

# **Unit 6**

## **Including all pupils in class and group activities using ICT**

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## Terminology

This Unit has been written for teachers and others working in all countries within the UK. There are differences in the legislation, terminology and structure of the educational systems in Scotland, Northern Ireland, and England and Wales and we have tried to reflect these in the document. In some specific Scenarios illustrating the use of ICT by individual pupils, we have given references to a scheme which is only applicable to one country – for example, the Literacy Hour in England and Wales – because it is necessary to make sense of the story.

For fuller information on terminology relating to each country, please see the section **Curriculum and Terminology in the UK**. This can be found at the back of your ICTS ring binder. You may well be corresponding with colleagues working in another part of the UK, and it will always be useful to have a common understanding of the language of education.

Throughout this Unit we have endeavoured to use the preferred spellings used by Oxford University Press and Cambridge University Press, as found in the current edition of the Oxford English Dictionary.

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## Introduction

Pupils with severe and complex needs can use ICT to support and enhance their learning. In many instances this will mean them using a computer and other technology in a one to one learning situation. The purpose of this Unit is to suggest some ways in which ICT can be used in group sessions to include all pupils by enhancing the session and helping individuals make a greater contribution.

Group learning situations are an important and essential part of the school day. They can range from activities undertaken in pairs up to a full school assembly. Although one may first think of the more formal situations such as group and class activities pupils are often interacting in less formal group situations throughout the school day.

Pupils with physical, sensory, communication and learning difficulties may often be present in these group situations but not fully included because of their disability. A pupil with a communication or language difficulty may understand the interaction but be unable to contribute. A visually impaired pupil may be looking at a computer screen but be unable to see the mouse pointer and thus find it hard to understand what is going on. A pupil with physical difficulties may only be able to watch someone carry out practical activities.

ICT and technology can be introduced into these situations to support individual pupils by helping them to contribute to the session and by providing them with additional learning experiences. Other pupils in the group can also use the ICT resources, making the session a more inclusive experience.

## Expected outcomes

**By the end of this Unit, participants will have...**

- considered how ICT can support pupils in group activities
- an awareness of how pupils can communicate in group / class situations
- a knowledge of software that can be used in group / class situations
- ideas for including all pupils in group / class literacy activities
- ideas for including all pupils in group / class numeracy activities
- ideas for including all pupils in a range of curriculum and social activities

## Key skills covered in this Unit

### **Using symbol and picture-processing software**

Using available symbol and picture-processing software to create captions for displays.

See Scenarios 1d, 3a, 3b, and 4

### **Configuring your computer system to meet a variety of needs**

Check and adjust Control Panel settings to meet pupils needs. Refer to **Unit B - Organizing your resources**.

See Scenarios 1, 2, 3, etc.

### **Using the computer Control Panel to check and adjust sound levels**

Check sound output levels in the computer Control Panel and connect external speakers and headsets to meet individual and group needs.

See section on Sound

### **Connecting a range of keyboard and mouse alternatives**

Use the computer with a range of alternatives to meet individual and group needs, using a splitter unit if required so that two devices may be used at the same time.

See Scenarios 1d, 3a, 3b, 6a, and 6b

### **Using single message and Step-by-Step communicators**

Program and use available simple communicators.

See Scenarios 1, 2, 3, 4, 6, and 7

### **Connecting switches to your computer**

Connect switches as required to operate switch software. See also **Unit 8 - The development of switching skills**.

See Scenarios 1, 2, 3, 4, and 6

### **Using switches as an alternative to mouse button clicks**

Use suitable interfaces to allow switches to emulate mouse button clicks. There are a number of ways that switches can be connected to do this. These include specially adapted rollerballs and keyboard-type switch interfaces.

See Scenarios 2 and 6

### **Creating a selection of overlays for an overlay keyboard**

Create a selection of overlays using text, pictures and symbols as required for available overlay keyboards to provide text and spoken output with a talking word processor.

See Scenarios 1, 3, 4, 5, and 6

### **Creating on-screen grids**

Create on-screen grids using text, pictures and symbols as required to provide text and speech using a suitable word processor.

See Scenarios 1, 2, 3, and 4

### **Using a digital camera to put pictures on your computer**

Use a digital camera to record pictures of activities and resources and place these into a presentation program on the computer. Programs such as *SwitchIt! Maker* and *PowerPoint* can be used for presentations, which include sound and text as well as pictures.

See Scenarios 2 and 6

### **Use switches with battery and mains control units**

Use switches to operate a selection of equipment using battery adaptor leads and mains control units. Investigate how switches can be connected to simple classroom experiments to give all pupils a part in the activity.

