Learning Journeys

Switch Progression Road Map

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by Ian Bean

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Welcome to the first in our new series of Learning Journeys booklets. The Switch Progression Road Map draws together over ten years of best practice research and classroom observations from around the world into a comprehensive teaching and assessment document you can use every day. Detailing every stage of switch skills acquisition from cause and effect to confident scanning, this document will help you plan meaningful and motivating routes to success for learners using switches to access communication, learning and leisure.

The Switch Progression Road Map will help you assess a learner's baseline, set achievable learning milestones and provide you with all the help you need to teach these important skills in a way which is both meaningful and motivating for your students. At every stage along the way the booklet provides advice on which software and hardware works best and how to set them up to personalise the learning experience.

The Road Map seeks to update our knowledge of switch skills progression, beginning at an experiential level and early interaction, through the range of skills required to be able to make independent choices with a switch or switches. It breaks the process down into a series of small, achievable steps, each illustrated with teaching examples and ideas for extension. Presented as a road map with no right or wrong routes, it provides a structure of level descriptors and key milestones to help you plan for and achieve success.

The booklet will help you choose the most appropriate software to use at each stage and show you how to adjust the settings to best meet the needs of the learner. For those new to switches, there's a helpful guide to the basics of choosing switches and using them with the computer or battery adapted toys and other appliances.

Watch out for forthcoming titles in the series:

- Learning Journeys: Touch Screens and Interactive Whiteboards
- Learning Journeys: First Steps to Communication
- Learning Journeys: The Beginner's Guide to ICT and Special Needs

Switch   Interface   Computer
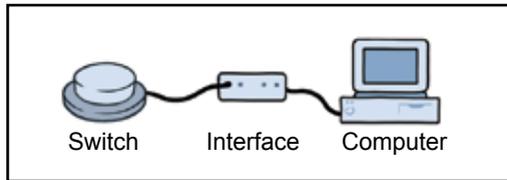
To connect a switch or switches to the computer requires a switch interface. Switch interfaces connect to your computer through either the keyboard socket or a USB port. They work by converting the switch press into something the computer can understand, usually the press of a key on the keyboard. For example, when we use one switch, the interface tells the computer that pressing the switch is the same as pressing the space bar.

With switch interfaces like the Inclusive Simple Switch Box, if we are using one switch it should be plugged into the socket marked 'Space', and if we are using a second switch it should be plugged into the 'Return' socket. Return simply means that the interface converts presses of the second switch into presses of the return or enter key on the keyboard.

Some interfaces, such as the Inclusive MultiSwitch, automatically detect the switch program you are using and will set themselves up. All you need do is plug in your switches and use them.

Some switches, such as the it-Switch from the Inclusive Simply Works range, connect to the computer wirelessly. The Simply Works system has the added advantage of being able to connect six access devices to the computer at the same time, through a single receiver: for example, any combination of wireless keyboards, rollerballs, joysticks and switches.

'Move' Switch and 'Choose' Switch -

It is important to be consistent when we are talking about switches, especially when we are talking to our learners. For simplicity we have used the term 'choose switch' to refer to a single switch and a 'move switch' and 'choose switch' when using two switches.

**Switch
Interface Box**

**Switch
Interface Box**

Space   **Enter**

Space   **Enter**

Choose Switch

Move Switch

Choose Switch
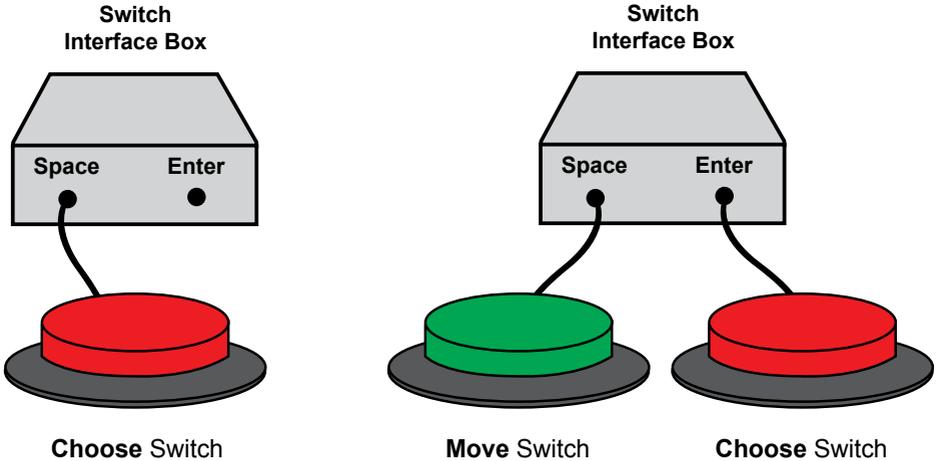
Software Settings and Options -

This document makes reference to the 'settings' or 'options' in your computer software. Most switch accessible software has options which can be used to set it up to suit the needs of individual learners. See page 56 for a full explanation of the types of changes you can make.

In any teaching situation, we need to ensure that our students are settled and ready to learn. This includes feeling comfortable with the positioning of equipment around them. Be aware that some students may find this a little bewildering and sometimes a little frightening. Always take the time to tell the student what you are doing and why: "Here's our music switch." It's important that the student is able to tolerate and accept the positioning of equipment around them.

If the student pushes the monitor away, try moving it out of reach, or better still use the interactive whiteboard or plasma screen. Alternatively, if the student throws the switch from their tray, try holding it in your hand and offering it to them when it's time to press it.

Accepting the positioning of equipment should be considered a prerequisite skill to learning how to use switches.

Student will demonstrate appropriate behaviour when using ICT equipment		
Student will tolerate the positioning of ICT equipment in relation to their body for short periods.		
Student will accept the positioning of ICT equipment in relation to their body.		

One of the most common behavioural problems we see is that of switch banging, i.e. the repeated tapping or banging of the switch. There are a number of reasons why this might be happening:

• The student is banging the switch to gain attention from adults.

> *This is most common where the student is left to work independently. Sitting with the student and encouraging them to press the switch and move their hand away can help reduce this.*

• The student enjoys the tactile sensation of activating the switch.

> *Some switches provide tactile feedback to help the student understand that the switch has been pressed. Using a switch with little or no tactile feedback (such as the Pal Pad) can help reduce this. Encouragement to press and move hands should also be offered.*

• The student presses the switch repeatedly because they want the activity again or they are bored with the activity.

> *Try changing the activity often and encourage the student to press and move their hand away from the switch.*

• The student doesn't understand the function of the switch or what is required to activate it.

> *Help the student understand the function of the switch by working hand-over-hand.*

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              Experimental Learning
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Looking   Listening   Responding

ICT is a very powerful tool we can use to provide meaningful access to the curriculum for learners with additional needs, including those with severe and profound difficulties. At this very early stage of learning we concentrate our efforts on providing multisensory learning experiences designed to stimulate the senses.

For many children with additional needs ICT begins in the multisensory room, where devices such as bubble tubes, wheel projectors, mirror balls and music are used to provide auditory and visual stimulation, often accompanied by hand and foot massage to help the child develop proprioceptive awareness. Some schools have installed digital projectors or interactive plasma screens in their multisensory room to enable children to use a computer and software, extending the multisensory experience to include photographs, animation and video.

Many good cause and effect software titles now feature an experiential level, where students are able to look and listen to the animations without having to control them. Breadth is important here. Don't restrict yourself to using just the computer or the multisensory room. Try using music, toys or colourful tactile materials - whatever you think will stimulate the student's senses.

Students encounter ICT generated activities and experiences		
Student shows simple reflex responses to ICT generated experiences, for example startling at sudden noises.		
Student encounters ICT experiences passively, showing little or no interest.		

At the experiential level our goal is to provide the student with a range of experiences which will encourage them to look, listen, and hopefully respond in a positive way.

Students show emerging awareness of ICT generated activities and experiences		
Student attends briefly to sounds or on-screen movement patterns.		
Student makes intermittent responses to sounds or on-screen movement patterns.		

To achieve this, we need to identify what motivates the student. Careful observation is the key here. If for example you are using equipment in the multisensory room, make a note of anything that triggered a positive response. It doesn't need to be much, just a simple sentence to say "Jenny looked intently when the yellow lights came on," or "Jenny smiled when the Bob the Builder music started." Similarly, when using the computer, observe and make notes of those things which capture the student's interest. After a short time you may be able to identify patterns. For example:

- Jenny likes to look at yellow.
- Jenny likes Bob the Builder music.
- Jenny tracks objects as they move across the screen.

Don't forget to discuss this with other colleagues who may work with the student, and, if possible, speak to their parent or carer. They may be able to help with information about what the student likes to do when they are not with you.

