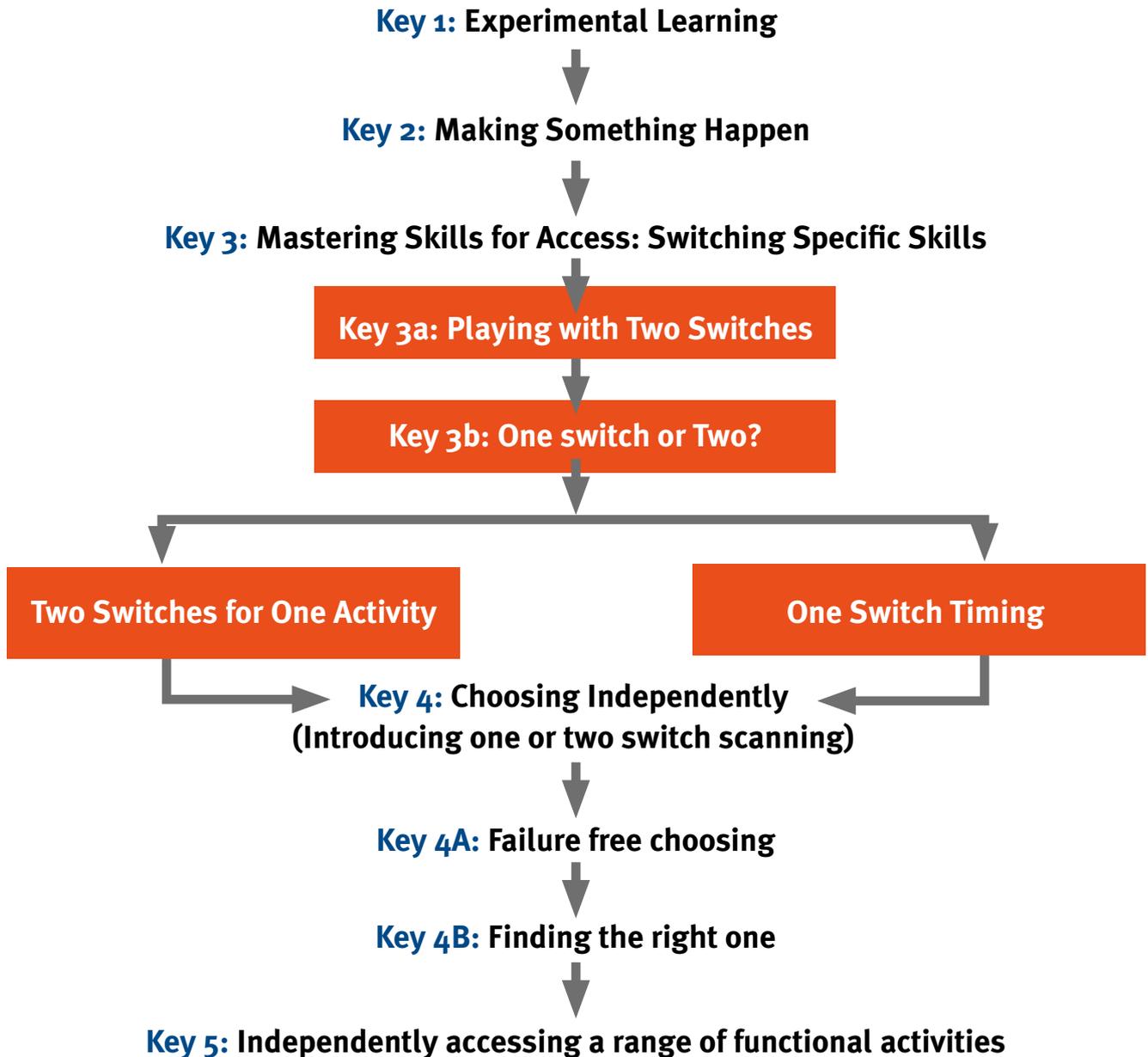


Unlocking Abilities: Keys to Developing Switching Skills



Adapted from;

Bean, Ian. (2011) Inclusive Technology, Learning Journeys: Switch Progression Road Map. Retrieved from <http://www.ianbean.co.uk>

Burkhart, L. (2012) Stepping Stones To Switch Access (Two Switch Step Scanning). Retrieved from <http://lindaburkhart.com>

Tobii Eye Gaze Learning Curve: A clear pathway to success with Eye Control and Gaze Interaction Retrieved October 7, 2016 from <http://www.tobiidynavox.com>



Unlocking Abilities: Developing touchscreen, switch and eye gaze skills for learning and beyond
**This handout was produced with funding received from the Non Government Centre Support
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There are many cognitive and motor skills a student needs to learn before being able to use switching for a range of everyday activities. Not all students may progress to using switch scanning for communication and computer access, however any progression in their switching skills will improve their opportunities for active participation in learning and daily activities.

