

SEN Switcher

Accessible software for students with
profound and multiple learning
difficulties

SENSwitcher Program and Documentation
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Documentation and Teachers' Notes
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SEN Switcher

Designed by teachers and other professionals, SENSwitcher represents a major advance in ICT teaching resources for students with severe or profound and multiple learning difficulties, those who need to develop skills with assistive input devices and very young children starting out with computers.

The program comprises 132 different activities covering eight progressive stages in skills development ranging from purely experiential visual stimulation and tracking, through cause and effect, switch building, timed activation and simple row scanning. All of the activities can be operated by the use of either a pointing device, keyboard, switch or touch screen. The program can be run online, preloading activities to enable fast response times on a 56.6k modem. It can also be downloaded in standard 'Zip' (PC) or 'Stuffit' (MAC) format for use on standalone computers with a Macromedia Flash 5 enabled browser.

The program is accompanied by this teacher's reference document, which details each of the sections, suggesting possible teaching activities and including a series of charts to record assessment, progression and attainment in line with the recently released 'P' levels of the QCA curriculum document 'Planning, teaching and assessing the curriculum for pupils with learning difficulties – Information and Communication Technology', published in March 2001. The document includes a number of mini case studies compiled while beta testing the program in an all age school for children with severe and profound and multiple learning difficulties.

Launching the program while online

You can access the launch page from <http://www.northerngrid.org/senswitcher> or by following the links in the SEN section of the web site. Once loaded the launch page displays an illustration and short description of the available levels. Load any section by clicking on the appropriate 'Launch' icon.



Level 1 : Shapes

10 animated shapes which do not require user input. The shapes range from a single star to a square morphing into a triangle.

Launch

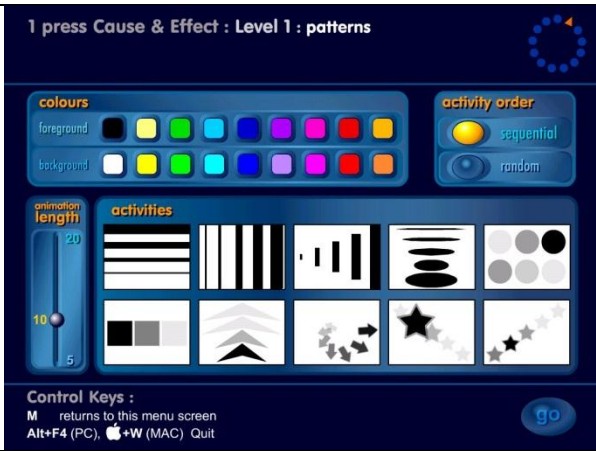
You can return to the launch screen at any time by holding down the [ALT] key and pressing [F4] on the PC or [APPLE] and [W] on the Macintosh.

Downloading the program for offline use

The program can be downloaded and used offline or on computers without an Internet connection. To do this, download the Zip file, extract, and open "Offline_index".

The main menu

SENSwitcher uses a very simple, quick to learn menu system for each of the fifteen sections.

Colour Selection Use this option to select contrasting colours for both foreground and background.	<div> <div>SEN Switcher</div> <div>Main Menu</div> </div>	Activity Order Use this option to decide the order in which the activities are presented, either sequentially or random.
Animation Length Drag the slider to determine the length of time the reward animation will play before moving on to the next activity.		Activity Selector Click to select or de-select activities for the current session.
Additional Options Scanning, targeting and timed activation levels have additional options that are described in the various sections.	Control Keys Press 'M' to return to this menu from the activities screen. Press [ALT] and [F4] (PC) or [Apple] and [W] to return to the program launch screen.	The Go Button Click this to start the activities.

Using the menu couldn't be simpler. First select (or deselect) the activities you wish to include in the session by clicking them. Activities that are greyed out are deselected and will not be included in the session. Next drag the slider to set the animation length, the duration of each of the animations in the session. Now select the activity order, choosing between 'Sequential' or 'Random' presentation. Finally choose two contrasting colours for the foreground and background and click the 'Go' button to start the session.

You can return to the main menu at any time by pressing the [M] key on the keyboard.

You can return to the launch screen from the main menu at any time by holding down the [ALT] key and pressing [F4] on the PC or holding down the [Apple] key and pressing [W] on the Apple Macintosh.