Armed with this information we can now personalise a learning experience which, based on our observations, we know that Jenny will find interesting. *Big Bang Pictures* for example enables you to select specific animations and play them in a fixed or random order. Using what we learned from our careful observations of Jenny we will be able to identify those pictures or patterns which move across the screen and select a yellow and black colour scheme.

Programs in the *Big Bang* series also allow you to accompany the chosen animation with your own music files, to further enhance the student's experience. Since we know Jenny enjoys Bob the Builder music we would set up *Big Bang* to use that instead of the built-in music. In a few minutes we have created a highly personalised learning activity just for Jenny, with all of the things we know that she enjoys and responds to.

Remember that we can also use software, toys and other devices that normally need some form of input from the student. We simply press the switch for them. If you're going to use activities such as this, make a point of telling the student what you are doing.

Here's an example:

My favourite band (experiential: looking, listening and responding)

Resources: *Slideshow Maker* software, twenty images, MP3 track (two minutes or longer). Choose images and sounds informed by previous observations.

Settings: Switch Training – Timed Reward set to twenty seconds.

How: Create a slideshow using twenty or more pictures and a long MP3 music track. Change the setting in the *Slideshow Maker* options to 'Timed Reward at 20 seconds' (you might want to change this to reflect the attention needs of the learner. Remember, students with PMLD take longer to process things).

In this activity the student listens to a favourite piece of music while watching an animated slideshow of images. You could all have a dance while the music is playing. When the music stops show the student the switch then press it, saying "more music". You might want to use the student's hand to press the switch if they will tolerate this. Give them lots of encouragement.

Extension Activities: Remember that you should use whatever motivates the student to look and listen. Try using the pause button on YouTube videos or a favourite DVD.

Slideshow Maker

It's important with activities such as these that we cue the student into what is happening. Tell them they are going to have "more" as you press the switch or touch the screen. Use hand-over-hand if the student will tolerate it. This will all help the student begin to associate the switch or touch screen with the motivating reward they are receiving. Remember too that short sessions often work better than long sessions, where a student's attention may start to wane.

Student begins to respond consistently to ICT generated activities and experiences		
Student shows interest or pleasure in sounds, images or movement patterns, looking more intently and for longer periods.		
Student briefly tracks objects moving in the horizontal or vertical plane.		
Student shows consistent interest in the ICT generated experiences, reacting and showing positive responses to familiar images, sounds and activities.		

Where did that go? (Tracking objects moving on the screen)

Resources: *Big Bang* software.

Settings: Choose 'Movements' from the main menu then select the direction and speed of movement from the options menu.

How: Start with the slowest speed, with objects moving left to right. The computer will display the object moving across the screen. Encourage the student to watch the object as it moves. As the student becomes more proficient, try changing the direction of movement to right to left or up and down.

Extension Activities: You might like to make up a little story about where the object (snail, motorcycle rider) is going. Try using your whiteboard or interactive plasma screen to increase the range of eye/head movement required to track the object.

Big Bang is an excellent program to use to introduce visual tracking.

You can also use interactive whiteboard software, such as *MyBoard,* to help develop tracking skills. Start with a dark (black) background and choose a bright object from the Scrapbook; one of the stars works nicely. Adjust the size of the star so the student can see it move it around the screen, encouraging them to watch where it is going. Why not use a photo of your student and take him or her on a journey up, down and across the screen?

Once our students are becoming more proactive and engaging with the experiences we are offering them, it's time to encourage them to take part. If the student will tolerate it, try taking their hand to the input device and model for them the movements they will need to make to start the activity. Always cue the student by telling them what you are doing, remembering to focus on the activity rather than the input device: for example, say "more music" rather than "press the switch."

Occasionally, when the activity stops, do nothing for a couple of minutes and observe the student's response. Do they reach out and move toward the switch? Are they looking at you to make it start again? If they are, encourage and reinforce this, giving them lots of time to respond. Students with PMLD take much longer than other students to process what is happening and coordinate their response. Be sure to record your observations on your record sheet.

Student begins to be more proactive in their intentions		
Student tolerates and participates in the shared exploration of the switch, including method of activation.		
Student reaches out toward the switch.		
Student independently explores the switch and its method of activation.		

To progress from experiential ICT, our students need to develop an understanding of cause and effect. What do we mean by the term cause and effect? Simply put, developing cause and effect means helping a child understand that they are able to extend influence and control over their immediate environment; that an action on their part can cause a response, either from other people or from objects around them.

An example of this may be recording a cheery greeting onto a BIGmack single message communicator. When the student activates the BIGmack (the action) they elicit a response from people around them (the reaction). The key skill here is that the student is aware that they made the effect happen by pressing the switch.

Understanding cause and effect is one of the foundation stones upon which all future learning is built. How can we understand our place in the world if we don't know that we can have influence over it? Cause and effect is not something that can be taught directly, rather our students develop their 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 gives us a powerful set of tools we can use to provide our students with a broad range of developmental and age appropriate experiences of cause and effect. Switches give our students a cognitively less challenging way of interacting with ICT equipment: simply pressing the switch makes something happen. Because of this, switches are an ideal way to experience cause and effect. However, we should remember that for some students with severe motor difficulties, switches will be the ONLY way they can interact with the world around them. Make sure the student has a switch that they can use.

Which Switch Should I Use?

It is important that an appropriate switch is chosen and that it is positioned so the student can use it without physical discomfort. For most of the students we work with, this will be relatively simple. So what do we need to consider when choosing a switch?

- Is the target area of the switch big enough for the student to touch?
- Can the student see the switch against the background?
- Can the student apply enough pressure to the switch to activate it?

For most of our students, choosing a switch such as an AbleNet Big Switch or Inclusive Technology Smoothie Switch in a bright colour will suffice. Choosing which switch to use and how to position it for a student with a more complex condition, such as cerebral palsy, can be very difficult. 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* 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 standing frames if this is the child's MOST comfortable position for accessing the computer).*

> *Several issues 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 coordination, tracking or scanning difficulties, problems with left or right side spatial relationships?*

Where the student experiences any of these difficulties, Inclusive would always recommend you take advice from either your local authority special needs team or one of the independent assistive technology organisations. They will be able to assess the needs of your student and make recommendations as to which switch you should choose and how it should be positioned.

Correctly identifying a reliable, repeatable and consistent movement, and selecting and positioning an appropriate switch to match that movement, are critical factors for success.

Switch use at this level can be addressed by any of the following four different skill areas and we would encourage you to try all of these with your students. There is no right or wrong place to start.

Make Something Happen

Press and Hold   Press and Let Go   Press It Again   Turn On and Off

With all of these levels, it's important that you focus the student's attention on the activity that results from pressing the switch rather than on the switch itself. Here's an example of this:

Jenny is using a Smoothie Switch to operate a Bob the Builder activity created in *Slideshow Maker*. Jenny's teacher is sitting with her and prompting her to activate the switch by saying, "More Bob please". Note that Jenny's teacher is not saying "Press the switch," which would divert Jenny's attention away from the screen. When Jenny successfully activates the switch her teacher praises her and encourages Jenny to look and listen to the reward.

Never talk about pressing the switch and always encourage the student to look at the effect they have created. These two simple rules will help your student make the all-important link between their use of the switch and the resulting reward. Remember too that we all need a reason to do things!

Press and Hold

This is where the learner is required to press the switch and hold it down in order to trigger an effect. The best example of this is the use of switch adapted toys. The student presses the switch and, while the switch is held down, the toy continues to move. Once the child stops pressing the switch the effect will end.

This is arguably one of the best ways to experience cause and effect, since the effect only happens while the student's hand is pressing the switch. This reinforces the concept that the student is making the effect happen. Here's an example:

Animal Olympics (press and hold a switch)

Resources: Two battery operated switch adapted toys which will walk, such as a pig and an elephant. Two switches, one of which the student can use.

Settings: If you are using a switch control box, set it to 'direct'.

How: Give the student one switch and you have the other yourself. Put the toys in the middle of a table and encourage the student to press the switch to make the toy walk. Press your switch at the same time as the student and race your animals across the table. The winner is the one who gets their toy to the other side of the table first.

Extension Activities: You might like to make up little homes for the toys and help them reach them using your switches.

Switch Adapted Toys

Student uses a switch to produce a desired effect

Student will press and hold a switch to achieve a desired effect with physical prompting (hand-over-hand).		
Student will press and hold a switch to achieve a desired effect with minimal physical prompting.		
Student can press and hold a switch to achieve a desired effect.		