This framework is not a fixed progression, students may be in multiple stages at once and may need to take a step backwards at times to consolidate their skills.

Key 1: Experimental Learning

At this stage it is about the student becoming comfortable with having the switch and other associated equipment around them and engaging with an activity (looking, listening, and reacting). We want to look at activities that provide a range of sensory experiences (sight, sound, movement, patterns). This stage may include modelling of switch use, physical assistance and positioning the switch so that the student may incidentally activate it.



Objectives

1. The student will tolerate a switch being positioned near them.
2. The student will look, react or respond to the switching activity.

Tip and Tricks

- Try activities related to the student's interests.
- Place a switch somewhere where the student can tolerate it and may incidentally activate it.
- Try different sensory activities that may gain the student's attention.
- Use switch toys or devices that offer direct activation (when you push the switch something happens and when you release the switch it stops).

Activity Ideas

- Switch toys
- Noisy/bright computer games or favourite songs
- Use a Powerlink to activate a fan, lights or a massage pillow
- See 'Apps and Software for Developing Switch Skills' handout



Key 2: Make Something Happen



We want the student to learn that they are controlling the activity via the switch (often referred to as ‘cause and effect’). We also want to student to have lots of practise executing the movement needed for switching to enable them to develop automaticity (being able to execute a motor movement without consciously having to think about it).

Objectives

1. The student will independently activate a switch to produce a desired effect.

Tips and Tricks

- Lots of repetition with moderate differences will be required at this stage for the student to learn the motor pattern and to keep the student motivated.
- Initially keep using direct activation.
- Once this has been mastered, provide activities that have timed activation (when the switch is activated the activity will occur for a certain time period, the switch then needs to be activated again to continue the activity).

- Ensure the student is looking at and attending to the desired effect/activity rather than swatting at the switch. If they are swatting at the switch, change the activity, try some turn taking with the activity or try a different type of switch.

Activity Ideas

- Use a Powerlink with a range of appliances to participate in daily activities; e.g. blender, popcorn maker, fan, light, simple radio, hairdryer.
- Turn pages of an electronic book; e.g. use a switch with a computer or iPad to turn pages of an electronic book.
- Use a single message switch to interact with others; e.g. say “my turn” during an activity, say “hi” to others in the playground
- Use a multiple message switch to tell news, a joke or give instructions for an activity.
- Use a spinner (e.g. All-Turn-It Spinner) to roll a dice for a game
- See ‘Apps and Software for Developing Switch Skills’ handout



Key 3: Mastering Skills for Access: Switching Specific Skills

Key 3A: Playing with Two Switches

We are trying to teach the student that two switches do two different things. Before progressing to this stage we want to make sure the student has had plenty of practise with their first switch site and this motor pattern has become automatic. We will now need to try to find a second switch site for the student.



Objectives

1. The student will independently activate two switches to control something different with each.

Tips and Tricks

- When introducing a second switch keep the cognitive demands of the activity low, as the student is now required to learn another motor pattern.
- Let the student explore the function of each switch. Try not to direct them to hit a particular switch.
- We can learn about student's preferences through these activities. They may continually choose to activate one switch due to a preference for a particular toy or activity.
- Ensure the two functions controlled by the two switches are distinctly different from each other.

Activity Ideas

- Use two single message switches for different comments; e.g. "Go away" and "Come here". Respond appropriately to reinforce the purpose of each switch.
- Two switches to activate two different switch toys.
- Use one single message switch and one switch toy.
- Use your Powerlink with two different appliances and two switches; e.g. have one switch to operate a hairdryer blowing warm air on the student and another to activate a fan to blow cool air.



Key 3B: One Switch or Two?

Before moving on to working towards learning to switch scan we need to decide how many switches the student will use initially.

