

ICT Advice regarding 'ICT Infrastructure Grant Scheme- 2009' for Primary Schools; (Nov 2009)



This NCTE document provides ICT advice in relation to Department of Education and Science recent 'ICT Infrastructure Grant Scheme – 2009'.

This letter states that 'Funding is being provided to schools on the basis, as a priority, that':

- (i) 'Each classroom must be equipped with a teaching computer with a wireless mouse and keyboard, and a fixed digital projector' and that
- (ii) 'Only when this baseline is in place, should the funding be used to purchase equipment from the following list':

Classroom computers (schools should work towards an eventual 5:1 pupil to computer ratio)
Speakers
Visualisers (<i>also known as document cameras</i>)
Digital cameras
Digital Video Cameras
Mobile laptop trolley
Laser printer
Mobile multi-media station
Server
Scanner
Networking equipment
Interactive Whiteboards: (Factors to be considered before purchasing an IWB are available on www.ncte.ie/ICTAdviceSupport/AdviceSheets/)

This document provides priority advice below in relation to:

- ***A Teaching Computer***
- ***Wireless keyboard and mouse and a***
- ***Fixed Digital Projector***

Teaching Computer (*ie. a laptop or desktop PC*)

The teaching computer can either be a laptop or a desktop computer, which is used for teaching purposes.

The teaching computer should be connected to the school network (LAN) and to the fixed digital projector in order to access and show digital content. This will enable staff to share resources amongst different class teachers or within a subject department.

A laptop as a teaching computer:

One advantage of a laptop is ease of mobility. A laptop provides schools and teachers with flexibility of use in the classroom, resource room or teacher work room. As laptops are designed with mobility in mind, they can be easily carried to a classroom and other learning areas and connected to the fixed digital projector in that area.

A desktop PC as a teaching computer:

A desktop PC is generally assigned to a particular classroom, and located at the teachers' position. Some advantages are that a desktop PC can be fixed in position, and powered 'on' during the school day so that there is no 'powering up' delays at the start of a class. Resource material required for class can be brought to class on a USB key and plugged into a desktop PC's USB slot or alternatively a CD or DVD could be used.

Wireless keyboard and mouse

Note: This refers to a 10 metre range Long Range mouse/keyboard including a long range 'air' mouse rather than a standard wireless mouse.

A wireless mouse and/or keyboard, when used with a computer and a digital projector, enables pupils to engage interactively without having to leave their seat and be 'up at the board'. They allow the classroom teacher to distribute access and opportunities for interactivity among the pupils from their sitting positions.

The wireless mouse and keyboard referred to here uses a long range wireless technology to allow the mouse and keyboard to be used **throughout the classroom up to a distance of 10 metres**. Generally the keyboards are smaller (ie mini keyboards) and so much more easily passed round the classroom, especially for younger classes. **The technology used (ie a gyroscope within the mouse unit itself) allows the mouse to be moved up/down/sideways or at any angle or direction 'in the air' to point and click, i.e. without the need to have a flat surface available to facilitate interactivity in the classroom.**

A USB key is plugged into a USB port of the teaching computer and this communicates wirelessly to the mouse and keyboard eliminating the need for a cable. This will enable the 'long range' keyboard and mouse to work from any part of a classroom.

Wireless keyboard/ mouse

- Provides greater opportunities for the wider integration of ICT in the classroom
- Some children may be less conscious in engaging with the activity from their own desk rather than standing up in front of the class
- Teachers can teach from any part of the classroom, providing a flexibility regarding teaching styles





Credit: <http://www.flickr.com/photos/jeanbaptisteparis>

Digital Projector Framework

NCTEs Digital Projector purchasing framework is available at www.ncte.ie/projectorframework

Short Throw projectors are recommended by NCTE, though Long Throw (or portable) projectors are also available via the Long Throw (or portable) Digital Projector Framework.

Teachers generally use a digital projector, in conjunction with a laptop or desktop computer, to project the computer screen image onto a white projection surface or whiteboard. Digital projectors are extremely useful and effective teaching tools that facilitate a range of learning opportunities when connected to a desktop computer in whole class teaching scenarios. Teachers use a digital projector, in conjunction with a laptop or desktop computer, to project the computer screen image onto a white projection surface or whiteboard.

Short Throw or Ultra Short Throw digital projectors are relatively new types of digital projector and they are recommended by NCTE for use in classrooms. They are installed above the main teaching position in a classroom as shown here. If subsequently schools decide to install interactive whiteboards, the already installed short throw digital projector can be incorporated as part of the overall interactive whiteboard installation. Depending on the quality of projector, prices for short throw projectors range from approx €900 to over €1,250 each, (excluding installation) however there is a range of quality and warranties available and schools should make informed decisions. The Digital projector framework at www.ncte.ie/projectorframework provides details of products suitable for schools.