Using assistive input devices with SEN Switcher

SENSwitcher can be operated using a wide range of input devices, which include:

- The left mouse button or equivalent on roller-balls, joysticks etc.
- The Space Bar or equivalent on adapted keyboards.
- Concept keyboards – An overlay can be downloaded from the launch screen.
- Any switch via an interface, which can emulate the spacebar or mouse button.

When using the program with people with profound and multiple learning difficulties, or those with restricted or involuntary movements, it is important to ensure that the correct switch is being used and that it is positioned so that the user can access it without physical discomfort.

Little has been published on the subject of switch assessment although some information is available on the Internet and in books. The [Priory Woods School](#) Assistive Technology Skills Progression document (which can be downloaded from the [Northern Grid](#) web site offers the following advice.

“An accurate assessment will be required to identify a reliable, consistent and repeatable movement that the child will be able to make from their normal seating position (this may include side lying benches and prone standing frames if this is the child’s MOST comfortable position for accessing the computer).

Several issues also need to be considered;

- *The child’s medical condition including expected course and prognosis and other related medical issues such as skin conditions, which could affect movement.*
- *Physical functioning, which movements are voluntary and which are involuntary. What is the range of movement? Is it accurate? How quickly can the movement be made and how much pressure can be applied?*
- *Is there any sensory impairment, which may affect the use of the equipment? Visual difficulties, hearing impairment, tactile problems?*
- *Are there any known perceptual problems to consider? Hand to eye co-ordination, tracking or scanning difficulties, problems with the left or right side, spatial relationships?”*

Switch assessments should be multi-disciplinary, drawing on the skills of the teacher, occupational therapist, physiotherapist, speech therapist and the child’s parents to help identify movement patterns, known motivators, likes and dislikes etc to aid the assessment process. Correctly identifying a reliable, repeatable and consistent movement and selecting the right switch to match that movement are critical factors for successful learning for people who require assistive devices to enable them to access the curriculum.

CASE STUDY ONE – Using Switches

Roger (5) is a young boy with ataxic cerebral palsy and a severe learning difficulty, who is just learning to use switches to operate the computer. Following an assessment a suitable switch was identified and mounted near to Roger's right hand. Roger activates the switch by lateral movement of his hand and arm, a movement, which is reliable, repeatable, consistent and comfortable for him in his normal seating position.

SENSwitcher was used initially at a single press cause and effect level to encourage Roger to activate the switch. Roger quickly understood and internalised the relationship between the switch and the on-screen animations and rapidly moved on to switch building (activating the switch a set number of times to 'build up' the screen before triggering the animation).

Teachers and other professionals are currently working with the Northern Grid to develop a web based 'expert system' to provide a framework for switch assessments. The system will be published on the Northern Grid web site in the near future.

There are a vast array of switches available on the market today, covering many different methods of activation and placement. Information and advice is available from a number of commercial companies on the Internet, their contacts details can be found in the appendix to this document.

Using constraining colours

One innovative feature of SENSwitcher lies in the ability of the user to select contrasting foreground and background colours for the various animations. This powerful tool is especially useful when working with people with some form of visual or perceptual difficulty.

Using the program's experiential levels it is possible to identify colour combinations, which are visually stimulating to individual children. The following case study describes this process.

CASE STUDY TWO – Using Colour Combinations

Simon (9) has an Autistic spectrum disorder and an associated severe learning difficulty. He has poor vision and some documented perceptual disturbance. Simon cannot use a mouse but will use the buttons as switches to activate cause and effect software. He becomes extremely excited whenever using the computer, which is expressed in self-injurious behaviour (head slapping and arm biting etc.)

The program was tried with various colour combinations with markedly different results. Any colour on a white background saw no change in his behaviour pattern. Yellow and black triggered a dramatic escalation in the self-injurious behaviour, while red and black had a calming effect, lessening the self-injurious behaviour and generating an increase in spontaneous vocalisation.

Cause and effect – A cautionary note

It can often be quite difficult to ascertain if a child has fully grasped the concept of cause and effect when using switches to operate software such as SENSwitcher. For example, a child may press the switch and then look at the on-screen animation or listen to the sound effects. This may not always mean that they have established in their mind that the activation of the switch is causing the reward. Some children enjoy pressing the switch as an activity, especially if the switch has any form of auditory or tactile feedback, pausing only when something nice happens on the computer screen or they hear a new sound, which diverts their attention.