Electrical appliances, such as bubble tubes and fibre optic lamps, can all be controlled in this way. You will need to use a control box such as an Inclusive Click-On or a PowerLink, and use them on the 'direct' setting. A number of software packages can be used at this level too. Try the 'movement' levels in *Big Bang* for a computer activity.

While this is one of the easiest ways to understand the function of the switch, some students, most likely those with motor difficulties, will find holding down a switch quite hard. If this is the case, don't worry; just try any of the other skill areas.

Press and Let Go -

Most of us are familiar with the 'press and let go' skill. This is where the student presses the switch to start an activity, which will play for a set period irrespective of whether the student has released the switch or not. When working at this level we need to encourage the student to press the switch and then release it. This can be a little more difficult for the student to understand as the effect is not as obviously linked to the switch press as in 'press and hold'. Most cause and effect software works in this way by default.

Student will press and release a switch to achieve a desired effect with physical prompting (hand-over-hand).		
Student will press and release a switch to produce a desired effect with minimal physical prompting.		
Student can press and release a switch to produce a desired effect.		

Some battery toys, such as Droopy the Snoring Dog from Inclusive Technology, will work this way by default, but most will require the use of a toy control box such as the AbleNet Single SLAT or the Inclusive it-Control. Choose the 'timed' function and the number of seconds you would like the reward to last. For some students this can be quite short, perhaps thirty seconds or so; however, others will need a longer reward time. Mains devices such as fibre optic lights can also be controlled in this way. On your AbleNet PowerLink or Inclusive Click-On choose the 'timed' setting and the length of the reward. Here's an example using a mains controller:

Where are you going for your holiday? (Press and let go)

Resources: AbleNet PowerLink or Inclusive Click-On, a switch the student can use, a hairdryer.

Settings: Choose 'Timed' and set the reward time to thirty seconds.

How: Plug the hairdryer into the controller and give the student the switch. We are in the hairdresser's. The teacher stands silently behind the student, holding the hairdryer. When the student activates the switch the teacher begins to 'dry' the student's hair and talks in hairdresser style. When the hairdryer stops, the teacher returns to standing silently.

Extension Activities: Control units can be used with a wide range of appliances such as blenders (to make smoothies) or foot spas (I bet there is one in your attic!).

Inclusive Click-On

Control units like the Inclusive Click-On can be used to switch adapt most electrical equipment to provide greater breadth. Try connecting a desk fan which will blow a gentle breeze onto the student when the switch is pressed. Combining switch use with physical effects can really reinforce the concept of cause and effect. There are a few exceptions. Do not try and operate televisions, DVD and CD players, as these won't work. To operate these devices (and anything else operated by an infrared remote control) you will need a specialist switch controller, such at the GEWA Big Jack. These controllers automatically learn the signals from the device's remote control then assign the ones you want to use to the switch sockets.

Press It Again
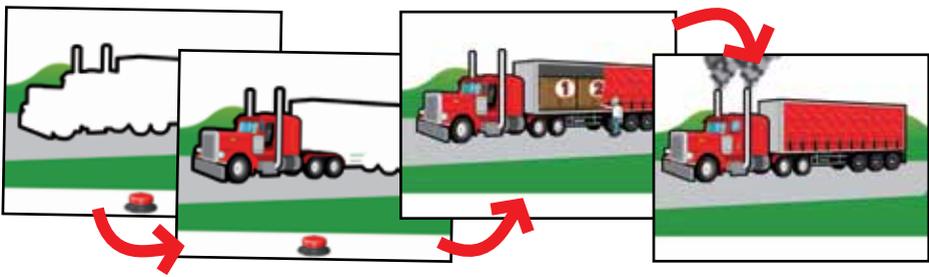
'Press it again' is often called switch building, an activity where the student is required to press the switch a number of times to receive a reward. In the past this has involved pressing the switch to build pictures or scenes, as in the *SwitchIt!* software series. More recently we have seen the value of activities where the learner is required to press the switch to keep an activity playing, for example a musical activity in *Slideshow Maker*.

In these activities the learner is prompted to press the switch again when the activity stops. Some activities will also present the learner with an on-screen switch prompt when this happens.

You might want to try activities such as this before introducing picture building.

Here's an example:

<table>
<tr><td colspan="2">Be the DJ (press to keep an activity playing)</td></tr>
<tr><td>

Resources: *Slideshow Maker* software, twenty images, MP3 track (two minutes or longer).

Settings: 'Switch Training – Timed Reward' set to fifteen seconds.

How: Create a slideshow using twenty or more pictures and a long MP3 music track. Change the setting in *Slideshow Maker* to 'Timed Reward at 20 seconds' (you might want to change this to reflect the attention needs of the learner).

In this activity the child becomes the DJ. Every time they press the switch, the activity will play. You could all have a dance. Give the learner lots of encouragement to press the switch when the activity stops. Be aware that the learner may start to bang the switch; encourage taking the hand away from the switch if this happens.

Extension Activities: Play musical statues. When the music stops, everyone in the class has to freeze until the music starts again.

</td><td>

Slideshow Maker

</td></tr>
</table>

Battery operated toys are another useful tool to use at this level. You will need to use a toy controller, such as the it-Control or an AbleNet SLAT control box, to adjust the time that the toy will play after the switch press.

Student can activate a switch a number of times to keep an activity playing.		
Student can activate a switch a number of times to complete a simple sequence, noticing changes after each switch press.		

Another way to teach this skill is to use activities where the learner has to press the switch a number of times to complete a simple sequence. For example, the child may press the switch a number of times to build up a picture or scene. On the final press, the learner is rewarded by seeing their picture animate. Some of the best activities for teaching this skill are found in the *SwitchIt!* series of programs.

Teachers can choose to 'build' flashcards (a picture and a word), pictures or simple stories in a customisable number of steps. You may have already introduced some of these activities at a cause and effect level in the 'Make Something Happen' section. Go into the options and choose 'Pictures' from the Activity Menu and 'Three Steps' from the Number of Steps Menu. Each time the learner presses the switch they will introduce another part of the picture. On the third press the picture will animate.

One of the key skills here is helping the learner to understand that after they press the switch something will have changed on the screen. Encourage them to look at the screen, pointing out the changes if necessary. You may encounter some switch banging: again, encourage the learner to move their hand away from the switch and look at the screen. Choosing pictures that you can talk about will help with this. You can choose which pictures to use in the 'Subjects' menu. Be aware that some children may not yet be able to identify an object from parts: for these children, using the stories works best.

All of the *SwitchIt!* programs have a number of simple stories which can be used to teach this skill. Every time the learner presses the switch the story will move on until, at the last switch press, the learner is rewarded with music and animation. *SwitchIt!* stories are not narrated by the computer so you are free to tell the story in your own way, differentiating the language to suit the level of the learner. You can also make your own personalised activities. In this example we have used *SwitchIt! Maker 2:*

Tell a story (press more than once to complete a simple sequence)

Resources: *SwitchIt! Maker 2* software, digital photographs of a school trip, microphone.

Settings: No changes needed.

How: Create a 'Big Book' using *SwitchIt! Maker 2* using images from a school trip. Record a simple sentence in *SwitchIt! Maker 2* to accompany each picture.

In this activity the learner becomes the class storyteller. Each time the child presses the switch the page will turn and that page will be read out to the class.

Extension Activities: Try adding a short video clip to the last page as a special reward for listening to the story. Use a Flip video camera with the children to record clips throughout your trip.

SwitchIt! Maker 2

Turn On and Off

Another way to operate a switch at the cause and effect level is to use it to turn things on and off again. This is sometimes called latching. The process is simple. The student presses the switch to start the activity then presses again to stop it. The best example of this would be controlling music with the Inclusive MP3 Player:

Stop right now… thank you very much (turn on and off)

Resources: Inclusive MP3 Player, music on a memory stick, a switch the student can use.

Settings: Plug the switch directly into the Play/Pause (middle) socket.

How: We're playing musical statues. The student starts the music and everyone dances around the room. When the student presses the switch again the music stops and everyone must stand still. Anyone moving is out. The activity continues until only one person is left in; they are the winner.

Extension Activities: Try putting a switch into the 'Next Track' socket. Each time the student presses the switch a different track will play. If the student wants to listen to the track, they simply don't press the switch.

Inclusive MP3 Player

Student can activate a switch to start and stop an activity.		

Despite being a very useful skill, little or no software works using the latching technique. Thankfully we can practice the skill using battery toys and electrical appliances. This requires the use of a controller, such as the Inclusive Click-On or AbleNet's SLAT. Simply use the 'latching' setting.