See Scenarios 2, 5, and 7

## Access to activities

Group and class activities are an essential feature of the school day; it is through such interactions that pupils can be involved with their peers. The interchanges that take place are an important way to learn. Learning sessions can be of a formal group, class or school situation as well as less formal sessions at break and lunch time or in school clubs or when visitors are in school. Where these group sessions are formally planned suitable resources can be prepared in advance and used in the session.

At other times the sessions are less formal and different provision may be required. The staff and adults involved may be less familiar with the individual pupils and the equipment they use. The aim should be to help all the pupils to participate in the session rather than just observe. When ICT is used it can be there for the whole group to access as well as the pupils who may have a specific need to use it.

### Individual needs

A group situation may include pupils with a variety of difficulties that affect their ability to participate. Planning for the session as a whole can take into account these needs and include the provision of ICT to support the activity. This planning for ICT can also include the pupils who do not have a particular need for additional support. If the whole group uses ICT the session will be much more inclusive, ICT enhancing the session for all pupils as well as providing access for others.

Typical groups may include pupils with communication, physical, and sensory difficulties as well as learning problems. The basic planning for the session will include ways of helping the whole group make sense of, and interact with the material being used, as well as communicate with their classmates and staff. The materials used may have to be presented in different ways. For example, you may use small books alongside the big book for pupils with a visual impairment, pictures and symbols to support text or objects related to a computer program.

### Physical difficulties

Pupils with motor difficulties may find it hard to handle materials and equipment. ICT can provide them with additional opportunities for control; they could use a mains switcher unit to take part in a food technology session. Pressing a switch while counting objects may enhance their sense of number. Switch access to a standard word processor can allow them to write alongside their peers, contributing to the same work.



mains switcher unit

### Communication difficulties

Pupils with speech and communication difficulties will be unable to contribute as easily as their peers. They may then be seen as having little to offer. Even when they have an alternative system of communication it is often only understood by the adults supporting the group and not by the other pupils. All the pupils in a group are unlikely to be able to see the message indicated by a pupil using a communication chart. Simple speech output communicators can be used in these situations to help the pupil make a contribution that can be heard by the rest of the group.



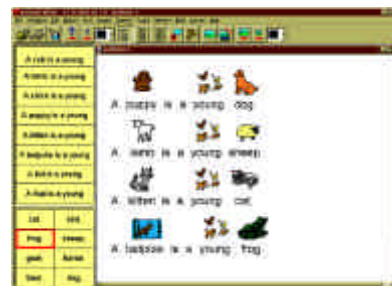
TechTalk speech output communication device

## Sensory difficulties

Pupils with visual and hearing difficulties can easily feel isolated in group sessions. Many resources used to support their learning are most effective in a one-to-one learning situation. ICT can help in different ways, not only during the session but also in the preparation of materials. Large-print written materials can be created on a computer at the same time as a symbol or picture-supported text.

## Cognitive difficulties

The computer can add to sessions by providing additional multi sensory resources such as talking books or picture-supported text. Pupils can contribute to the recording of a lesson by using whole word or picture grids while others spell words from the keyboard.



using picture support in  
Inclusive Writer

## Group needs

The group as a whole can benefit from using ICT; by using the same or similar resources in a session all pupils can feel included. A computer can provide a motivating focus for a group session, providing visual and auditory interest and opportunities for discussion and interaction. The organization of the group will have to take into account the individual needs; some pupils will need to be closer to the screen, and others will need additional adult support to interpret the session.

The needs of the pupils in the group should be taken into account when positioning the computer and monitor. An adjustable-height trolley may be needed. The computer should be placed against a distraction-free background if some pupils have a visual impairment. It is useful to look at the screen from the pupil's point of view; all you may see is a reflection of a window or light on the screen.

## ICT resources in a group setting

The typical computer workstation is best suited for use by just one, or at most two or three pupils at a time. The commonly-used 15-inch monitor is not much bigger than a small portable television. The mouse and keyboard can only be used close to the computer and will often be monopolized by one pupil in the group. Others will be at the fringe of the activity, often unaware of what is happening.

There are various ways in which the computer can be adapted to make it more suitable for group sessions, some more affordable than others!

### Check the Accessibility Options settings in the Control Panel

The Accessibility options allow you to adapt the operation of the computer to cater for different needs. **Unit B - Organizing your resources** deals with the use of these options and will help you adapt the computer for the needs of individuals within your teaching group.

### Display (screen)

The standard monitor, 14 or 15-inch, may be too small for group sessions but ideal for the individual. Alternative displays such as flat screen monitors or data projectors are becoming more common and affordable. A data projector, connected to the computer, can provide a good quality image on a screen, especially if the room can be slightly darkened, avoiding direct sunlight.

It is important that whatever display we have is set up to best advantage and positioned with regard to the pupils' needs and the classroom environment. Even then there may be pupils in the group who are unable to see or make sense of the computer screen and will need additional support if they are to participate in the session.