Careful observation and a sound knowledge of the child and how they function in other circumstances may be necessary in order to determine if they have developed an understanding of cause and effect. When working with children such as these, it may prove useful to use the cause and effect levels of SENSwitcher together with other switching activities such as battery toys and cassette players. Only when the child has demonstrated an understanding of cause and effect in a range of different activities is it safe to move the child on to the switch building or timed activation levels of the program.

You can find further information about using switches both on and off the computer in the Priory Woods Assistive Technology Skills Progression document, which can be downloaded from the Northern Grid web site.

SEN Switcher and switch skills progression

One of the greatest strengths of the SENSwitcher program lay in the way the activities mirror how children learn control skills with switches in six progressive stages. SENSwitcher can be used with the following developmental framework based on the QCA ICT P Levels and empirical evidence from switch progression research carried out at Priory Woods School:

1. Developing Appropriate Behaviour

Even at the early experiential stage, switches should be made available and positioned as if the pupils were to operate the software independently. Emphasis is placed on experiencing and developing appropriate responses to the animation and sounds generated by the program, however if a pupil is to become a proficient switch user, they need to be taught to behave appropriately when equipment is positioned near their bodies. This behaviour should be reinforced at every opportunity and considered a prerequisite to any form of independent operation of ICT equipment.

Pupils will experience and develop appropriate behaviour when using ICT equipment.

This is broken down into two small steps.

- a. Pupils will tolerate the positioning of ICT equipment in relation to their bodies for short periods.
- b. Pupils will accept the positioning of ICT equipment in relation to their bodies.

2. Experiential ICT

Before children can learn to use switches to operate and control computer and other ICT related equipment, they need to be able to respond in an appropriate manner to the stimuli produced by the equipment. Through the use of experiential ICT, children can encounter ICT generated experiences and begin to develop appropriate responses.

The experiential section of the program comprises two levels of ten visually stimulating animations, each of which require no user input. Level 1 animation follows a shape theme with objects moving in both horizontal and vertical planes. Later animations in this level include moving objects morphing from one shape to another. Level two animations comprise of a sequence of patterns, again moving in both horizontal and vertical planes and introducing tunnelling and perspective.

Pupils encounter ICT generated activities and experiences.

This is broken down into two small steps:

- 1. Pupils encounter ICT experiences either passively or reactively, showing no interest in on screen movement or sound.**
- 2. Pupils show simple reflex responses to ICT experiences, for example, startling at sudden noises.**

Animations are played sequentially or at random. Pupils demonstrate either passive acceptance or some level of resistance. Experimentation with different patterns, colour combinations and animation length, together with careful observation can help identify animations, which may trigger some response.

Pupils show emerging awareness of ICT generated activities and experiences.

Broken down into two small steps:

- 3. Pupils attend briefly to sounds or on-screen movement patterns.**
- 4. Pupils make intermittent responses to sounds or on screen movement patterns.**

Pupils begin to show intermittent responses to the animations. They may look, vocalise or become quiet, become animated or still or may attend to the screen for brief periods.

Pupils begin to respond consistently to ICT generated activities and experiences.

Again broken down into two small steps:

- 5. Pupils show interest or pleasure in sounds and movement patterns looking more intently and for longer periods.**
- 6. Pupils briefly track objects moving in the horizontal or vertical plane on a computer screen.**



Pupils show consistent interest in the on screen animations, reacting and showing positive responses to familiar program elements. They may track moving objects, turn towards or become animated by specific sounds.

At this very early experiential stage ICT should incorporate a wide variety of experiences both on and off the computer. Lighting and sound equipment, electric fans, static and moving developmentally appropriate images could all be used to provide multi-sensory ICT experiences.

CASE STUDY THREE – Experiential ICT

Anne (11) is a young girl with profound and multiple learning difficulties, functioning at a cognitive age of less than 3 months. She is non ambulant and has specialist seating requirements.

Anne was introduced to SENSwitcher using Experiential Level 2 (Patterns) using different colour combinations. Careful observations were made as to her responses to animation / colour combinations. Anne quickly showed a preference for tunnelling animations in yellow and black, looking intently at the screen and vocalising while the animations played.