It's important when we are working with students at the 'Make Something Happen' level that we give them lots of opportunities to practice using the switch throughout the day. One of the best ways to achieve this is by using single message communicators, such as the Inclusive Smooth Talker or Ablenet's BIGmack.

These easy to use devices enable you to incorporate switch use into just about every aspect of the student's day. They can say hello in the morning, take part in storytelling or singing and say goodbye at the end of the day. The possibilities are endless. Remember that if your student is using a more specialist switch, for example activated by head movement, this can plug directly into the communicator and be used to operate it.

For more information about single message communicators and how to get the best from them, look out for the *Learning Journeys: Early Communication* booklet on the Inclusive Technology website.

It can often be difficult to ascertain if a student has fully grasped the concept of cause and effect when using switches. For example, a student may press a switch and then look at and listen to the effects on the computer screen. Although this looks like the student has understood that pressing the switch has triggered the reward, this may not always be so. Some children enjoy pressing the switch for its own sake, especially if it gives some form of tactile feedback; they pause only when they notice something happening on the screen or when they hear new sounds which divert their attention from the switch.

Careful observation, and a sound knowledge of the student, will be useful in order to determine that they understand THEY are making something happen by pressing the switch. Only when we are sure the student has fully grasped the concept, and we have observed them applying that knowledge with toys, computer software and multisensory equipment, should we consider moving them on to the next stage…

This level introduces the use of two switches in a free play environment, where our goal is to allow the learner to experience using two (or sometimes more) switches, and there is no expectation of formal scanning.

The two activity areas we will focus on are:

Playing With Two Switches

Start and Stop   This or That?

All of the activities in this section require the use of two switches; however, they do not necessarily require the learner to be able to activate them both independently. For example, if you are working with a learner who can manage one switch but finds it impossible to use two switches because of motor difficulties, the second switch can be offered by the teacher, therapist, or support worker as and when it is required by the activity. We would encourage you to try these activities irrespective of whether the child will go on to use one or two switches with more formal scanning techniques.

This, That or Both? -

Student can differentiate between the actions of two different switches.		

Here we use two switches connected to two different activities and encourage the learner to explore the effects they produce when activated. You could try using two different battery operated toys or lighting effects with your Click-On. How about two different 'action' messages on Smooth Talkers or BIGmacks? Essentially, we're presenting two different 'make something happen' activities and giving the child the option of watching either or both.

Remember, this is about exploration, and giving the learner the opportunity to demonstrate a preference. Give the learner lots of time to explore the effects and try not to ask them to 'find' a specific effect; there will be lots of time for questioning later in the programme. To further develop the concept of demonstrating preference, you might like to use one activity that you know the learner enjoys and one that you know they do not.

Start and Stop -

Student can use two switches, one to start an activity, the other to stop the activity.		

Here we use two switches to operate an activity. For example, in *Slideshow Maker* a learner can use two switches to start and stop a musical slideshow. This is a great way to introduce these activities. Create an activity using music and images that you know the learner enjoys, and let them start it by pressing the switch.

You then tell them that you think the music is 'horrible', and stop it by pressing the second switch. The learner will no doubt respond by pressing the first switch to start the music again. Try swapping this around, presenting the child with some 'dreadful' music that you know they don't like, and giving them the stop switch. You can also use this method to give the learner control over a game of musical statues.

This 'start and stop' system also works well with toys and electrical devices.

Going home (use two switches to start and stop an activity)

Resources: Battery operated toy that moves forward (elephant, pig, dog, etc.) A toy control box such as Simply Works or an AbleNet Choice SLAT. A cardboard box decorated as the animal's home.

Settings: Set to 'Latch'.

How: The learner will take the animal home by making it walk into the decorated cardboard box.

In this activity the student presses the first switch to start the animal walking, then presses the second switch to stop the animal when it has arrived. Give the learner lots of encouragement if they get it right.

Extension Activities: You can make the activity more challenging by using circles cut from paper as the animal's home. Place these on the floor in front of the toy and encourage the learner to stop the toy when it is on the circle. You could use different coloured circles for more able learners, and ask them to stop the toy on a specific colour.
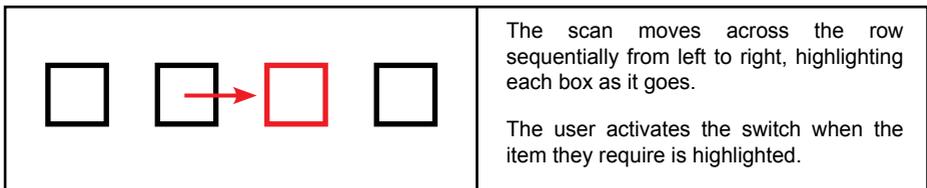

Simply Works it-Control

There are so many possibilities for using two switches in this way. Try mixing physical effects, for example by using a hairdryer and a fan. One switch will blow warm air onto the learner, the other cold. Try to arrange your day to ensure that the learner can practice these skills often.

» One Switch or Two?

As we move closer to the point where we will introduce more formal scanning systems, we need to make a decision about how many switches the learner will use. This decision is largely informed by the results of an access assessment, discussed earlier in this document. If you can identify two voluntary movements the learner can make which meet the criteria of being both reliable and repeatable, you should follow the 'Using Two Switches' path. For whatever reason, if the learner is only able to cope with one switch at this time, you should follow the 'Using One Switch' path.

What is our goal? Irrespective of whether we choose to proceed with one or two switches, our goal is the same: to enable the learner to make independent choices. They will achieve this by learning how to scan. Here's how scanning works.

The learner is presented with a range of options that they can choose from, represented by the boxes in the diagram below. These options are then 'scanned'. Each choice will be highlighted in turn (often by a red box) as in our diagram, and usually accompanied by an auditory prompt (a short message giving the learner more information about that box). To make a choice, the user presses his or her switch when the required option is highlighted.

	The scan moves across the row sequentially from left to right, highlighting each box as it goes. The user activates the switch when the item they require is highlighted.

When using one switch, the computer controls the scanning by highlighting each choice and waiting a short while to give the learner an opportunity to press the switch to select the option, before moving on to the next. The key skills that a single switch user will need to be able to scan effectively are:

- Tracking an object as it moves across the screen (the highlight box).
- Pressing the switch within a specific time period (while the choice is highlighted).

The single switch pathway will introduce activities to teach these skills and give the learner lots of opportunities to practice them in a range of different contexts.

The process of scanning is the same with two switches; the only difference is that the *learner* moves the highlight box by pressing a second switch repeatedly to reach the option they require. The key skills required are now:

- Tracking an object as it moves across the screen.
- Understanding that each switch has a different function. The first moves the highlight box and the second chooses the highlighted item ('move' and 'choose').

Again, the two switch pathway provides lots of activities that will teach and consolidate these skills.

» Using One Switch

Effective scanning with one switch requires pressing the 'choose' switch while the required item is highlighted by a scan box. Various activities can help the learner develop the requisite timing skills. These tend to involve pressing the switch in response to something appearing on the screen, or when an on-screen object is in a particular place.

One Switch Timing

Pop Up   Positional
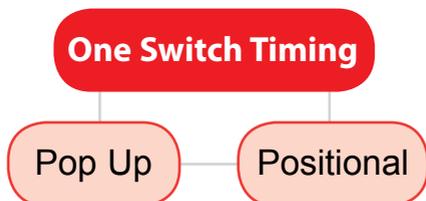
Pop Up

Pop up is where something 'pops up' onto the screen and the learner is required to press the choose switch when they see or hear it. The learner is rewarded for pressing the choose switch at the right time. This can be very challenging for some learners, especially those that may have retained a startle reflex. So often these learners know exactly when to press the switch but are unable to coordinate their movements quickly enough. This can be hugely frustrating for them. If you are working with a student who experiences this problem you might want to look for an alternative strategy to traditional pop up activities. More about this later.

Student can press a switch in response to an on-screen cue.		

The most common way to teach this skill is through the use of software such as *Switch Skills 1* from Inclusive. Start with the 'Traffic Lights' game, where the learner will be cued into pressing the switch with a familiar "Ready? Set? Go!" prompt. Remember that you can go into the program options and change the 'Reveal Time' if the learner is experiencing a startle reflex response, or if they find it difficult to press the choose switch within the default time of three seconds. The 'Reveal Time' can be set to give the child up to 30 seconds to respond. You may also want to turn off the background music and sound effects, which some learners will find distracting.
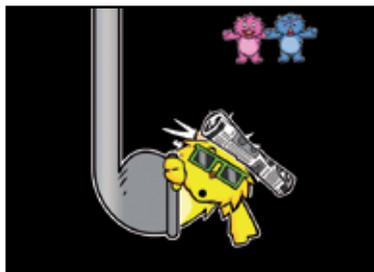
Another very useful program to use at this level is *Switch Skills 2* from Inclusive. This program has the added benefit of being able to set the 'Reveal Time' to 'Wait until the switch has been pressed'. When set in this way, the program will display the cue then wait until the learner has pressed the switch before moving on. This is incredibly useful as it ensures that every learner will experience success irrespective of the time it takes them to press the switch. The self-esteem boost this provides can help keep them engaged and motivated.

