

## ICT Equipment

As efforts are made to reduce energy use in schools, there is one area in which energy use is increasing, namely Information and Communication Technology (ICT) equipment. Computers, interactive flat screen technologies and whiteboards (IWBs) are creating a demand for electricity that did not exist a few years ago. It is essential to manage and make efforts to control this increasing demand, as it could negate any savings made in other areas, such as lighting. Fortunately, many of the measures that can be taken involve little or no cost.



Switch off to save!

Screens and digital projectors in use in schools can influence use of daylight and electric lighting. Choose quality interactive whiteboards, screen technology and projectors which are appropriate for schools.

This will enable daylight to be used more of the time in classrooms.

For guidance on purchasing Interactive whiteboards and digital projectors for schools, check the advice on the Oide Technology in Education website <https://www.oideotechnologyineducation.ie/technology-infrastructure/presenting-in-the-classroom/>

Peer reviewed research has established that children learn better when they have access to daylight (Source: See references at the end of this document). With less bright and poorer images on whiteboards, there is a tendency to close blinds and put the lights on, increasing energy use and deteriorating learning ability.

Where blinds are installed and used, they should not be the black-out blinds as these will require the lights to be on. Blinds should be the open weave type recommended by the Department of Education and Skills. Open weave blinds are designed to reduce glare and maintain good daylight levels in the classroom.

When purchasing computer screens, only buy monitors with a matte finish to the screen. A glossy finish acts more like a mirror, and can cause "veiling reflections" of windows, necessitating blinds to be closed which, with a matte finish screen, could be left open.



Choose matte screens to reduce reflection

## Did you know?

### Screensavers

Screensavers were designed to save the older cathode ray tube (CRT) monitors from damage. They do not save energy and can actually reduce the life of a flat panel monitor by keeping the backlighting on unnecessarily.

### Brightness

A monitor with a high brightness setting uses more energy. Reducing the brightness by 25% may not be noticeable but would save energy, provided it does not result in blinds being closed and lights being switched on more often.

### Sleep mode

A computer still uses some energy in Sleep mode. Use Sleep during idle times during the day but switch the computer off at night.

### Photocopier power saving

A typical photocopier may use 230W in standby and only 17W in power saving mode i.e. there is a 92% saving by using power saving mode.

### PC power options

For Microsoft Windows 10, search for "Power settings" and you will see that you can change power options (Windows operating systems vary).

### Blinds

If replacing blinds, choose an open weave to allow daylight through and reduce glare. There is no need to use blackout blinds with quality whiteboards and open weave blinds.

## Low and no cost measures

With respect to IT equipment, the most significant waste of energy is due to computers being left on when not in use.

- Computers can be set up through their Power & Sleep Settings to go into Sleep mode if inactive for a set period of time. It is a good idea to set computers up to go into Sleep mode if not used, say, for an hour or two, however they should always be switched off overnight and at weekends.

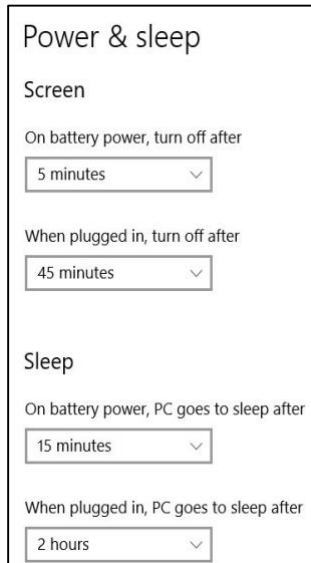
- Monitors use energy even when idle and it is wasteful to leave them on when the computer is not in use, even for short periods like lunch



Don't forget to switch off monitors!

breaks. Awareness campaigns should be implemented to encourage users to switch off monitors when leaving their computers. This is particularly relevant where computers are sporadically used by different people e.g. in computer rooms and staff rooms, where they can be left idle for lengthy periods. It is very common for staff room computers to be left on all the time, unnecessarily, because no one person is responsible for the machine.

- While use of Power & Sleep functions is important, it is still necessary to switch off monitors manually. Awareness campaigns are an important aid to ensuring computers and monitors are switched off at the end of the day. In shared computer rooms, it is worth putting up a sign listing the last class in the room each day hence naming the teacher responsible for ensuring that all the IT equipment which can be switched off is switched off, especially on a Friday.



*Make use of power and sleep settings on your PC*

- As with computers, all office equipment should be switched off at the end of the day. Use should be made of a photocopier's energy saving functions, which will put it in power saving mode when idle. Many photocopiers will not go into power saving mode if the lid is open, so ensure that the lid is closed when not in active use.