Over the next few weeks Anne was introduced to Experiential Level 1 (Shapes), choosing only those animations, which moved in the horizontal plane and displaying them in her preferred colour combination. Observations showed that Anne could track objects moving horizontally across the screen.

Anne's ICT sessions now incorporate a combination of both tunnelling patterns and visual tracking activities. She is beginning to respond more consistently to familiar patterns, evidenced by increased vocalisation.

Two recording sheets are included in with this document. These sheets can be used to record the pupil's response the various animations and colour combinations available in the experiential section of the program. By using these sheets over a period of time, patterns of responses may begin to emerge.

3. Becoming More Proactive – Reach out and touch

Pupils should be encouraged throughout the experiential stage to accept and engage in tactile explorations of the input device that they will eventually use to control the software program. Many children begin by reaching out and touching the input device or pointing at the screen. This should be encouraged and reinforced whenever it happens spontaneously.

Pupils begin to be more proactive in their intentions.

This is broken down into three small steps:

- 7. Pupils reach out toward a switch or touch screen or point to an object on the screen.**
- 8. Pupils proactively make tactile explorations of the access device.**
- 9. Pupils participate in the coactive tactile exploration of the access device including method of activation.**

For the final step the teacher would begin to use a single press cause and effect level of SENSwitcher enabling the program to respond to the pupil's activation of the switch.

Cause and effect – making something happen

To progress from experiential ICT, pupils need to develop an understanding of cause and effect. Simply put, this means a pupil recognising that by pressing a switch or touching a touch screen THEY are causing the effects on the computer screen to happen. Cause and effect is not something that can be taught directly, rather, pupils develop understanding through experiencing it in a range of different contexts. A baby throwing a toy from a pram (and having someone pick it up) or pressing a button on a Jack in the box to make it pop up are both examples of cause and effect experiences.

ICT can be a powerful tool to help teachers provide a broad range of developmental or age appropriate experiences of cause and effect for all children, especially those with some disability who may not be able to explore the world through the medium of play.



In our experience, children begin to learn to use switches first through continuous or momentary activation. This means pressing and holding a switch closed to trigger an effect. Examples of this may be holding a switch closed to enable a music tape to play on a cassette player or to activate a battery operated toy. The effect lasts only as long as the switch is held closed.

This is an extremely important concept; children need be able to understand that THEY are making the effect happen by holding the switch closed. Devices that require discrete (press and release) activation are much more difficult for children to understand as the effect is not obviously connected to the cause, starting only when they take their hands AWAY from the switch. While software can be used at the continuous activation stage, it should always be used as part of a range of multi-sensory switching activities presented to the learner.

Once continuous activation has been internalised, children then learn to operate a switch using discrete (a single press and release) activation. It should be noted however that for some children with severe mobility problems, especially where there are ataxic or involuntary movements of the limb used to activate the switch, the continuous method of activation might cause pain or discomfort. These children should start using switches with the discrete (press and release) method of activation.

SENSwitcher cause and effect section provides twenty different activities all of which can be operated by any assistive input device using discrete activation. In level one, animations

follow on from those presented in the experiential section, allowing for a seamless transition. Pupils would start by being fully prompted to activate the input device and then moving toward more independent use by reducing the level of prompting. Level two activities provide the same opportunities for control but with more developmentally complex images.

Pupils use a switch to produce a desired effect.

Within this level, switch use needs to be broken down into three smaller teaching steps.

- 10. Pupils participate in switch activation activities with full verbal and physical (hand over hand) prompting.**
- 11. Pupils will activate the switch in response to a minimal physical or verbal prompt.**
- 12. Pupils will activate a switch in order to achieve a desired effect.**

CASE STUDY FOUR – CAUSE AND EFFECT

Richard (5) is a young boy with a non-specific severe learning difficulty. He has some difficulty with fine motor control in both his arms and legs and finds walking difficult. Richard was introduced to switching in the reception class. He started to use switches to control a tape player, with help, holding down the switch to play a favourite tune and used the same switch and control method to operate a range of different battery toys and an electric blender to create milk shakes.

Richard also experienced a variety of different software activities on the computer, coactively exploring the switch and the effects generated by holding it closed. Records were kept of the software activities that initiated the most positive responses. Over the next few weeks support was gradually withdrawn and Richard was able to use the continuous activation method independently.