Switch Skills 2 also allows you to turn off the 'Penalty' noise which is played if the learner presses the choose switch at the wrong time, and lets you select a personalised auditory cue. These range from the usual beeps to pops, and even the sound of someone blowing a raspberry.

Switch Skills 2 focuses exclusively on pop up activities. For more information about which software to use, see our 'What Software Can I Use?' section at the back of this booklet.

Using *Switch Skills 1 and 2*, you will be able to provide your learners with a broad range of pop up style activities on the computer. *Switch Skills 2* also extends the pop up concept, allowing you to personalise the difficulty level to more closely match the learning needs of the student. For example, you can change the size of the visual cues and where they appear on the screen, or increase the challenge by having to respond to more subtle changes.

Of course it doesn't always have to be on the computer. You could use Smooth Talker or BIGmack switch communicators to create off-computer games, where the outcome is to be able to press a switch in response to a cue.

Here's an example:

Farmyard orchestra (press a switch in response to a cue)

Resources: A Smooth Talker or BIGmack for each learner taking part. Animal lotto cards. Pictures of animals to place on the Smooth Talker or BIGmack.

Settings: Record an animal noise on each device (some learners find it fun to do these themselves).

How: Turn over each of the cards to reveal an animal. If the animal matches the animal on the learner's switch, they press the switch to make that animal noise.

Extension Activities: Make up a short story to tell your class, all about the animals that live on the farm and their adventures. Every time you mention an animal the child with that animal noise on their device presses the switch. You can use any combination of words or sound effects, whatever you think the child might like.

These activities work really well for those children who may experience startle reflex difficulties, as you can wait however long it might take for the learner to make the response.

Smooth Talker

Whatever type of activities we use, our expectation is that the learner will be able to press the choose switch in response to a cue. To achieve this we must remember to encourage the child to look at the screen, listen for any prompts, and to press the choose switch when they notice them.

Postional

The second skill the learner needs to acquire is being able to track an object moving across the screen and press the choose switch when it is in a specific place. This mirrors the process of tracking a scan box as it moves through the choices and pressing the choose switch when the required option is highlighted. Here's another example from *Switch Skills 1:*

The object the learner needs to track is a bee which travels from left to right across the screen. The child will be prompted to press the choose switch when the bee gets near the centre of the flower. You can adjust the time it takes the bee to travel across the screen, giving the learner more time to coordinate their movement and press the choose switch.

Switch Skills 3 from Inclusive focuses exclusively on positional activities and provides a breadth of activities that can be personalised to meet the learning needs of the student.

Student can track an object as it moves across the screen, pressing a single switch when the object is in a target area.		

When learning any skill it is important to have time to practice. Remember that for some children, using switches can be both physically and mentally tiring. Be led by your learners. The game style of the *Switch Skills* series lends itself to short sessions, repeated often, rather than mammoth forty-five minute 'lessons'. When your learner is demonstrating a good understanding of both the pop up and positional skills, you're ready to move on to Introducing Formal Scanning on page 38.

» Using Two Switches

Once the decision has been taken to work exclusively with two switches, we need to begin to build on the work we did in the 'Two Switch Play' section. This involves two new skill areas:

Two Switches Two Actions

Interacting with Objects

Move and Choose
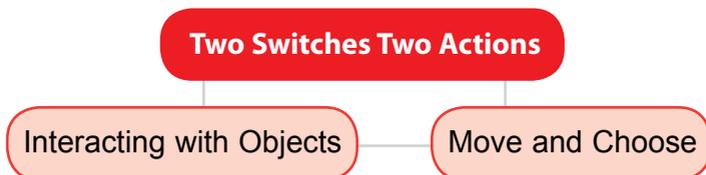
Related and Interacting Objects

Student can use two switches, each controlling part of the same activity.		

Earlier we were using two switches with what were essentially two separate 'make something happen' activities. We are now going to extend that by introducing the concept that each switch has a role to play in completing the activity. Here's an example of using two switches where each performs a specific function. In this case the learner is commenting on the teacher's performance skills.

My teacher has talent (use two switches to control an activity)

Resources: Two Smooth Talker or BIGmack switches.

Settings: Record some boos on one and cheers on the other.

How: Present the learner with the two switches and position them so the child can use them. Show the learner what each switch does. Now perform some (very short) songs, dances, or jokes to the learner, and encourage them to respond by pressing one of the switches. Remember there is no right or wrong in this activity.

Extension Activities: How about tying this into emotional recognition? Demonstrate to the learner that a smile gets a cheer and a frown gets a boo. Now pull some faces for the learner and get them to respond by pressing either switch.

Smooth Talker

Here's another example, this time using the computer:

<table>
<tr><td colspan="2">'MyTube' (use two switches to control an activity)</td></tr>
<tr><td>

Resources: *SwitchIt! Maker 2*, four short videos saved from Youtube or from a Flip camera.

Settings: *SwitchIt! Maker 2* needs to be set for 'No (Press the Return Key or right mouse…)' in the 'Access' menu.

How: Create a simple four page activity. On each page add a video clip of something the learner enjoys, from YouTube or a Flip camera. If you need help to make *SwitchIt! Maker 2* activities you can watch instructional videos and download a step-by-step guide from the Inclusive website. The learner presses the move switch to cycle through each of the videos. If the learner wants to play one of them they would then press the choose switch.

Extension Activities: Add more videos.

</td><td>

SwitchIt! Maker 2

</td></tr>
</table>
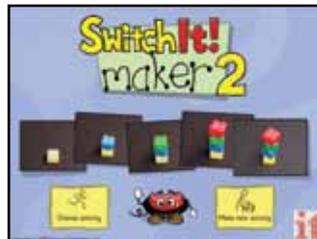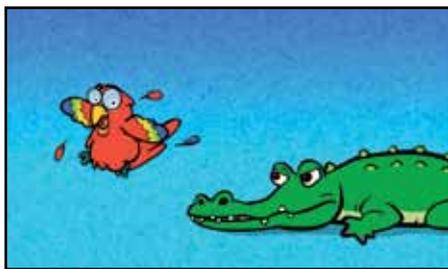
Switch Skills for Two Set One software is also useful for teaching this skill, as all the activities focus specifically on this area. For example in the 'Feed the crocodile' game in the 'Interacting Objects' level, pressing the move switch repeatedly will change the piece of food offered to the crocodile while the choose switch makes the crocodile eat it.

This mirrors the way that the two switches will be used when we move toward more formal scanning. Each press of the move switch will move the scan box along the row of choices. When the scan box highlights the object the learner wants, they press the choose switch.

'Build Up' and 'Move and Choose'

Student can use two switches to complete simple 'move and choose' or 'build up' activities.		

In 'move and choose' activities we focus on developing the learner's ability to press the move switch a number of times to move something into a specific place before pressing the choose switch to trigger a reward. One example is the 'Dancing Monsters' game from the 'Move and Get' level in *Switch Skills for Two Set Two*. The learner presses the move switch repeatedly to take a monster across the floor towards a ballet dancer. When the monster is next to the ballet dancer, the learner is prompted to press the choose switch to trigger the reward.

Switch Skills for Two Set Two features lots of 'move and choose' activities together with a number of 'build up' activities, where for example the move switch is used to build up a tower and the choose switch knocks it down. These are all superb ways for your learners to develop and practice the skills they'll need when moving on to more formal scanning activities.

When your learner is demonstrating a good understanding of the 'move and choose' process it's time to move them on to formal scanning activities.

» Introducing Formal Scanning

As discussed earlier, choosing with either one or two switches involves moving or tracking an object, usually a scan box, left to right across the screen through a series of on-screen choices. The scan box highlights each in turn and when the required object is reached the learner presses the choose switch to select it. (Highlighting an object usually involves displaying a coloured 'scan box' around the object.) Auditory cues are often used to provide further support for the learner.