If two reliable and repeatable switch sites have been learnt, it is best to progress with two switches at this stage. This enables the child to have full control over the process and minimises the cognitive load of learning to scan (Burkhart, L., 2016). Continue with two switches below. If you want to consider continuing with one switch, see 'One Switch Timing'.

Two Switches for One Activity

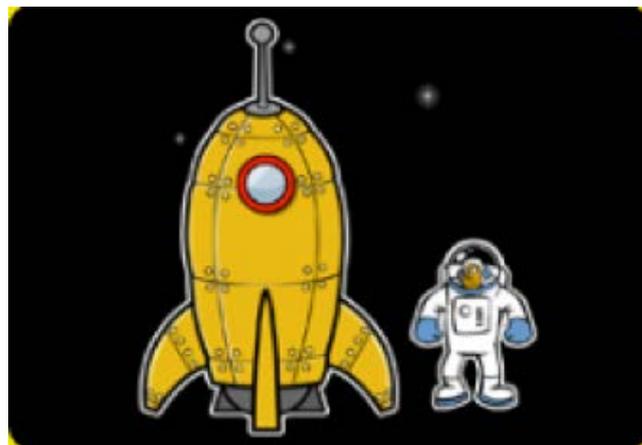
In this stage, instead of having each switch complete a distinctly different action, we are wanting the two actions of the two switches to be used together to complete an activity. We want the student to understand that each switch plays an important role in the activity and that they will have to use both to complete the activity.

Objectives

1. The student will use two switches to complete an activity.

Activity Ideas

- Use two single message devices, one with a joke set up on it and one with the punch line. The student has to activate the switches in the correct order to tell the joke to the class.
- Using computer games where one switch builds the activity and the other completes it. See 'Apps/ Software for Developing Switching Skills' handouts for further details;
e.g. Helpkidzlearn Rockets – one switch builds the rocket piece by piece, the other switch launches the rocket.
- Use a switch with an iPad to listen to music. One switch for 'next song', one for 'play'. Perhaps the student has to find a particular song for the class to sing to.



One Switch Timing

We are now looking to move forward with using one switch. This may be due to being unable to find a reliable second switch site or concerns regarding fatigue using two switches. To scan using one switch the student first has to learn to activate the switch with appropriate timing. This involves complex cognitive and motor processes (tracking something across the screen, knowing when it is time to activate the switch and planning and executing the movement in appropriate time). Therefore, it is important the student has lots of opportunities to practise timing.

Objectives

1. For the student to activate the switch within a certain time period (specify time) when cued by a visual or auditory prompt.

Tips and Tricks

- Consider short frequent sessions of practice, as learning timing can be tiring.
- As skills improve, reduce the amount of the time the student has to activate the switch.

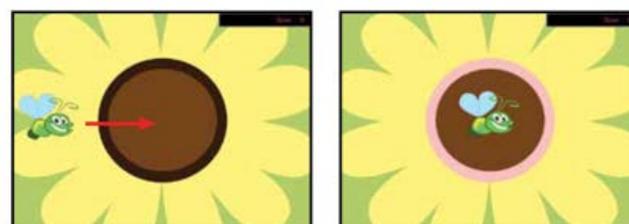
Activity Ideas

- Computer software can be very useful at this stage, as there are games designed to teach these skills. See 'Apps and Software for Developing Switching Skills' handouts for further details; e.g.

Switch skills 1 software



Car racing game – switch needs to be activated within a certain time period when a car appears to make the car race.



Bug game – a visual and auditory prompt cues the student to activate their switch within a time period while the bug is in the centre of the flower.

- Use a single message switch to make a comment or noise at an appropriate time; e.g. making an animal noise at the appropriate time in the Old MacDonald song.



Key 4: Choosing Independently

Key 4A: Failure Free Choosing

We are now looking at introducing the student to the concept of switch scanning (with one or two switches). This can be an abstract concept and may take some time to learn. At first we want to encourage the student to make choices without there being a wrong answer. Any option they choose is reinforced and rewarded.

Objectives

1. The student will choose one item from three or more options, where there is no correct answer and any choice is rewarded.