Richard is now working on discrete (press and release) activation and is using the same tape player and battery toys, now connected to the switch via a timer, which allows the effect to start when the switch is released. On the computer, he is using a switch to operate his favourite activities (as recorded earlier) with minimal verbal prompting.

Discrete activation is fundamental to further progression in switching skills and children should be given opportunities to use it in as broad a range of contexts as is possible.

4. Switch Building - Completing sequences

Switch building extends discrete activation by adding in the concept of completing a sequence. The child presses the switch a set number of times to 'build up' the picture on the computer screen, then makes a final press to activate the animation.

SENSwitcher has two sections covering the development of switch building skills. The first entitled '3 Press' delivers either pattern or object animations similar to the cause and effect level but requiring the user to press the switch four times, three to 'build up' the screen and a fourth to start the animation. '5 Press' continues the pattern theme, introducing linear

and tunnelling patterns together with a developmentally higher level 'scenes' activity. Users are required to activate the switch six times, five to build up the scene or pattern and a sixth to start the animation.

Pupils use a switch to build or sequence events on a computer.

Again this needs to be broken down into smaller teaching steps.

13. Pupil can use a switch to build or sequence an event in four steps, stopping to attend to the screen on completion of the sequence.

14. Pupil can use a switch to build or sequence an event in six steps, stopping to attend to the screen on completion of the sequence.

A helpful tip to remember when working with children at this stage is to encourage them to attend to the screen between each activation of the switch, pointing out the changes. Counting the activations also helps to reinforce the sequential nature of the activity. i.e. "One... Two... Three... Go!!!".

CASE STUDY FIVE – SWITCH BUILDING

Kirsty (7) has profound and multiple learning difficulties. She can operate a switch using discrete activation can use it to complete simple sequences of four steps. Kirsty is using SENSwitcher 5 press scenes to learn to complete sequences of six steps.

Kirsty's teacher has created a number of resources linked to the scenes in the program, which include simple tactile storybooks, poems and songs. These resources emphasise the sequential nature of the activities by building up the scene page-by-page and verse-by-verse.

SENSwitcher Cause and effect and Switch Building levels are designed primarily to introduce pupils to control, first learning that by pressing a switch they can make something happen, then by pressing a switch a set number of times they can make something else happen. The main aim of these activities is to help the pupil develop their access skills to a point where they become reasonably automatic. Pupils should have lots of practice at these levels before moving on to more cognitively challenging activities.

The analogy that is often used is one of learning to drive a car. Think back to your first driving lesson, were you, like me, absolutely bewildered by the amount of controls to operate, clutch, brake, accelerator, gears? How many of us spent our first few driving lessons looking at our feet on the pedals or our hands on the gear stick instead of looking through the windscreen at the road ahead? After a few lessons however, the controls of the car start to become familiar and using them becomes reasonably automatic. From that point on, we don't need to spend quite so much time thinking about how to control the car; rather we can concentrate on where the car can take us.

Learning to use switches is often the same. When children first start using them, they need to spend a lot of time thinking about how to control their movements to reach the switch, how much pressure to apply to activate it, how long to hold the switch closed. The cognitive load on the switch user is often so great that just using the switch to activate simple cause and effect animations is a challenge in itself. With practice however, switch use is internalised and becomes automatic. At this point it is possible to increase the cognitive

element of the activity, moving on from the challenge of using the switch to the challenge of completing the activity.

5. Timed Activation (Popup)– Responding to the screen

Timed activation or ‘Popup’, increases the level of cognition, requiring the user to respond to program generated prompts and cues on the screen. SENSwitcher has twenty-four timed activation activities separated into three groups of eight. In the first level, one of eight shapes or animals ‘popup’ onto the screen at random intervals together with a sound cue. The pupil is required to activate the input device while the object is displayed on screen, if successful, the pupil is rewarded by an animation. The further two levels provide eight activities each of shapes or animals but without the sound cue.

The teacher can set the ‘popup’ length, the time in seconds the objects remains on the screen by moving the appropriate slider up or down. This facility allows for progression, building anticipation and speed of response. Levels can be presented with or without sound, as it is often helpful to know if a child is responding to the visual or auditory cue.

Pupils will activate a switch in response to program generated cues.