### Points to think about

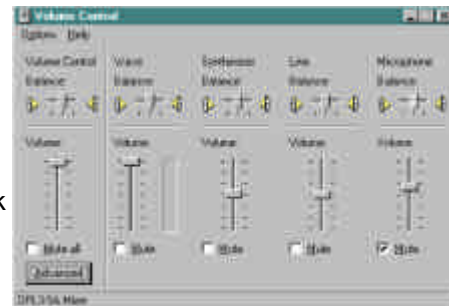
- have an adult or other pupil describe the screen
- make a printout of key screens
- arrange for them to have used the program previously
- have some tactile materials or objects that relate to the program

### Sound

Sound is an important part of many programs; for some pupils it will be their main source of information. The loudspeakers provided with many computers have been chosen with cost the main consideration. While often just sufficient for the individual user they will be inadequate for a group or whole class session. Better quality speakers are not expensive and can make a dramatic difference.

The volume of sound from a computer can be controlled in two main ways: by adjusting the volume in the computer Control Panels and by using the volume control on the loudspeaker system. The two controls work in tandem.

If you cannot make the sound loud enough, first check the Control Panel setting. If this is very low the volume control on the loudspeaker will have little effect.



adjusting the sound output in Windows

You will find more about Control Panels in **Unit B - Organizing your resources**

### Points to think about

- volume settings
- quality of speakers
- position of speakers
- ambient sound

There may be some pupils who still cannot hear the sound – think about other ways to help

- describe what is happening
- use headphones
- seek help from a specialist teacher of the hearing impaired about using the pupil's hearing aid in conjunction with the computer
- use additional amplification

### Group listening

Computer sound can be a distraction for some pupils; a simple pair of headphones can be used by a single pupil to cut down the level of sound. When a group of pupils are working together it is possible to use a distribution box, microBob, which allows up to six headphones to be used at the same time. Used with headsets, which have a microphone attached, it is possible for a group to talk to each other at the same time as using the software.



group listening without distracting the rest of the class, using microBob

### Access

The computer is an interactive resource; most software requires an operator. Commonly the mouse and keyboard are used, restricting access to only those who can use and understand these devices. In a group situation there will be individuals who can use these input devices and others who cannot. In the case of larger groups it is difficult to hand over control to individuals unless they come close to the machine.

Alternatives to the standard input devices can be used to provide access for the pupils who have individual needs, while at the same time making it easier for all pupils to have a go.

For more information see **Units B, 4, 7, 8, 9, and 10.**

### Touch Monitor

Until recently a rather expensive resource, these provide a very direct and intuitive way to control software. Used as an alternative to the mouse, they allow a direct touch to perform the action of moving the screen pointer and then clicking the mouse. For some pupils, this direct access with nothing intervening works wonders. They can really concentrate on the task in hand, and not worry about locating a mouse, switch or rollerball. Sometimes the effort of looking up and down between screen and input device is enough to distract the pupil completely from the task.

#### Points to think about

- direct cause and effect – the pupils are free to concentrate on the software
- cognitively simpler than a mouse
- can be used at the same time as other devices
- good for small groups
- stops one pupil monopolizing the interaction



using a Touch Monitor for direct access

## Mouse and alternatives

Many pupils have difficulty using a standard mouse. Alternatives such as rollerballs are now commonly used to provide an accessible alternative. In a group situation they can be more easily passed around than a mouse which requires a flat surface.

Remote-control mice or rollerballs are now becoming common; they could be passed round a group, provided they each have a flat surface and can use a mouse.

Adjust the settings in the mouse Control Panel to help accessibility.

See **Unit B - Organizing your resources** for more information on mouse control.

### Points to think about

- can all pupils see the mouse pointer
- can they understand how to use it
- get a **Y-splitter** to connect two devices at the same time
- the whole group may be able to use a rollerball
- use a switch to carry out mouse clicks
- adjust mouse settings in the Control Panel



adjusting the mouse pointer speed in Windows

## Keyboards and alternatives

The keyboard is a complex device that many pupils are unable to use. There are many alternatives and adaptations to make text input easier. In group sessions where text input is required alternatives can be provided for some pupils. Writing letter-by-letter is a slow or impossible task for many pupils. Overlay keyboards and on-screen grids can be used to input whole words, phrases or sentences. A group could write co-operatively with some pupils using the keyboard while others choose words from a grid or overlay. Symbols and pictures can be used to support text to help pupils who have problems reading.



a range of alternatives for keyboard access

### Points to think about

- connect overlay keyboard with whole words
- a remote keyboard can be passed around a group
- on-screen grid with the same vocabulary as overlay
- lower case stickers for some pupils
- larger keyboard easier to use and see
- speech feedback from written work
- symbols and pictures associated with text

### Using switches

Switches provide simple direct control of some programs. They are useful for pupils with motor difficulties or cognitive problems and allow pupils to focus on the task. They can easily be passed around a group to give all pupils a chance to take part. A switch can be used to change pictures or step through a presentation of pictures or text.