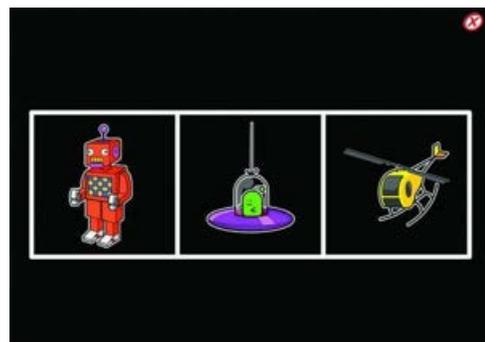
Tip and Tricks

- You will need to set the switch settings to either 'one switch scanning' or 'two switch scanning' when using computer software/apps.
- If using single switch scanning, the speed of the scan can be adjusted. You will need to adjust this to find a speed that allows your student to consider the choices and activate the switch but that isn't too slow that they lose focus.
- The number of choices provided can usually also be adjusted in settings. You may want to increase the number of choices as the student's skills improve.
- Personalise activities to make them motivating.

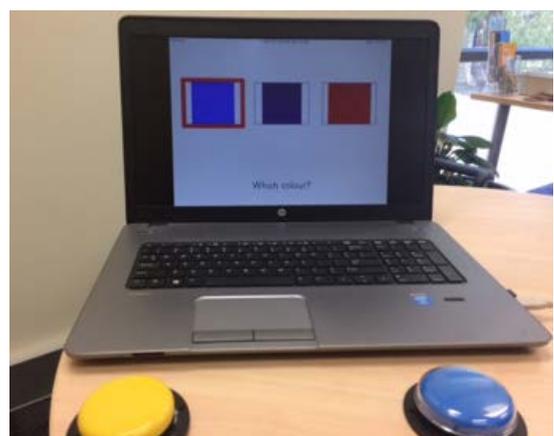
Activity Ideas

- Computer software is available that enables failure free choosing with switch scanning. See 'Apps and Software for Developing Switching Skills' handouts for further details; e.g.

Switch Skills –Scanning - A range of failure-free switch scanning activities.



Chooselt Maker 3 - Make your own failure free switch scanning activities



e.g. 1. Provide choices of colours. Colour in a picture together or complete a painting according to the student's colour choices.



2. Provide choices of musical instruments, the one chosen is the one the student or class uses for the song.

- Play a version of “Duck, Duck, Goose”. The teacher or another student can go around pointing to each class member one by one. The student can use a single message switch to say “Goose” or “They’re it” to select their desired classmate for the activity.

- Single Switch Scanning – Provide choices with visuals or objects one by one. The student can use a single message switch to say “That’s the one” to select their desired option.
- Two Switch Scanning - Use a multiple message switch and a single message switch to make choices. The student can use the multiple message switch to hear the options and use the single message switch to say “That’s the one” to select their desired option.

Key 4B: Finding the right one

This is about the student being able to select the option they want or being able to make a choice to answer a question using switch scanning. These skills can enable the child to communicate, have control over their environment and demonstrate their learning.

Objectives

1. The student will choose one item from three or more options in regards to a request or question.

Tips and Tricks

- Start with choosing activities that have blank cells and only one right answer available. This decreases the cognitive demands in having to find the right option. Add more options as skills improve.
- Customise scanning activities for your student’s interests or current learning objectives.

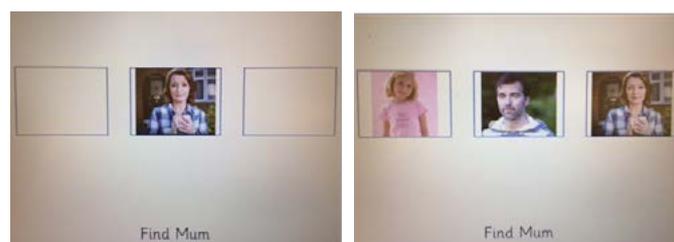
Activity Ideas

- Use software that enables the student to make choices with some blank cells initially. Then add more options. See ‘Apps and Software for Developing Switching Skills’ handouts for further details; e.g.

Switch Skills – Scanning – ‘Find the object’



Chooselt! Maker 3



Key 5: Independently accessing a range of functional activities

By now the student has mastered the skills needed for them to start using switch scanning functionally, for whatever their goals are, whether this be communication, reading books, writing, taking photos, making phone calls or playing music.

Objectives

1. The student will use switching independently to participate in one or more functional activities (communication, computer access, educational activities, environmental control).

Activity Ideas

- See 'Apps/ Software for Developing Switching Skills' handouts for further details.



References

Bean, Ian. (2011) Inclusive Technology, Learning Journeys: Switch Progression Road Map. Retrieved from <http://www.ianbean.co.uk>

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