This level can be broken down into two stages:

- 15. Pupils will activate a switch in response to a randomly timed program generated visual AND auditory prompt.**
- 16. Pupils will activate a switch in response to either a randomly timed program generated visual OR auditory prompt.**


CASE STUDY SEVEN – TIMED ACTIVATION

Julie (9) is a child with Ataxic Cerebral Palsy and a severe learning difficulty. Julie can operate two switches mounted at hip level on either side of her body with lateral movement of her arms.

Julie is a proficient switch user with her right hand, and can use a switch to complete six stage sequences. She has more difficulty activating the switch with her left hand. Julie’s teacher felt she would benefit from more switch training using her left hand so SENSwitcher timed activation levels were used to help her increase the speed of response with her left hand. Julie started using the program with a popup time of eight seconds, she can now respond to the program generated cue within three seconds.

6. Targeting – Introducing Scanning

Once pupils are familiar with the timed activation 'Popup' levels and can respond to on-screen program generated cues, they should begin to work with the Targeting levels. These levels introduce the concept of both horizontal and vertical scanning and require the user to activate the switch when a moving object is within a specific area of the screen.

	<p>The object moves either horizontally or vertically across the screen at a user selectable speed. The switch must be activated when the object is within the target area to trigger the animation sequence. Any activation of the switch outside of this area is ignored.</p>
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SENSwitcher presents two levels of ten activities each. In the first level shapes and simple objects are used with a clearly defined target area. In the second, scenes are used and the user is required to activate the switch when objects are aligned in either a horizontal or vertical plane.

Pupils will activate a switch in response to a specific program generated event.

Which is broken down into four smaller steps.

- 17. Pupils can track a moving object horizontally across the screen, activating the switch when the object is close to the target area.**
- 18. Pupils can track a moving object horizontally across the screen, activating the switch when the object is within the target area.**
- 19. Pupils can track a moving object vertically up or down the screen, activating the switch when the object is close to the target area.**
- 20. Pupils can track a moving object vertically up or down the screen, activating the switch when the object is within the target area.**

CASE STUDY EIGHT – TARGETING

Dominic (7) has a severe learning difficulty and some restricted movement in his arms and legs. He accesses the computer with a small 'Jelly Bean' switch mounted on the tray of his specialised seating.

Dominic understands cause and effect, switch building and can activate a switch in response to both visual and auditory cues from the computer. He is working towards using a scanning system in an attempt to meet his future communication needs. Early attempts to introduce switch scanning were not successful as Dominic had some difficulty in tracking a traditional scanning highlight (the box around the object) across the screen.

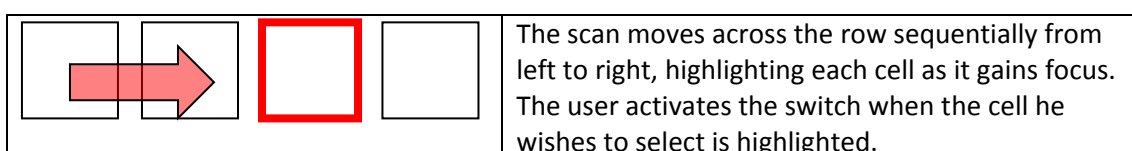
Dominic is using the targeting level of SENSwitcher as an aid to understanding the relationship between the moving object and the target cell. He is making good progress and can track and correctly target slow moving objects moving horizontally left to right across the screen.

7. Scanning – Making Choices

One could argue that the overall aim of learning to use switches is to enable choice. For some people that will mean choosing to make something happen or not, for others, especially those for whom assistive technology may be their primary means of extending influence and control over their environment, it may mean using a switch to select from a range of options such as symbols on a communication device.

SENSwitcher scanning level provides eight activities designed to promote the development of row scanning skills. Row scanning works by sequentially highlighting a number of objects or cells presented in a horizontal row across the screen. Each object is highlighted (gains focus) in turn as the scan moves across the row. The user selects an object or cell from the row by activating the input device when the object gains focus.

For example



Further information about scanning systems can be found in the Priory Woods Assistive Technology Skills Progression document, which can be downloaded from the Northern Grid web site.

In the first six activities, choices are made between two objects using the row scanning principle. Teachers can choose to use either shapes or objects and can select the speed of the scan to suit the individual child. The final two activities use scanning proper by introducing empty cells into the row, first a single empty cell (wait, press) followed by two empty cells (wait, wait, press).

