

Using Switches

An Introduction to Assistive Switch Technology



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Introduction – What is Switch Technology?



Switch Technology, usually in the form of a range of different switches are defined as any gadget, button or otherwise which allows an individual to produce an effect which could be anything from switching a light on to activating a computer game. This effect can be activated by very small body movements and even by blinking and eye movements in some cases.

Switches can be homemade; custom-made by companies specialising in assistive technology, specifically designed for certain purposes or even be something that you can pick up at a local shop.

Switches can be used to help people with learning difficulties and other [special educational needs](#) in the classroom and home environment. They can encourage mobility, communication, pleasure through toys and games and all-round learning.

In the most basic terms a switch converts a user's action, such as pressing a button or blinking, into another action. Switches can be extremely simple or complex depending on the needs of the user and they allow for access to many more devices, toys, games and facilities.

Using Switches

One of the most valuable things you'll discover when using assistive technology switches as they can be customised and purchased specifically to suit the user in question. Depending on that particular user's needs, the switch can be activated by a number of things including:

- Pressure
- Motion
- Air Flow
- Light Sensitivity (Blinking)
- Sound Sensitivity (Tongue Clicks/Speech)

There are switches available which are activated by hand, foot, eye movement, blinking and even biting. Every individual needs their personal needs assessed to see which type of switch would be most beneficial for what they're trying to achieve.

Advantages of Switch Technology

Investing time and effort into switches as a parent, carer or educator of somebody with a disability is not something you will regret. The benefits, advantages and skills learned and developed simply through learning how to use a single switch are plentiful and in time, you can introduce a range of switches for different purposes for the user.

Some of the main advantages and benefits of using switches include:

- **Introducing new sensory experiences**

Through the introduction of switches which activate lights, sounds and other sensory reactions, you can show the user different ways of experiences and exploring their senses. Switches can support the development of language, communication and independent play.

- **Introducing the idea of cause and effect**

Switches can show the user how completing an action can cause a positive reaction, the basics of cause and effect. For example, a user can learn that by biting down on their bite switch, the light on their sensory toy is activated.

- **Scope for Development and Challenges**

Switches can be designed and developed in such a way that you can add to the educational process. Degrees of difficulty can be included in the switch system that allow for progress and more challenging actions required.

- **Decision Making**

Switches encourage the user to make decisions independently, in line with their understanding of cause and effect and realising how one action effects another and how they need to do something to get the desired result.

- **Further Assessment**



From a teacher or educator's point of view, switches open up a whole new world of assessment. You can see whether learners are able to differentiate between colours, sounds and make correct choices and then work on their learning plan in conjunction with these discoveries.

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Types of Switches

As explained in the introduction, a switch can literally be anything that results in something happening after a user action. However, there are some more common and popular types of switch which can be bought in specialised shops and are commonly used in educational and therapeutic settings.

Squeeze Switches - Reliant on pressurised squeezing of the switch area and good for those working on their motor skills and developing their squeeze and release function.



Plate Switches - Reliant on movement and touching of the plate area of the switch, can be used to activate toys, games, lights and more.



Fine Motor Switches - Specifically designed for the development of fine motor skills and a wide range available including the pictured **finger isolation switch**, which trains the use of single digits.



Multi-Movement Switches - including the common joystick, wobble switch (pictured), leaf switch and other custom designed models which require a range of movement.



Bite Switches – enables action to be carried out via biting down on a pressurised element of a specifically designed switch to cause designated response.

Eye Movement Switches – switches designed specifically to respond to eye movements, blinks and nothing else.

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This is only a small example of the full range available and many individual users have customer made designs their specific needs.

Determining Correct Switch Positioning

Switch technology is absolutely no use whatsoever if access is restricted so it is extremely important to ensure accessibility to the switch is made as simple as possible through the correct positioning for the user.

Before positioning any switch you need consider the following questions:

- **How will the switch be controlled?** *Does it need to be positioned in close proximity to the body to allow for digit access or on the floor for foot access?*
- **What kind of switch can be used by the chosen controlling appendage?** *Switches are designed with specific muscle groups and appendages involved so you need to be aware of this.*
- **How much force can the user generate?** *Most switches can have their sensitivity altered so you can ensure the user has full access and ability to use their device.*
- **Do you need a mount?** *This will be looked at in more depth later in the document but a mounting device is often essential to secure and guarantee easy access to the device. We recommend the **Trabasack Lap Tray** (pictured below) and **supportive Media Mount** as ideal for a wide range of switches.*

Without the correct positioning a switch is basically useless as the user will not be able to engage with it properly and therefore, the chance to develop any skills is lost. Answering these simple questions is the first step to ensure you have the best possible accessibility in place and the chosen activities via the switch can be enjoyed.



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Simple Switch Activities

There are hundreds of possibilities opened up when you have access to even the most basic switch, below are a few fun and educational ideas which you can put into practice to aid learning, development and play.

- Put a musical switch inside a shape sorter – you can set it up so that when the user inserts shapes, the music is activated and a further stimulus is provided.
- Hide a musical or light up switch inside a box of objects that stimulate other senses – as the user searches for the switch to cause its action, they'll also enjoy a range of different touch related experiences. Suggested items include dry pasta, smooth stones and small fluffy toys.
- Enjoy [accessible games](#) – a range of computer games on the market are designed specifically for switch use, whether using multi-movement switches or single buttons.
- Programme a switch with the user's favourite phrases – from 'Hello my name is...' to favourite quotes from comedy shows, hours of fun are possible when the user realises how a simple press or bite can activate their favourite sounds or speeches.



- Purchase specialist items such as a switch-enabled electric bubble machine¹ (pictured), which provides hours of fun and is again activated by a single small pressure and can be customised to allow for.

There are a number of retailers who specialise in creating only the best switch enabled devices to ensure many products which may previously have been inaccessible can now be enjoyed by a wider range of users.

¹ Courtesy of <http://www.oneswitch.org.uk>

Switch Mounting

Previously mentioned was the idea of mounting a switch to improve accessibility. In many cases switch mounting is essential to get the most from your chosen switch device and here we're going to look more closely about how you can mount your switch and the questions you should ask yourself before choosing a mount.

Consider these questions before choosing your mounting device:

- **How is the switch to be mounted?**
- **Where does it need to be positioned?**
- **How much force can the chosen mount sustain?**

We recommend the Trabasack Lap Tray as the perfect base for any mounting system as the added cushioned base allows for no pressure to be exerted on the user's lap and it can comfortably sustain any potential pressure needed to activate the switch without any concern.

- **Does the amount allow for users of different strengths to access it?**
A mount that is designed without any 'give' is difficult to adapt for different users. As a lightweight and cushioned product, the Trabasack lap tray allows users of different strengths to easily access and apply pressure to their switches without any discomfort.



The Trabasack Lap Tray can be further enhanced by the addition of the supportive [Media Mount](#), which allows for even more specific and exact positioning of any switch. It can also be used as a guide to keep the hands of users in the right area to access the switch as the picture shows, making accessibility even more straightforward and easy for the user.

More Useful Information and Links

To find out more about switches, switch mounting, accessible gaming and assistive technology consider the below links as top resources:

- <http://switchmounting.com/>
- <http://communicationaids.info>
- <http://accessiblegaming.info/>
- <http://www.oneswitch.org.uk/>
- <http://ablegamers.org/>
- <http://www.gamebase.info/>