Short throw digital projector

Fixed Digital Projector

- Highly effective as a means of instruction or demonstration in classrooms, computer rooms, staff training, or parents groups.
- Presenting student work to the whole class.
- Displaying and browsing Web sites in a controlled and collaborative manner.
- Demonstrating or using educational software in a whole class context.
- In conjunction with a TV, video or internet source, a digital projector provides a means of presenting video to student/parent audiences.
- As a means of display/interaction in a classroom situation. Students with special needs can particularly benefit from material being presented visually as it can aid in both information processing and retention.
- Enhancing professional development with staff groups via large screen projection
- Image projection in conjunction with an interactive whiteboard
- Facilitating video conferencing via large screen group participation

Short throw projectors

It is recommended by NCTE that short throw digital projectors are installed in classrooms in both primary and post-primary schools.

Advantages of short throw projectors include:

- the elimination of the potential for eye damage which might occur due to children moving around the classroom and being too young to have the discipline not to look directly into the projector lens
- provides clearer visibility throughout the classroom for the teacher while the projector is in use
- reduces or eliminates shadowing effects on the whiteboard on the projection surface
- overcomes the limitations of low ceilings and the relative high cost of installation where false ceilings exist
- wall mounted short throw projectors are generally simpler to install thereby reducing the cost of installation.
- where schools are ready to purchase an interactive white board, a short throw projector, correctly installed, reduces the purchase cost of the IWB

Other Equipment

(as listed in Appendix 2 of ICT Infrastructure Grant Scheme- 2009 letter to Primary schools from the Department)

Classroom computers

Depending on the size of the classroom, a number of computers should be available for pupil use in the classroom. Classroom computers (either desktop PCs or laptops are available via the School PC and School Notebook Frameworks at the following link www.ncte.ie/ICTAdviceSupport/Purchasing

Visualiser

A visualiser, often referred to as a document camera, is a tool that enables teachers or pupils to show an image such as a diagram from a book or any artefact to the whole class by projecting it through a digital projector. For more information refer to the NCTE advice sheet on visualisers. Please refer to NCTE Advice Sheet 36 on Visualisers at www.ncte.ie/ICTAdviceSupport/AdviceSheets

Speakers

A suitable set of speakers are required for all classrooms as the speakers in computers are not adequate and don't have the required volume for a classroom. The use of a teaching computer will be enhanced if attached to a suitable sound system/speakers. It is recommended that a quality sound system, with fixed speakers at both the front and the back of the classroom or distributed so as to facilitate quality sound throughout the classroom be used.

Audio/visual equipment for shared access in schools

Digital camera/Digital video camera

Images captured using a digital camera can be transferred to a computer for viewing, slideshow creation, printing, and for filmmaking.

Mobile Multi-media station

Each primary school should be equipped with a multimedia station to facilitate the integration of audio/visual projects such as FÍS and other visual and audio based resources in learning.

Comprising of a computer with multimedia editing software, a stills and a video camera, tripod, speakers and a microphone, this equipment allows image capture, video work, digital editing and sound recording, slideshow creation, printing and filmmaking for FÍS. (www.fis.ie)

The Multimedia station is generally recommended to be a desktop PC rather than a portable laptop. A desktop PC can provide more options in terms of having a faster processor, a dedicated video editing or graphics card, and a faster disk drive, all of which largely contribute to a more powerful and faster editing and processing of video files.

The multimedia station is recommended to be mobile so that it can be used by different classes or groups throughout the school. A suitable trolley can be used for this purpose.

Other recommended ICT Equipment

Schools are recommended to have a school server, laser printers, and a scanner.

Server (or School Server)

Servers in general and schools servers in particular provide 'services' or functions to other computers via the school local area network (LAN) and are more powerful and robust than desktop computers or laptops. More common server functions include storage of files, be they school, teacher or student files, where a server acts as a 'file server' and is used for network management.

Laser Printers

Printers are among the most common ICT peripheral devices found in Irish schools. NCTE recommends using laser printers over inkjet printers. Please refer to the laser Printer purchasing frameworks for black and white and colour printers at www.ncte.ie/ICTAdviceSupport/Purchasing

Scanner

A flat bed scanner would be useful to digitise content, for example, printed photographs, newspaper articles and other content which can be used for learning and teaching.