NOTE: The word 'object' here denotes any image, photograph or symbol that represents that choice. For example, a symbol for orange juice might be used on a scanning communication aid to represent the phrase "Can I have some orange juice please". An accompanying auditory cue might be the spoken words "orange juice".
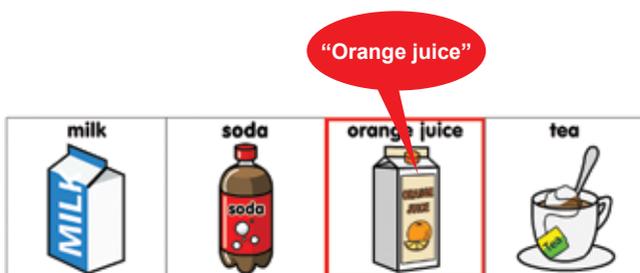
It's important to remember that the use of a coloured box to highlight the on-screen choices might make sense to us, but can be a little too abstract for some of our learners. A useful tip here is to create a 'real' scan box from A4 colored card and use it to make choices of real objects. For example, at break time you could hold the 'real' scan box over different toys. Used in this way, the 'real' scan box can help the child begin to associate the coloured box with the choosing process. What colour should the scan box be? That depends on the learner and what they can see. The default colour is always red. Change this only if the learner has difficulty seeing or processing this colour.

Introducing Formal Scanning

Always Right

At this stage we are moving the learner towards using a more formal method of choosing. We do this by providing them with lots of activities where they can make choices, without there being a right or wrong answer; for example, the learner might use *Slideshow Maker* to choose one of three different songs to listen to. Whatever the learner chooses, they always receive the reward of having a song played to them.

In this way we ensure that we keep the learner's concentration focused on the process of choosing and avoid over-complicating the activity by requiring them to answer questions too. One example of over-complication might be requiring the child to choose the number six when asked: "What is four plus two?"

Student can choose one item from three on-screen options.		

Useful software to use at this level would be any of the *Choose and Tell* series of programs, where the learner 'writes' a story by choosing characters and events as the story progresses. The learner must choose something to move the program on and whatever they choose influences how the story unfolds. There are no right or wrong answers. It is always best to begin by scanning with three things to choose from rather than two, so change this in the settings.

Single switch users need to look and listen to the options as they are highlighted in turn and press their choose switch to select the one they want. If the scan box is moving too fast for your learners you can change the scan speed in the settings. You may have to spend a little time trying the various speed options until you find the most appropriate one for your learner.

Two switch users will press their move switch to move the scan box through the options until they reach the one they want. They then press their choose switch to select it.

Here's an example for you to try, using music:

<table>
<tr><td colspan="2">'MyPod' (choose one from three on-screen options)</td></tr>
<tr><td>

Resources: *Slideshow Maker* software, three MP3 music tracks, photographs or eight pictures to accompany each track.

Settings: *Slideshow Maker* should be set to 'Choose Slideshow from a Picture Menu.' Set the number of switches you'll be using in 'Picture Menu Access.'

How: Create a choosing activity using three slideshows of the learner's favourite music. The learner can then use this to independently choose the music they would like to listen to - just like using an iPod.

Extension Activities: Add more music choices as the learner's skill progresses. You can have up to nine choices.

</td><td>

Slideshow Maker

</td></tr>
</table>

Other useful software at this stage includes *Switch Skills - Scanning* from Inclusive. It provides activities appropriate to single or two switch users at this level.

Select 'Free Choice' from the main menu of *Switch Skills - Scanning* for a range of free choice, 'always right' activities.

Encourage your learner to make choices. As their confidence grows, you might want to introduce a little structure; for example, suggest that you might like to see what happens when they choose the ghost train or the very smelly sock. This will help move toward choosing specific objects from the menu. Don't worry if the learner finds it difficult; go back to letting them explore and have lots of practice using their switch or switches. Once the learner demonstrates a good understanding of choosing from 'always right' activities, it's time to move them on.