#### Points to think about

- more than one switch can be used
- a switch can perform mouse clicks
- easy to use
- everyone can use the same switch
- use two switches for turn taking



sharing and turn-taking using switches to access SwitchIt! Scenes

### Other technology

Other equipment that is used to support pupils with disabilities is often used in group situations. Communication aids of various types will allow pupils to contribute to a group session. In conjunction with suitable adaptors, switches can be used to operate toys or mains equipment as part of a teaching or leisure session.

### Simple communicators

Some pupils will have personal communication systems or devices; these will often have to be set up in advance with messages that may be needed in particular sessions. It may be easier to use simple communicators that can be quickly programmed as required for some teaching sessions. The computer can also be used to provide additional communications materials, such as communication symbols and charts. It is a good idea if the teacher also makes use of a chart when working with a group. This will help reinforce the use of alternative communication systems.



using technology in a story session

#### Points to think about

- single message communicators are easy to program when needed – ideal for informal sessions
- other pupils can understand the speech output
- amplification can be used in large sessions
- all pupils can use the device
- some devices provide a sequence of messages
- pupils can give instructions

### Switch control devices

Battery and mains adaptors are used to allow switches to control equipment such as battery toys, tape recorders, food processors etc. Pupils who find it hard to handle this equipment can be put in control using a switch. Where such equipment is used in a group session it allows these pupils to play a part. Other pupils can be encouraged to interact and communicate with peers who may otherwise be left out.

### Points to think about

- use a switch to work a tape story
- control a fan on a hot day
- provide music for a game
- mix drinks or food for the class
- turn on the Christmas lights
- provide sound effects in a play



controlling the music for a musical game

## Scenarios

### Things to try - ideas and suggestions

This section describes some typical group sessions and suggests how ICT could be used to support and include pupils with severe and complex needs.

The section includes various types of formal and informal session and refers to software, strategies and devices that may be used. Each section describes some resources and how they can be set up to cater for different needs. Each activity contains some suggested resources; think about how they can be used for other activities.

The suggestions focus on two pupils in one class who have additional needs that make it difficult for them to participate fully in some class and school activities.

- **John** is a bright sociable pupil who is unable to speak and has difficulty with fine and gross motor control. He can use a switch to operate a single message or Step-by-Step communicator and also point to operate a simple overlay on an IntelliKeys overlay keyboard. He is well liked and accepted by the rest of the pupils in his class. However they tend to 'mother' him. They will often answer for him, help him by doing everything for him and treat him as the class pet.
- **Sharon** has a visual impairment along with some motor and learning difficulties. She is able to see and handle learning materials that are close to her. She has some additional support assistant time to prepare additional materials and to help her make sense of class activities. She often finds the noise and bustle of the classroom intimidating and is being encouraged to play a bigger part. She enjoys using ICT and has begun to enjoy showing her skills to other pupils.

Some of their classmates have additional learning and sensory difficulties and also require additional support, especially modified and adapted learning materials. In particular one is very reluctant to talk but enjoys using the computer with a mouse and is often provided with an on-screen grid to use to support his communication. This grid usually is similar to the overlays provided for John and Sharon.

## Scenario 1 - Getting started - Greetings and news

Pupils arriving in school will encounter a variety of situations where they will meet and greet others. These range from the informal groupings of the school bus or taxi to the formal class routines such as 'Circle-time'.

Each of these situations can involve different types of greetings from a formal "Good-morning" to a "hi-ya". News about the weekend may be exchanged on Monday morning or last nights 'East Enders' events discussed.

The pupils will also meet different adults and pupils who may not be familiar with them and what support they need, so any equipment used should be easy to program and all staff should be aware of how it is used.

John comes to school each morning in a school bus that also collects a number of other pupils. The following examples illustrate ways in which ICT can help John in the morning's activities.

Not necessarily all on the same morning!

### Example 1a - Saying "Hello"

Each morning John meets a number of people on his way to school. Many of them will say hello to him. He has a One Step communicator programmed with his favourite greeting "Hi-ya", fastened to his wheelchair tray. He really likes pressing this, all the time! All the adults that meet John have been told that he is trying to restrict his greetings to the first time he sees someone and not to press the communicator indiscriminately.



John's One Step communicator

The adults that John meets each morning have been asked to help by also responding in an appropriate way to the greeting and not to keep encouraging him to repeat his greeting.

This morning he is able to say hello to six people including the bus escort, the driver, his best friend on the bus, the teacher who helps him off the bus, the school secretary and the rest of the class during Circle-time.

