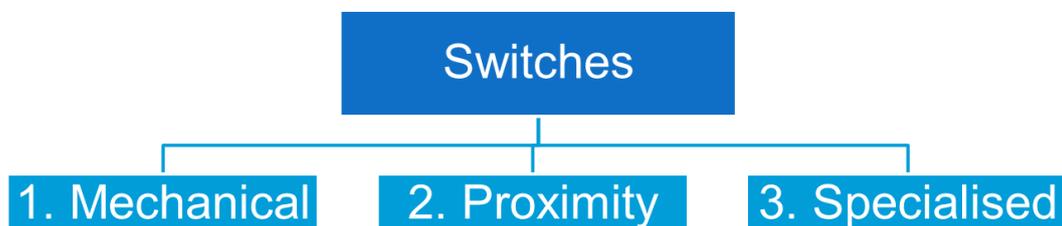# Switches

A switch is an electromechanical device that is used to activate or deactivate an electrical signal by opening or closing a contact. By doing so a person may operate electronic devices including computers, mainstream tablets, speech generating devices, and simple battery-operated toys.

Switches make operating electronic devices easier for people who have motor control difficulties. They can help with accessing high tech communication devices, environmental control, and computer functions.

Switches can be classified into three main categories: mechanical, proximity, and specialised.

```
                    Switches
                       |
        ┌──────────────┼──────────────┐
  1. Mechanical    2. Proximity   3. Specialised
```

1. Mechanical Switches:
These switches are activated via physical touch. You can activate them using any body part, such as the hand, head, foot, knee, elbow, etc. Mechanical switches are the most commonly used switches for people with disabilities and have the advantage of providing auditory (sound/click), tactile (the feel of depressing/activating the switch), or visual (LED light) feedback which is helpful for people learning how to use a switch, and for those with visual and cognitive impairments. Different mechanical switches require different activation force and could be wired or wireless. Examples include: piko button, specs switch, jelly bean twist, etc.

2. Proximity Switches:
These switches are activated by bringing an item or a body part within close distance to the switch. They are useful for people with very limited strength and movement range such as people with motor neurone disease. Examples include: candy corn proximity switch, mini beamer, etc.
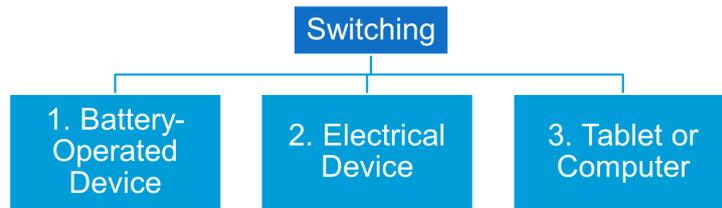
3. Specialised Switches:
These switches are operated using a specialised body function such as the breathing mechanism, voice activation, or muscle twitch. For example, with the sip and puff switch, the user sips or puffs into a mouth tube to activate and control the device. These are frequently used with people with limited upper limb movement, such as high level quadriplegia. Examples include: Sip and puff, voice-activated switches, muscle twitch switch (e.g. EMG NeuroSwitch).

Setting Up Switches

Switches may be used with battery-operated devices, electronic devices, and computers/tablets.

```
                        Switching
     ┌──────────────────────┼──────────────────────┐
  1. Battery-          2. Electrical          3. Tablet or
  Operated                Device                Computer
  Device
```

1. Battery-Operated Device:

The battery compartment is opened and a battery interrupter is inserted between the battery and the rest of the circuit (spring). The external switch is then connected to the battery interrupter jack. The original internal switch of the device must be turned on. The device will be turned on/off once the external switch is activated. You can also buy ready-made switch-adapted toys.

2. Electrical Device:

If the device runs on mains power, then a switch control unit is needed. An example of a switch control unit is the PowerLink4. The control unit is connected to the electrical device. The control unit may allow for several modes of control which determine how and for how long appliances will be turned on and off. It may also allow for more than one switch to be plugged in and may connect to more than one electrical device at once.

3. Tablet or Computer:

A switch interface is required to use switches with tablets and computers. A switch interface interprets the switch activation as a meaningful signal that the tablet/computer can understand. The switch is connected to the switch interface via a jack while the switch interface is connected to the tablet/ computer via Bluetooth, USB, or lightning connector - depending on the switch interface type.

There are specifically designed programs or applications which have settings compatible with switch use. On the other hand, you may modify the access settings on your tablet/ computer to allow you complete switch access control in all programs and applications installed. You can connect more than one switch to your tablet/ computer. You may choose automatic or manual scanning of items on the screen.
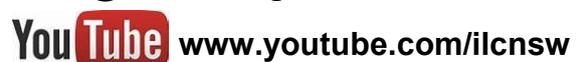

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