Procurement of ICT Equipment and ICT purchasing frameworks

To assist in achieving value for money, schools are advised to refer to NCTE Advice and Support in relation to **ICT purchasing Frameworks**. These Frameworks are currently available to support purchasing of **desktop computers, notebooks (i.e. laptops), monochrome laser printers and colour laser printers**. The NCTE is also establishing a framework for the procurement of **fixed digital projectors** which will be available in the near future. Purchasing Framework are recommended to schools for the following reasons:

- Frameworks make it easier for schools to purchase ICT equipment – one simple email to the appropriate framework email address will be responded to by a list of suppliers for that framework.
- The specification of the equipment (Schools PC , School Notebook etc) is approved for schools by NCTE so schools don't have to worry about technical details. The summary details are provided on NCTE website.
- The suppliers on the framework are approved to supply and support the equipment.
- The frameworks include minimum requirements and always include a minimum 3 year warranty.
- The competitive nature of procurement frameworks means that the framework suppliers need to compete on price constantly to win the orders from schools.

Further NCTE advice is available at: www.ncte.ie/ICTAdviceSupport/Purchasing. Schools should check this section of the website regularly as framework prices and specifications are updated from time to time.

Additional ICT Advice

Additional information on the ICT equipment listed in the document can be found on the 'ICT Advice and Support' section of the NCTE website, where approx' 40 ICT Advice Sheets are available. The link is: www.ncte.ie/ICTAdviceSupport

Networking: (and Networking equipment)

The school network connects the range of ICT devices in a school so that each can connect to and communicate with other sections and devices. The network facilitates online digital content to be accessed from the web via broadband link from any classroom. Networks can be wired, wireless or a combination of both. Networking equipment generally consists of network switches, or wireless access points for wireless networks. However other related equipment includes **data backup equipment**. All important data in a school should be backed up. This is to avoid loss of data through either human error or failures in technology.

More information related to this area can be accessed at www.ncte.ie/SchoolNetworking/

Considerations & Recommendations on Interactive Whiteboards

An Interactive Whiteboard (IWB) is a large, touch-sensitive (thus interactive) board that, when used with a combination of a computer and digital projector, facilitates interactive ICT engagement. It resembles a traditional whiteboard in appearance. The computer, connected to the interactive whiteboard, can be controlled by touching the board directly or by using special pens. It is generally accepted that the use of IWBs in the classroom can lead to an increase in pupil motivation to learn and can assist in making learning a more stimulating, enjoyable and a more interactive experience.

School and teacher readiness

IWBs have the potential to be an exciting and useful addition to a classroom. However the extent to which their potential can be realised is dependent on the ICT capabilities of the teacher to use it

effectively. **Teachers should have prior experience of using a range of ICT equipment and resources in the classroom and should also attend professional development in the effective use of IWBs.**

Subsequently, research will be required to identify online resources and lots of preparation time will be necessary if the board is to be used well and to guard against superficial interactivity in the classroom.

Purchasing Priorities and first steps

Schools which have classrooms without digital projectors or teaching computers should prioritise ICT equipment purchases in line with the classroom configuration recommended in this document. In summary, fixed digital projectors should be a high priority in classrooms. Digital Projectors provide good value for money and are essential to ICT enabled classroom learning, as well as being a prerequisite for an interactive whiteboard at a later time. Digital Projectors are used in conjunction with a teaching computer and are required for all classrooms. Given the range of costs per IWB package (from €1,500 to over €4,000 per classroom) schools should consider whether or not they are in a position to make full use of the boards or whether they should, as a first step, provide baseline technology configurations in classrooms.

Costs of interactive whiteboards packages

When purchasing IWBs schools should request details from a number of vendors in order to obtain best value for money. There are a number of related elements associated with an interactive whiteboard package, and costs vary depending on the package being purchased. The main elements are an interactive whiteboard itself (range of sizes) the digital projector, a sound system, software and resources package, installation, warranty, spares (eg lamp units, pens) and training. Lower cost packages from some vendors generally include some of these elements whereas some of the higher cost packages may include all of these elements.

The technologies used in the boards themselves are either finger touch and/or pen touch.

Boards come in different sizes. Digital projectors vary from lower cost standard models to higher cost short throw or ultra short throw models. There is a range of software packages available to suit Primary and Post Primary schools. The training provided can vary from basic training on how to interact with the board to pedagogically-focused training given by experienced teachers.

Laptop Trolley

The purpose of a laptop trolley is threefold, namely to a) securely store, b) provide power and recharge and c) provide ease of mobility to a set of school based laptops. When not being used by staff and/or pupils laptops can be securely stored/locked and simultaneously recharged so as to provide maximum availability to different group with in the school.



Laptop Trolley