### Example 1b - Telling news

Last night John went to see his brother play in a local football team. His brother has recorded a message in the One Step communicator so that John is able to tell his class about the match when he gets to school. On the way he also tells everybody he meets, many times!

### Example 1c - Calling the register

The morning routine in John's class involves the register being called. Each pupil's name has been recorded in a Step-by-Step communicator. This morning it is John's turn to call the register. He gets very excited and is working on waiting for each pupil to answer before pressing the communicator to call the next name. The rest of the class joins in by waiting for their name to be called and then answering clearly.

### Example 1d - The day's events

During Circle-time the day's events are discussed. John and other pupils have already used a Step-by-Step communicator programmed with the day's events to lead a discussion. John and another pupil are beginning to use pictures on an overlay keyboard. Today they are both using this to lead the discussion.

The pictures on the overlay are used alongside a talking word-processor to read out and print a record of the day's events. A tactile version of the overlay has also been created for Sharon who is beginning to use objects of reference to plan her daily activities.



an overlay for 'talking' about the day's events

### Key skills and equipment

The key skills for the above examples are the ability to:

- programme simple communicators
- create overlays with pictures linked to a talking word-processor

The key equipment is:

- One Step communicator
- Step-by-Step communicator
- Wheelchair mounting for the communicator using a variable friction mounting arm
- IntelliKeys overlay keyboard
- Talking word processor

For more information, see **Unit 3 - Language and communication** and **Unit 8 - The development of switching skills**

## Scenario 2 - Whole school activities

In John's school each class take turns at leading a school assembly. As well as John there are other pupils who use switches and each time the class lead assembly their teacher uses a piece of switch-operated equipment or a computer program to include John and the others in the presentation. Pupils in other classes are also asked to help by using some of the switch equipment.

### Example 2a - Providing music

A PowerLink mains unit lets John use his switch to provide music at the beginning and end of the assembly. This is used in latched mode, so John is learning to start and stop the music at the right time. He is very enthusiastic and needs some assistance as he is liable to produce music frequently throughout the assembly.



John controls the music

### Example 2b - Working equipment

The school Christmas tree has just been set up and John's class invite a pupil from another class to switch on the lights using the PowerLink. This is then left connected to the lights, set to a long timed interval, so that there are lots of opportunities for other pupils to turn them on throughout the school day.

### Example 2c - Describing a school trip

Having just been on a school trip John's class have used *SwitchIt! Maker* to create a presentation using the photos taken with a digital camera. This presentation also included spoken descriptions recorded by some of the class. John can use his switch to change the pictures during the presentation. When using the slides the hall was blacked out and a screen and data projector were used to project the computer images.



creating a switch presentation using  
SwitchIt! Maker

### Key skills and equipment

The key skills for the above examples are the ability to:

- set up and use a PowerLink
- use a digital camera
- download the pictures to a computer
- make a presentation using *SwitchIt! Maker* or *PowerPoint*

The key equipment is:

- PowerLink
- digital camera
- data projector

For more information, see **Unit 3 - Language and communication** and **Unit 8 - The development of switching skills**

## Scenario 3 - Numeracy and maths activities - Counting

Numeracy activities present particular difficulties for some pupils. A pupil who cannot speak is unable to count out loud and thus misses the experience of sounding and hearing the number names. Pupils with motor difficulties miss out on many practical activities by only being able to observe and not do. The computer can provide them with part of the experience by providing visual feedback.

In John's class there are pupils with a range of difficulties, John with physical and speech difficulties and Sharon who is visually impaired. ICT resources have been created which can be used by both of them as well as by the other pupils.

### Example 3a - Counting activities

#### Counting objects

John is unable to handle objects or to count out loud. While another pupil places bricks in a line John uses a Step-by-Step communicator programmed with the numbers '1' to '5' to count alongside. He finds it hard to wait for each brick to be put down and his classmate enjoys moving the bricks slowly to make John wait.

#### Joining in a number sequence

John's chosen number is '4', programmed into a single message communicator. During a class session every time his number comes up he has to 'speak' it by pressing the communicator. This gives him an important job, as the class cannot get past '4' until he joins in!

### Saying number names

As John is beginning to be able to select areas on an overlay keyboard he is starting to use an overlay on the IntelliKeys which contains the numbers '1' to '4'. These are used alongside the *IntelliPics* program, which speaks the number in digitized speech and also displays the number on the screen. A tactile version of the overlay has been created for Sharon using stuck-on counters to represent the numbers.



speaking numbers

### Key skills and equipment

The key skills for the above examples are the ability to:

- design and program printed and tactile overlays
- use the *IntelliPics* program to create and edit a simple activity

The key equipment is:

- One Step and Step-by-Step communicators
- IntelliKeys and *IntelliPics*

### Example 3b - Playing board games

To allow some of her pupils to join in with board games John's teacher had to remake her resources to deal with numbers up to 'six'!