» Choosing Independently

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            ┌─────────────────────────────┐
            │  Choosing Independently     │
            └─────────────────────────────┘
       ┌──────────┬──────────────┬──────────────┐
┌──────────────┐ ┌──────────────────┐ ┌──────────────────┐
│ Nothing Here │ │ Completing Sequences │ │ Find the Right One │
└──────────────┘ └──────────────────┘ └──────────────────┘
```
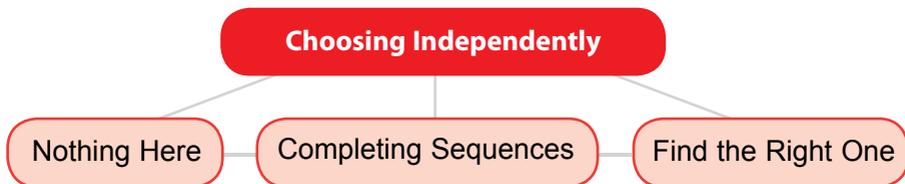
This last set of teaching activities extends the choosing process beyond 'always right', where the learner can choose anything and still receive a reward, into choosing specific objects from rows that contain both full and empty cells. The process of selection remains the same. The learner using one switch will wait for the desired object to be highlighted by the scan box before they press the choose switch to select it. The two switch user will use the move switch to highlight the object they want and then press the choose switch to select it.

Nothing Here

This set of activities introduces empty cells into our grid. If the learner selects an empty cell nothing happens and they are not given any reward.

Student can choose one from three or more on-screen options which include empty cells.		

One of best ways to do this is to create 'finding' activities in *ChooseIt! Maker 2*. The following example involves finding people, but you could make one to find whatever interests the learner: a cartoon character or pop star they like. If you are not sure how to use *ChooseIt! Maker 2,* or indeed any other of the Inclusive *Maker* series, you can watch instructional videos and download step-by-step guides from the Inclusive Technology website.

Where's Waldorf? (Or anyone you want!) (Choose a specific object from a row containing empty cells)

Resources: *ChooseIt! Maker 2* software, digital photographs of people to find.

Settings: *ChooseIt Maker 2* should be set to 'Single Switch Scanning' or 'Two Switch Scanning' in the Switch Access menu. If you are using one switch, set an appropriate speed in the Scan Speed Menu.

How: Create an activity with three cells, two of which are empty and one which has a photograph of the person we are going to find.

Record the audio prompt for the empty cells as "Sammy is not here", where Sammy is the name of the person to be found. Record "Here's Sammy" as the audio prompt for the cell with the photograph. The learner can then scan through the choices to try and find the person. You could change the audio prompts to whatever might work with the learner - "Keep looking!" for example.

Extension Activities: You could create an activity with four or more cells and with more than one photograph. Remember, you still need empty cells at this stage.

ChooseIt! Maker 2

Learners respond really well to personalised activities such as this. Remember, there are lots of scanning activities for one and two switch users in *Switch Skills – Scanning*. In fact the whole CD is filled with activities appropriate to this level. Staying with *Switch Skills - Scanning*, we move to …

Simple Sequences --

Student can complete simple sequences by choosing the appropriate object from three or more on-screen options.		
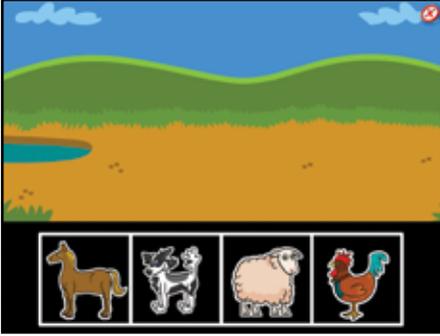
These activities involve both empty and filled cells. A good example is the Farmyard game in 'Create a scene' from *Switch Skills - Scanning*. The learner starts with a row filled with animals and can choose any of them to add to their farmyard. As the animals are chosen the cells they came from remain empty, increasing the difficulty level in a progressive manner. Once the learner has chosen all four animals they are rewarded with music and animation.

Specific Target --

Student can select a specific object from three or more on-screen options in response to a question or request.		
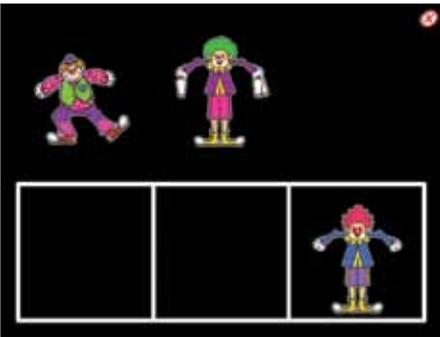
This is the most challenging of this series of activities as it requires the learner to find a specific object. This could be decided by the context, as in the 'Complete a Set' activities in *Switch Skills – Scanning*. The learner looks to see what is missing and selects the object to complete the set. In this example, the learner would scan to and choose the clown.

Can you find the duck?
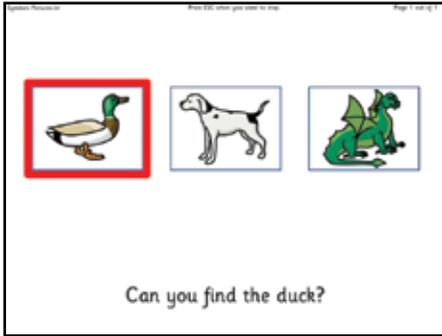
In other activities the learner will make a choice based on a question or request. For example, in this *ChooseIt! Maker 2* activity the learner is asked: "Can you find the duck?" They would then scan to the picture of the duck and press their choose switch to select the right answer.

I'm an Independent Learner

Student can make independent choices using one or two switch scanning.		

If learners are working at this level, their scanning skills are already well developed. The aim now is to begin to embed the use of switch scanning into daily classroom teaching. To achieve this we need to ensure that there are sufficient resources for the learner on the range of topics that you are currently teaching. Open content programs, such as *ChooseIt! Maker 2*, allow you to create switch scanning activities on any topic and at any level. These resources will work with whichever access device your learners use, including joysticks, rollerballs, interactive whiteboards, touch screens, the mouse, keyboard and switches.

Remember that once you have created a resource, that resource will be available to everyone in your school or college. With just a few people in school making these activities you will soon create a library of teaching materials that are accessible to everyone, including switch users.

Good luck!

» Recording and Assessment

The Switch Progression Road Map uses a simple system to help you determine a baseline for your learner and then to track their progress through the programme. Each stage in the learning journey is split into Key Milestones. These represent 'big' targets that you can set for the learner. Between each of the Key Milestones are the Small Steps or 'small' targets. These are used to chart any progress the learner makes between the Key Milestones. They also help us focus our teaching and support efforts on the specific skills that will help the learner make progress. See the following pages for details.

Assessing a Learner

To assess a learner you will need access to a computer, software and some mains or battery operated toys and devices that can be operated by one or two switches. If you're not sure which software to use, look at the 'What Software Can I use?' section in this booklet. This shows which software title have activities that correspond to each of the small steps. Remember that in this assessment we are looking at what the learner can do with their switch, NOT which switch they need, so use a switch that you know your learner can use. Look down the Road Map flowchart and at the small step level descriptors and find one or two that best fit your learner. Then try out some of the activities at that level. If your learner finds these too easy or too hard, move forward or back a step until you find activities which challenge the learner without overwhelming them. Complete a recording sheet for them and write in their target, which is the number and description of the small step we've just identified.

Name: Jenny Gribble	**Class:** Yellow
Target: Press and hold a switch to achieve a desired effect.	

You may also want to record other useful information, especially if the learner moves between classes and teachers. This could include:

- A photograph and brief description of which switch the learner is using and how it is positioned.
- Prompts used to encourage interaction. This helps ensure a consistent approach.
- Information about known motivators - useful if colleagues plan to make teaching resources.
- Short notes relating to observations made.

With a target set for the learner, we can look at the Road Map and use any of the range of activities at that stage. This ensures that we're providing the breadth of experience our learner needs in order to acquire and generalise the skills we are teaching them.

See the following pages for the Switch Progression Road Map and Key Milestone and Small Step matrix.

Experimental Learning

Looking — Listening — Responding

Make Something Happen

Press and Hold — Press and Let Go — Press It Again — Turn On and Off

Playing With Two Switches

Start and Stop — This or That?

One Switch or Two?

One Switch Timing

Pop Up — Positional

Two Switches Two Actions

Interacting with Objects — Move and Choose

Introducing Formal Scanning

Always Right

Choosing Independently

Nothing Here — Completing Sequences — Find the Right One

I can use One or Two Switches to Make Choices

» Small Steps and Key Milestones

Key Milestone	Behavioural Small Steps	Level
Experience appropriate behaviour when using ICT equipment.	a. Student will tolerate the positioning of ICT equipment in relation to their body for short periods. b. Student will accept the positioning of ICT equipment in relation to their bodies.	Prerequisite.

Switches should be made available and positioned as if the student were to operate the software independently. During the early experiential stages of the programme, emphasis is placed on experiencing and responding to animations and sounds. However, to use the equipment effectively, students need to be taught to behave appropriately when equipment is positioned near their bodies. This appropriate behaviour should be reinforced at all times and should be considered a prerequisite to any form of independent operation of ICT equipment.

Key Milestones	ICT Small Steps	Level
Student encounters ICT generated activities and experiences.	1. Student shows simple reflex responses to ICT generated experiences, for example startling at sudden noises. 2. Student encounters ICT experiences passively, showing little or no interest.	Experiential.
Student shows emerging awareness of ICT generated activities and experiences.	3. Student attends briefly to sounds and/or on-screen movement patterns. 4. Student makes intermittent responses to sounds or on-screen movement patterns.	Experiential.
Student begins to respond consistently to ICT generated activities and experiences.	5. Student shows interest or pleasure in sounds, images or movement patterns, looking more intently and for longer periods. 6. Student briefly tracks objects moving in the horizontal or vertical plane. 7. Student shows consistent interest in ICT generated experiences, reacting and showing positive responses to familiar images, sounds and activities.	Experiential.

Student begins to be more proactive in their intentions.	8. Student tolerates and participates in the shared exploration of the switch, including method of activation. 9. Student reaches out toward the switch. 10. Student independently explores the switch and its method of activation.	Experiential. Make Something Happen.
Student uses a switch to produce a desired effect (Press and Hold activation).	11. Student will press and hold a switch to achieve a desired effect with physical prompting (hand-over-hand). 12. Student will press and hold a switch to achieve a desired effect with minimal physical prompting. 13. Student will press and hold a switch to achieve a desired effect.	Make Something Happen.
Student uses a switch to produce a desired effect (Press and Let Go).	14. Student will press and release a switch to achieve a desired effect with physical prompting (hand-over-hand). 15. Student will press and release a switch to achieve a desired effect with minimal physical prompting. 16. Student will press and release a switch to achieve a desired effect.	Make Something Happen.
Student uses a switch to complete simple tasks and sequences.	17. Student can press a switch a number of times to keep an activity playing. 18. Student can activate a switch a number of times to complete a simple sequence, noticing changes after each switch press. 19. Student can activate a switch to start and stop an activity.	Make Something Happen.
Student explores the use of two switches in simple non-scanning activities.	20. Student can differentiate between the actions of two different switches. 21. Student can use two switches, one to start an activity, the other to stop the activity.	Playing with Two Switches.
Student can use one switch in a range of different timing activities.	22. Student can press a single switch in response to an on-screen cue. 23. Student can track an object as it moves across the screen, pressing a single switch when the object is in a target area.	One Switch Timing Skills.

Student can use two switches in a range of simple activities.	24. Student can use two switches, each controlling part of the same activity. 25. Student can use two switches to complete simple 'move and choose' or 'build up' activities.	Using Two Switches.
Student can use one or two switches to make independent choices.	26. Student can choose one item from three on-screen options. 27. Student can choose one from three or more on-screen options which include empty cells. 28. Student can complete simple sequences by choosing the appropriate object from three or more on-screen options. 29. Student can select a specific object in response to a question or request, from three or more on-screen options. 30. Student can make independent choices using one or two switch scanning.	Introducing Formal Scanning. Choosing Independently.

NOTE: It is not envisaged that all of your students will be able to achieve all of these goals. For example, students with physical problems will find the one switch timing activities difficult. If you feel the student is prevented from attempting a skill for reasons such as motor difficulties, you should skip those activities and chose another route from the Road Map.