*Make sure photocopier lids are closed so they go into power saving mode*

- Where Uninterruptable Power Supplies (UPS) are used, they should be switched off when the equipment they are feeding is switched off, otherwise they will continue to use energy. In the mornings, switch on equipment when it is first needed, not routinely at the start of the working day.
- For flat panel monitors, the higher the brightness setting, the more power a monitor uses. Ensure that monitors are not automatically set to maximum brightness if unnecessary. A 25% reduction in brightness may not be noticeable but will save energy. However, do not dim monitors to the point where window blinds have to be closed and lights switched on. It's better to have a bright monitor and use daylight with the lights off, rather than have the lights on.
- Overhead projectors, Interactive whiteboards, and large flat screen TV's should be switched off at the socket rather than left on standby. When having overhead projectors, TV monitors or other devices installed which are mounted at high level, ensure that the socket is at an accessible height so that the device can be easily be switched off fully, or if the socket is up high, install a switch at low level to control the socket. Ensure you only buy SEAI "Triple-E" listed devices. Triple-E listed devices are known and certified to be energy efficient.



*Make sure sockets controls are within easy reach.*

- Consider getting pupils to conduct an audit of all IT equipment in the school, and estimate how many hours per year the equipment is in active use, versus how many hours the school is closed. Try to estimate how much energy is wasted outside teaching hours.

## Measures requiring investment

- For computer rooms, network software can be installed which will allow the powering down of the computers to be controlled centrally. Monitors and peripherals, however, will still need to be switched off manually. Many computer rooms have a dedicated electrical distribution board feeding the sockets through a device called a contactor (a kind of switch) controlled by a key, but this is often not used as it is

- necessary to wait until the computers have shut down before switching off the power. Replacing this key-switch control with a 24 hour/7 day time clock will ensure that no power, even to monitors, is left on out of hours. If power is still required to a server, this can still be arranged by an electrician installing the time clock.
- Peripherals e.g. printers, scanners and PC speakers are often left on even when the computer is not in use. "Intelligent" multi-sockets (extension leads) are available which switch off power to all peripherals when they sense that the main computer has been powered down. Use of such devices in conjunction with the computer's Power & Sleep Settings can provide an effective means of ensuring that a computer and all its peripherals are left in a state of zero energy usage if unattended for a prescribed period. These devices can be sourced on the internet.
- When purchasing new computers, it is worth considering that laptops typically use less power than most desktops. The laptop monitor will also shut down with the laptop, unlike the separate monitor used with a desktop. Solid state drives (SSD) have plummeted in price and use less energy. Purchase computers with SSDs if you can. SSD equipped computers also have the advantage that they restart or wake up more quickly after a shutdown or sleep mode activation thus making energy saving easier. SSD drives are faster and as they don't have moving parts like conventional 'spinning' disk drives they are much more reliable.
- It is important to consider what the computer is to be used for when choosing a specification. If the machine is used mostly for web browsing and word processing, then the use of a specific low energy computer may be appropriate. In particular, high end graphics cards can have larger power consumption than all the other components of the computer put together, but these graphics cards are only required for advanced 3D graphics. "On-board" graphics are normally adequate for most school uses and it is therefore not necessary to specify computers with additional graphics cards.
- Specifying low energy machines. When purchasing new equipment, always make it clear that the school have a preference for low energy equipment. For example: Energy consumption when operating should be less than 90W and when idle shall be less than 50W, when in sleep mode shall be less than 2W.
- To save energy and reduce costs schools are advised to consider using cloud-based tools and applications in preference to using a local school server approach. For more on this schools are welcome to email [ictadvice@oide.ie](mailto:ictadvice@oide.ie)

- Buying combined peripherals e.g. all-in-one scanner/printer is not only more cost effective but also more energy efficient.
- Interactive flat screen technology is a popular technology in schools in lieu of interactive whiteboards. The technology is generally LED based and thus have lower energy use. Most high quality flat screens have matte finish screens and are not prone to glare or undue negative influence by the sun. For advice on these technologies schools are welcome to email [ictadvice@oide.ie](mailto:ictadvice@oide.ie)
- Use a 7-day timer if charging student devices via classroom charging station outside teaching times, set the timer to match the charging time of the devices, this will limit energy use to the set time, assist in prolonging the battery life of the devices and reduce the potential for overheating and associated fire risks.



Classroom charging station

## Top tips

- Make use of the Power & Sleep Settings on a PC. Make the screen goes off after a few minutes of inactivity, and the computer goes into sleep mode when possible.
- Switch off the monitor when leaving a computer even for a short period.
- Ensure by means of an awareness campaign that all computers, peripherals and office equipment are switched off at the end of the day, especially Fridays.
- Use Power Management settings on photocopiers to reduce power usage when machine is inactive.
- Use laptops where possible instead of desktops as they can use only 25% of the energy.
- Close the lid of the photocopier when it is not being used.
- Use a 7-day timer if charging student devices via classroom charging station outside teaching times, set the timer to match the charging time of the devices, this will limit energy use to the set time, assist in prolonging the battery life of the devices and reduce the potential for overheating and associated fire risks.