In addition she was able to use the communicators and IntelliKeys to enable John to comment on the game and to say when it was his turn, which was often!

An on-screen *Inclusive Writer* grid or overlay shows and speaks the number shown on a die. The overlay or grid could also be programmed with dots instead of numbers. The on-screen grid is very popular with the rest of the class who enjoy using the mouse to select the numbers shown on the die.



Inclusive Writer grid with numerals '1' - '6'

### Key skills and equipment

The key skills for the above examples are the ability to:

- create IntelliKeys overlays
- make on-screen grids for *Clicker* or *Inclusive Writer*

The key equipment is:

- communicators
- IntelliKeys, *Clicker* or *Inclusive Writer*

## Scenario 4 – Practical activities

Pupils like John, who are unable to take part in practical activities, can use ICT to comment on the activity or to give instructions on how it should be carried out.

Suitable language can be provided in a communication device, on an overlay, using a low-tech communication chart or using a switch program or in an on-screen grid.

Activities involving a sequence of actions could also be covered using a Step-by-Step communicator; John could 'tell' someone how to make a drink with a suitable sequence of messages.

- get a glass
- pour in some cordial
- now add water
- STOP!

### Key skills and equipment

The key skills for the above example are the ability to:

- identify suitable activities
- choose appropriate equipment
- use symbol software or a digital camera to create charts / overlays

The key equipment is:

- communicators
- IntelliKeys
- *Clicker* or *Inclusive Writer*
- *Boardmaker* or similar utility to make communication charts

For more information, see **Unit 3 – Language and communication** and **Unit 8 – The development of switching skills**



An overlay or communication chart to comment on and give instructions in a practical activity.

## Scenario 5 – Making things work

Pupils like John are often observers, watching adults or other pupils carry out activities. He enjoys being part of the class even more when doing things that are his special job. The rest of class will also see that, despite his lack of communication, he understands what is happening and is part of it.

### Example 5a – Listening to a story

A story tape is being listened to by a group of pupils. John is in control with a PowerLink on a timed setting. When the tape stops he will start it again when asked.

### Example 5b - Food technology

John uses a PowerLink to operate a food mixer during a class session. He has to wait until instructed to switch on and off; he may even let someone else have a go if they ask nicely.



switch operation of a food mixer, through a control unit

### Example 5c - On a hot day

In the same way a fan can be set up with a timed operation. When it stops someone has to turn it on again. All the pupils could be given the chance to do this using a switch. This is the best way to do it and not just for John.



switch operation of a fan, through a PowerLink 2

### Example 5d - Experiments with electricity

#### - Battery only

John's class has a kit that allows them to connect up simple battery-operated circuits to work bulbs and motors etc. (Lego equipment is a good way to do this)

When circuits are created they can be worked by a single switch by using a battery adaptor lead connected into the battery box. Everyone can then use the switch to operate the experiment.

This is an ideal opportunity to experiment for yourself, just like the rest of the class. Using toy adaptors is exactly like the sort of experiments that the pupils carry out, and is an ideal opportunity to explain simple circuits and switches.

#### Key skills and equipment

The key skills for the above examples are the ability to:

- wire up simple circuits
- persuade someone to help if you cannot do it

The key equipment is:

- PowerLink
- Switch Latch/Timer
- battery adaptor lead
- control technology equipment

For more information, see **Unit 3 - Language and communication** and **Unit 8 - The development of switching skills**

## Scenario 6 - Literacy and group discussion activities

Group literacy activities are an important part of the school day. They present particular problems for the pupils who have speech and language difficulties who are very often only able to observe.

Many pupils with severe and complex needs will also need additional support when reading and recording work. They may only be able to use sounds, pictures or symbols rather than print. ICT can be used to support and augment text with pictures and sound, as well as providing alternative access through switches and other devices.

Many class activities involve discussion in groups or whole class settings. Pupils with communication difficulties can be helped to take part using ICT.

### Example 6a - Group reading

The big book is now a part of many school days. The ideal of a whole group participating in reading is hard to achieve when some of that group will have very different needs. Some may be unable to see the book, hear the teacher or ask questions. In John's class there are pupils with different needs, each of whom needs some help to take part.

#### 'Reading' a book

The computer and simple communicators can be used in different ways to give pupils the experience of joining in with reading. Single-message communicators are very easy to use in this situation as they can be quickly programmed with new messages such as the text on a page of a book. The computer may take more time and preparation but is more versatile.