» What Software Can I Use?

The following chart shows how various switch accessible software titles relate to the Switch Progression Road Map. It demonstrates which of the Small Step Level Descriptors (see the preceding pages) each title covers. Simply look down the list to find software appropriate to teaching that specific skill. You can also use this list to identify gaps in your provision.

Level	Experiential								Make Something Happen				
Number	1	2	3	4	5	6	7	8	9	10	11	12	13
1-2-3 Paint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Alphabet Paint	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Big Bang	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Big Bang Patterns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Big Bang Pictures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Card Maker	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choose and Cook	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choose and Tell: Fairy Tales	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choose and Tell: Legends	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choose and Tell: More Nursery Rhymes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Choose and Tell: Nursery Rhymes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ChooseIt! Maker 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ChooseIt! Ready-mades Literacy Series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ChooseIt! Ready-mades Numeracy Series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ChooseIt! Ready-mades Science Series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Coping with Chaos	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Counting Songs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Disco	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Make Something Happen						Playing with Two Switches		One Switch Timing Skills		Using Two Switches		Introducing Formal Scanning				
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
✓	✓	✓				✓						✓				
✓	✓	✓				✓						✓				
✓	✓	✓														
✓	✓	✓	✓	✓						✓						
✓	✓	✓	✓	✓						✓						
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓						✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓						✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓						✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓						✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓						✓	✓	✓		✓	✓	✓
						✓				✓	✓	✓	✓	✓	✓	✓
						✓				✓	✓	✓	✓	✓	✓	✓
						✓				✓	✓	✓	✓	✓	✓	✓
						✓				✓	✓	✓	✓	✓	✓	✓
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓

Level	Experiential								Make Something Happen				
Number	1	2	3	4	5	6	7	8	9	10	11	12	13
Drumkit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Let's go to the Seaside	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Let's go to Town	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
MyZone	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Press It Now!	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Press to Play	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ReadIt! Younger Reader's Library	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Slideshow Maker	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spot On Games	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Facemaker	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills Champions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills for Two Set One	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills for Two Set Two	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Switch Skills - Scanning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Maker 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Christmas Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Dinosaurs Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Bob the Builder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Farm Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Hygiene Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Jigsaw Maker 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Maker 2 Older Learners Edition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! People Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Make Something Happen						Playing with Two Switches		One Switch Timing Skills		Using Two Switches		Introducing Formal Scanning				
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
✓	✓	✓				✓						✓				
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓		✓		✓		✓	✓			✓				
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓		✓		✓		✓	✓			✓				
✓	✓	✓		✓		✓		✓	✓			✓				
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓
✓	✓	✓		✓		✓		✓	✓			✓				
✓	✓	✓				✓				✓	✓	✓		✓	✓	✓
✓	✓	✓				✓		✓	✓	✓	✓	✓		✓	✓	✓
✓	✓	✓				✓				✓	✓					
✓	✓	✓				✓				✓	✓					
✓	✓	✓	✓					✓	✓	✓	✓	✓		✓	✓	✓
✓	✓	✓	✓					✓	✓							
✓	✓	✓	✓					✓	✓							
✓	✓	✓				✓				✓	✓	✓	✓	✓	✓	✓
✓	✓	✓		✓	✓	✓				✓						
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓			✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓			✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓		✓				✓	✓	✓		✓	✓	✓
✓	✓	✓		✓	✓	✓				✓						
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓

Level	Experiential								Make Something Happen				
Number	1	2	3	4	5	6	7	8	9	10	11	12	13
SwitchIt! Transport Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Weather Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
SwitchIt! Wildlife Extra	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Toyshop	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			

Make Something Happen						Playing with Two Switches		One Switch Timing Skills		Using Two Switches		Introducing Formal Scanning				
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓	✓	✓		✓		✓		✓	✓	✓		✓	✓	✓
✓	✓	✓		✓		✓										

» Switch Software Options

All of the software developed by Inclusive Technology contains options to enable you to tailor the way the switch works to meet the access needs of the child. Here is an explanation of some of the more common options:

Number of Switches

This allows you select the number of switches that can be used with the program.

Switch Colour

This option allows you to select the colour of the switch prompt that is displayed on the screen. It is very important for some learners, including many with autism, that the switch colour displayed on the screen matches the colour of the switch they are using to operate the program. This setting is also used for some two switch activities where the learner is required to press a specific switch in response to an on-screen prompt.

Press Alternate/Requested

Some programs, such as those in the *SwitchIt! Extra* series, have levels that are designed to develop two switch skills without using scanning. With these programs, you can opt to have the user press each switch alternately, or press a specific switch in response to an on-screen prompt.

Number of Steps

Some programs have 'switch building' levels where the learner must press the switch a number of times to complete a sequence. Each press of the switch builds up a picture, scene or story, with the final press in the sequence triggering the animated reward. This option allows you to set the number of presses that are required before the reward animation appears.

Delay

Often described as a 'pre-acceptance delay', this setting determines the amount of time the switch has to be held down before the computer accepts it as a valid switch press. This is a useful feature for children who have spasmodic movements or tremors, as it helps eliminate accidental activation.

Scan Box Colour

When carrying out decision-making activities using switches, a 'scanning' process is used. Each selectable object on the screen is highlighted or 'scanned' in turn, either automatically by the computer or by the learner using a second switch. If the switch is pressed when an object is highlighted, that object is selected. The scan box colour option allows you to change the colour of highlight around the object. Evidence suggests that some learners will respond better when using a consistent highlight colour.

Scan Speed

If a choosing program such as *Choose and Tell: Nursery Rhymes* is used with a single switch, the computer will automatically scan each of the available choices. This option enables you to match the speed of the scan to the ability of the student. For example, a child with severe motor difficulties might require more time to coordinate their movements and press the switch.

Auditory Prompts

Some Inclusive programs provide auditory prompts when on-screen objects are scanned. These prompts provide clues to what might happen when that object is chosen. Auditory prompts are especially useful for learners with visual impairment.

Reward Time

This option allows you to shorten or lengthen the reward time. Learners with profound or complex learning difficulties often need more time to process things. Short bursts of animation or music can be missed, especially if the pupil also has difficulties with looking at the screen while simultaneously pressing a switch.

Background Options

Programs like *Big Bang* have the option to begin an activity with an on-screen prompt or to start with a blank screen. Which you choose depends on the needs of the child or the type of technology you are using. For many switch users at the cause and effect level, it is better to start with a blank screen. The animation will only start after the switch has been pressed. If you are using a touch monitor or interactive whiteboard, some children will respond better with a target to touch. The on-screen prompt can also help introduce simple targeting, i.e. "Can you touch the car?".

Reveal Time

Some programs like *Switch Skills 1* help to develop timing skills. In programs such as these, an object will appear on the screen for a number of seconds, prompting the child to press the switch in response. 'Reveal time' is the length of time that the object will remain on the screen before disappearing. Children with poor motor control will need a longer reveal time to help them coordinate their movements and press the switch.

» Assistive Technology Advisory Services

Here is a list of regional and national centres which provide information and advice on the use of assistive technology. Many provide an impartial assessment service.

Aberdeen   TASSCC

www.aberdeen-education.org.uk/tasscc

Barnsley   Assistive Technology Team

www.barnsleyrd.nhs.uk

Birmingham   Access to Communication and Technology

www.actwmids.nhs.uk

Bristol   Communication Aids Centre

www.nbt.nhs.uk/our_services.aspx

Edinburgh   CALL Centre

www.callcentrescotland.org.uk

London   CENMAC

www.cenmac.com

Oldham   ACE Centre North

www.ace-north.org.uk

Oxford   ACE Centre

www.ace-centre.org.uk

UK-wide   Abilitynet

www.abilitynet.org.uk

» Useful Websites

Here is a (very short) list of websites where you will find useful resources to support this teaching programme.

HelpKidzLearn

www.helpkidzlearn.com

Developed by Inclusive Technology, this website features a large collection of free switch accessible activities and games, including sample levels from many of the software titles used in this teaching guide.

Priory Woods School

www.priorywoods.middlesbrough.sch.uk

A large collection of free to download activities for one or two switch users. The website also features a Kids Only area with games and activities suitable for switch users.

OneSwitch.org

www.oneswitch.org.uk

A large collection of free to download games for one and two switch users. Be aware that many of these use non-standard methods of scanning and are best used with more proficient switch users.

Don't forget...there is more information about using switches at **www.inclusive.co.uk**

» About the Author

Ian Bean joined Inclusive Technology from Priory Woods, an award winning, 'OFSTED Outstanding' special school where he taught learners of all ages with a range of severe, profound and complex learning difficulties, including autism.

Ian has an in-depth knowledge of assistive technology and has developed detailed assessment techniques and novel teaching strategies to exploit this technology's full potential. In 2000, he worked to develop and write the teaching notes for *SENSwitcher*, a suite of software designed to help train teachers and support staff to teach their learners to make more effective use of switches.

SENSwitcher was made available at no cost from the Northern Grid for Learning website. It has been downloaded over ten million times by schools, colleges and other establishments around the world where assistive technology is used to support the learning, communication and leisure needs of children and adults with a disability.

Until recently, Ian also wrote and managed the Priory Woods School website, which is visited by over one million teachers, therapists and support staff each month. Colleagues visit the website to get ideas and inspiration in the use of technology to support teaching and learning across the curriculum.

At Inclusive Technology, Ian works closely with schools to identify and disseminate good practice in the use of assistive technology. This booklet draws together over ten years of best practice classroom research from around the world into a comprehensive teaching and assessment document that you can use every day in your classroom.

Ian is passionate in his belief that technology has the potential to enable and empower all learners, providing them with rich, meaningful and personalised learning experiences. He is a former National ICT in Practice Award winner, an award winning website designer and a regular speaker at assistive technology conferences around the world.