Pupils will activate a switch to select a specific object using row scanning.
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This is broken down into four smaller teaching steps:

- 21. Pupils can activate a switch to select ANY of two on-screen objects using the row-scanning principle.**
- 22. Pupils can activate a switch to select a specific animation from two on-screen objects using the row-scanning principle.**
- 23. Pupils can differentiate between an empty and filled cell, activating the switch to select the filled cell using the row-scanning principle.**
- 24. Pupils can differentiate between two empty and a filled cell, activating the switch to select the filled cell using the row-scanning principle.**

CASE STUDY NINE – ROW SCANNING

Andrew (10) has Ataxic Cerebral Palsy together with a severe learning difficulty. He has no speech and uses themed PCS symbol based communication sheets mounted on his tray to express wants and needs etc.

Andrew is a proficient switch user and is able to sequence events and respond to program generated cues. He was introduced to SENSwitcher scanning levels as part of a structured programme to help him develop scanning skills to enable the use of an augmentative or alternative communication (AAC) device. Andrew started to use scanning to choose between two objects, first on his own and then in response to a question from the teacher, “Can you find the frog?” Andrew learned to do this and was moved onto empty cell scanning which he quickly internalised.

Andrew’s teacher has now created a series of linked communication grids using Clicker 4, covering different vocabulary areas. Vocabulary and navigational cells are row scanned, enabling Andrew to select the appropriate grid to initiate or respond to communicative opportunities.


Assessment and recording

The progressive design of SENSwitcher automatically lends itself to the assessment and recording of pupil’s progress and attainment. Two sets of checklists are included with this document together with a copy of the developmental skills progression framework to enable you to chart pupil progress through the program’s various levels and link attainment to the QCA P levels for ICT.

Recording experiential responses

As already stated, when working at an experiential level, it is critical to keep records of responses pupils make to the various animations and sounds presented by the program. These records aid the process of identifying recurring behaviour patterns to specific animation / colour combinations. This information can then inform future planning and target setting.

The record sheets are used as follows:

LEVEL	COLOUR F B		SOUND Y/N	RESPONSES	DATE
	BLK	YLW	YES	Animation held attention for brief moments (20 seconds max) Vocalising to the music.	1/7/2001

Information is recorded for each level, foreground and background colours, sound effects on or off, the date and a brief description of the child’s responses to the experience.

Recording progress

The checklist document that accompanies the program enables teachers to record progress through a series of small steps as described earlier. These small steps aid the assessment process and break down each skill level into a series of attainable targets.

The checklists are used as follows:

CAUSE AND EFFECT	WT	ACH	DATE
Pupils participate in switching activities with full verbal and physical (hand over hand) support.		Y	1/7/01
Pupils activate the switch in response to a minimal physical or verbal prompt.	Y		1/7/01

Here the child is engaged in the activity and can activate the switch with hand over hand support. The child is now working towards operating the switch in response to a minimal verbal prompt, "Press!" Information is recorded relating to skills achieved (**ACH**) and those the child is still working towards (**WT**).

Linking attainment to the QCA ICT P levels

In March 2001, the Qualifications and Curriculum Agency (QCA) published a series of subject specific curriculum guidelines entitled 'Planning, teaching and assessing the curriculum for pupils with learning difficulties. These documents provide a wealth of useful information relating to the differentiation of the DFEE/QCA scheme of work for ICT key stages 1 and 2 for pupils with a range of learning difficulties.

The documents also introduced a new set of performance descriptors known as 'P Levels'. These descriptors outline learning and attainment in ICT before level one National Curriculum in eight progressive levels from P1 to P8. These new descriptors are a useful tool for teachers, enabling easier assessment, informing planning and a framework for tracking both linear and lateral progress.

SENSwitcher was designed around a developmental model of skills progression, which can be linked to the QCA P levels in the following way.

SENSwitcher Performance Descriptor	P Level
Pupils encounter ICT generated activities and experiences.	P1(i)
Pupils show emerging awareness of ICT generated activities and experiences.	P1(ii)
Pupils begin to respond more consistently to ICT generated activities and experiences.	P2(i)
Pupils begin to be more proactive in their intentions.	P2(ii) – P3(i)
Pupils use a switch to produce a desired effect.	P3(i) – P4
Pupils use a switch to build or sequence events on a computer.	P4
Pupils will activate a switch in response to program generated cues.	P4
Pupils will activate a switch in response to a specific program generated event.	P4
Pupils will use a switch to select an object using row scanning.	P5

You can download the [QCA Curriculum Guidance](http://www.nc.uk.net/lc/) documents from the National Curriculum web site. <http://www.nc.uk.net/lc/>

Curriculum links – schemes of work

With a design based on a developmental model of switch skills progression, SENSwitcher activities integrate seamlessly with many ICT schemes of work written for PMLD students attaining below level one National Curriculum.