#### Reading 'my' page

John, Sharon and other pupils enjoy having the text from a particular page programmed into a single-message communicator. As the book is being read they have to wait for their turn to read the page; in John's case this requires considerable restraint. At first John had a picture on his communicator to help him recognize the right page. As he is now using Rebus symbols the communicator has an appropriate symbol placed on it. This symbol has also been stuck on the appropriate page of the book and John is working on using this as his cue to press his communicator.



enjoying 'my turn'

Sharon has a tactile reference to the page placed on the communicator and is beginning to respond when this is mentioned and press the switch to read her page.

#### Reading a number of pages

There are several ways in which a whole book could be read page by page. Various ways are now being devised to allow John and the other pupils to read a whole book.

Using a Step-by-Step communicator, with each page recorded in turn, has been found to help John overcome his enthusiasm for switch pressing. There is now a real need and responsibility to wait when he is reading to the rest of the class. He also enjoys being allowed to take the book and communicator home so that he can read to his family.

IntelliKeys overlays are being made to match some of the books available in school, with additional tactile overlays to help Sharon. In fact these are popular with all the pupils, who enjoy trying to work out what they mean.

It has been found that the school digital camera is able to take a good picture of the pages of the book, especially if the pictures are taken outside in bright light. These pictures have then been used to create a switch-operated story using *SwitchIt! Maker*.



accessing a book using SwitchIt! Maker

### Key skills and equipment

The key skills for the above examples are the ability to:

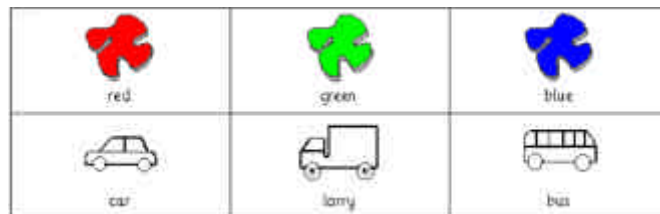
- program overlays for IntelliKeys
- use the digital camera and transfer the pictures to the computer

The key equipment is:

- IntelliKeys
- digital camera
- *SwitchIt! Maker* software

### Example 6b - Group discussions

ICT can be used to help the whole group become involved in a discussion. This may prove more difficult than making resources for numeracy and reading activities where the content is fixed. The preparation for the sessions involves careful planning to ensure that suitable vocabulary and images are available. The digital camera can be used to provide pictures of the actual resources that will be used.



an on-screen grid (Inclusive Writer or Clicker) or overlay that could be used to describe an object

### Key skills and equipment

The key skills for the above example are the ability to:

- create overlays or on-screen grids
- use a digital camera

The key equipment is:

- IntelliKeys
- digital camera
- overlay making software or on-screen grid software

## Scenario 7 - Around the school

Pupils like John and Sharon are a part of the whole school community as well as of their class. Throughout the school there are displays, notices and other printed material designed to be seen by all pupils.

To ensure that pupils with a variety of needs benefit from these materials the school has asked all staff to try to design displays and printed materials to include all pupils. This has helped raise awareness of the variety of pupils' needs in the school.

### Example 7a - Displays

There are various areas in school where regular displays are set up. Where possible these displays include provision for access by pupils with additional needs. Some of the techniques used are

- One Step communicator with the sound of the sea
- One Step communicator with a section of a story included in a display about the 'Iron Man' story
- captions printed in picture-supported text using *Inclusive Writer*
- One Step communicator with a tactile cover and a recording of bird song for a nature display



access to the display area

### Example 7b - Areas in school

To help some pupils locate themselves in school a number of single message communicators have been placed in strategic places – the office, outside each classroom etc – to give information. These are very popular with all the pupils who enjoy helping to decide what should be recorded about their class. The staff have spent some time coming up with alternative suggestions for the communicator placed outside the heads office! Some locations such as the pool are represented by relevant sounds.

### Example 7c - Dinner time

There are usually a number of choices to be made about what to eat. ICT is used in a number of ways to help all pupils understand and make individual choices. This includes preparation in the classroom for pupils like John and Sharon and the presentation of menus etc, in the dining area. This has provided an ideal opportunity to include all staff in the process of providing for each pupil's needs and to give them an opportunity to use technology.

- printed menus which include symbol and picture support
- John takes a communicator from class which is programmed with his choice
- Sharon enjoys reading a tactile overlay with the day's menu

For more information see **Unit 3 - Language and communication**, **Unit 4 - Identifying individual needs**, and **Unit 8 - The development of switching skills**

## Practical teaching activities

Please choose and complete one or more of the following activities:

1. Supporting software with screen printouts  
Create a set of printed resources that could be used to help pupils with visual difficulties make more sense of a program used in a group session.
2. Supporting software with real objects  
Assemble a selection of objects for use alongside a computer program to provide additional meaning for a pupil with a visual impairment and / or additional learning difficulties.
3. Switch access  
Provide switch access to allow a pupil who can only use a switch to join in with a small group of pupils (some of whom can use a mouse / rollerball) to explore a talking book.
4. Making a presentation  
Use a presentation program (PowerPoint, SwitchIt! Maker or similar) and a digital camera or scanner to allow a pupil with severe motor difficulties to show pictures of a school trip.
5. Science experiments  
Use switches and toy adaptors to help a pupil control simple experiments with batteries, bulbs, etc.
6. Accessible displays  
Make a classroom display more accessible, incorporating simple communicators to provide additional feedback and information using speech and sounds.
7. Tactile overlays  
Make a tactile overlay (IntelliKeys or Concept keyboard) to help a visually impaired pupil join in 'reading' a book.
8. Giving instructions  
Make an overlay / on-screen grid to allow a pupil to give instructions or make comments to others in an art session.
9. Writing about an activity  
Make an overlay or on-screen word / picture / symbols grid to help a group of pupils to write about a practical activity where some of the group cannot use a keyboard.
10. A class production or presentation  
Use simple technology such as single-message communicators and mains switching units to include pupils with motor and speech problems in a class presentation or play.

## Appendix 1 - Key resources

### Resources referred to in this Unit

#### PowerLink

Allows switches to be used to control mains operated equipment.

#### Single-message communicators

One Step, BIGmack, etc, record and replay single messages or sounds.

#### Data projector

Can be connected to computer to project a large image – some degree of shade needed. Ideal for large groups, these will also work with a video recorder.

#### microBoB

Connect up to six headphones or headsets for quiet group sessions.

#### Touch Monitor

Computer monitor with built-in touch activation.

#### Rollerballs and tracker balls

A wide range is available to use as an alternative to a mouse; they are easier to use for some pupils.

#### On-screen grids and talking word processors

Provided by programs such as *Clicker*, *Inclusive Writer* and *Writing with Symbols 2000*. Used with switches, mouse, Touch Monitor etc, to provide word, phrase and symbol access to writing and communication.

#### Message sequence devices

Allow a sequence of messages to be recorded and played back with switch presses. The AbleNet Step-by-Step and Step-by-Step with Levels communicators can be used to create message sequences.

#### Overlay keyboard

IntelliKeys or Concept keyboard. With suitable software these provide a simple, direct way of using computer software. Especially useful where tactile and easy physical access is required.

## Appendix 2 – Some useful Web sites

**AbilityNet** – [www.abilitynet.co.uk](http://www.abilitynet.co.uk)

**ACE Centre** – [www.ace-centre.org.uk](http://www.ace-centre.org.uk)  
Information and software. Publishers of SAW.

**ACE Centre-North** – [www.ace-north.org.uk](http://www.ace-north.org.uk)

**Advisory Unit** – [www.advisory-unit.org.uk](http://www.advisory-unit.org.uk)  
Information and resources about Windows Switch, Point for Windows, and other software.

**CALL Centre** – [callcentre.education.ed.ac.uk](http://callcentre.education.ed.ac.uk)

**Communication Matters** – [www.communicationmatters.org.uk](http://www.communicationmatters.org.uk)  
Information and links about the Augmentative and Alternative Communication (AAC) needs of people with severe communication difficulties.

**Becta** (The British Educational Communications and Technology agency) –  
[www.becta.org.uk](http://www.becta.org.uk)  
Information on ways of using ICT in education.

**Becta Inclusion Web site** – [inclusion.ngfl.gov.uk](http://inclusion.ngfl.gov.uk)

**Crick Software Ltd** – [www.cricksoft.com](http://www.cricksoft.com) and [www.clickergrids.com](http://www.clickergrids.com)  
Information about, and resources for Clicker.

**Foxdenton School and Integrated Nursery** – [www.foxdenton.oldham.sch.uk](http://www.foxdenton.oldham.sch.uk)

**Inclusive Technology Ltd** – [www.inclusive.co.uk](http://www.inclusive.co.uk)  
Extensive information on a range of issues around special needs and ICT.

**IntelliTools** – [www.intellitools.com](http://www.intellitools.com)  
This company's site has a free Activity Exchange where resources made with their products can be downloaded free of charge.

**Meldreth Manor School** – [atschool.eduweb.co.uk/meldreth/](http://atschool.eduweb.co.uk/meldreth/)  
Ideas and information for symbol users.

**Widgit Software** – [www.widgit.com](http://www.widgit.com)  
Excellent site with lots of information about symbols, switch software and techniques for introducing switches and scanning.

**Xplanatory** – [www.canterbury.ac.uk/xplanatory/xplan.htm](http://www.canterbury.ac.uk/xplanatory/xplan.htm)  
Pages of resources, information and ideas developed and maintained by the Special Needs Research and Development Centre at Canterbury Christ Church College of Higher Education.