The ICT programme of study for pupils with PMLD entitled 'Knowledge and Understanding of the World', devised and published by [Equals](#) in 1999 is a very good example of a structured teaching programme which introduces pupils to using switches within a developmental framework.

Modules start at a purely experiential level with emphasis placed on developing positive responses and appropriate behaviour. Later modules address cause and effect, switch building and scanning, all of which are areas covered by activities in the SENSwitcher program.

SENSwitcher integrates fully with the following Equals PMLD ICT modules:

SENSwitcher Level	Equals PMLD ICT Modules
Behavioural	Across all modules
Experiential	1a, 1b, 1c, 2a, 2b, 2c, 3b, 3c, 3d
Cause and Effect	4a, 4b, 4c, 5a, 5b, 6a, 6b, 7b, 7c, 8a, 9a, 10a, 11a, 11b
Switch Building	7b, 8a, 9a, 10a, 11a
Timed Activation	8a, 9a, 10a, 11a
Targeting	7b, 7c, 8a, 8b, 9a, 10a, 11a
Row Scanning	8b, 9a, 9c, 10a, 10b, 11a

For older students, The ALL (Accreditation for Life and Living Skills) range of modules also addresses the issue of switch skills development with the added bonus of being externally accredited. SENSwitcher is ideal for use with this teaching programme.

Beyond SEN Switcher – increasing cognitive challenge

SENSwitcher is designed around a developmental model of skills progression with a range of assistive input devices. By using SENSwitcher as part of a structured teaching programme, incorporating a variety of different ICT generated experiences and opportunities to practice control, those who are able will learn the skills required to operate and control simple computer programs and ICT devices.

Achieving this is not an end, rather a beginning. Proficient switch use enables access to a wider range of learning opportunities. An understanding of row scanning enables users to make choices, communicate ideas and initiate and participate in conversation with their peers.

There is a wide variety of commercial software on the market, which builds on the skills learnt using SENSwitcher. Clicker 4 for example allows for the creation of grids using photographs, symbols and words all with speech feedback. Teachers can create grids for any subject area or theme, differentiating and individualising them for specific students. Writing with Symbols 2000 and Inclusive Writer all have similar facilities for creating grid-based switch enabled activities.

Multi-media and presentation authoring packages such as Powerpoint or Macromedia Flash can be used to create switch-enabled storybooks and other activities and there are many examples of these available for teachers to download on the Internet.

In conclusion, to return to our driving lesson analogy, SENSwitcher is one tool that can help users learn to operate the controls of the car. As a teacher, you have the route maps to exciting journeys into a world of new experiences and learning opportunities for your students...

Buckle up... and go!!!

Appendix

Links to information and advice on the Internet

Northern Grid for Learning	www.northerngrid.org	Information and resources relating to all aspects of ICT teaching.
Inclusive Technology	www.inclusive.co.uk	Online knowledge base relating to all aspects of ICT teaching for students with special needs.
QED	www.qedltd.com	Specialist switch supplier
WIDGIT	www.widgit.com	Publisher of Writing with Symbols 2000. Site contains many articles on ICT for special needs.
Cricksoft	www.cricksoft.com	Publisher of Clicker 4. Site host a huge range of freely downloadable Clicker Grids.
Becta Inclusion Site	http://inclusion.ngfl.gov.uk/	Inclusion and special needs site. An online catalogue of resources relating to ICT, special needs and inclusive education.
NGFL	http://www.ngfl.gov.uk/	National Grid for Learning. Information relating to all aspects of ICT in education.
National Curriculum / QCA Guidelines	http://www.nc.uk.net/lc/	National Curriculum Web Site. Download ICT schemes of work and curriculum guidance for pupils with SEN.
EQUALS	http://www.equals.co.uk/	Publishers of the Knowledge and Understanding of the World Programme of Study for PMLD.