

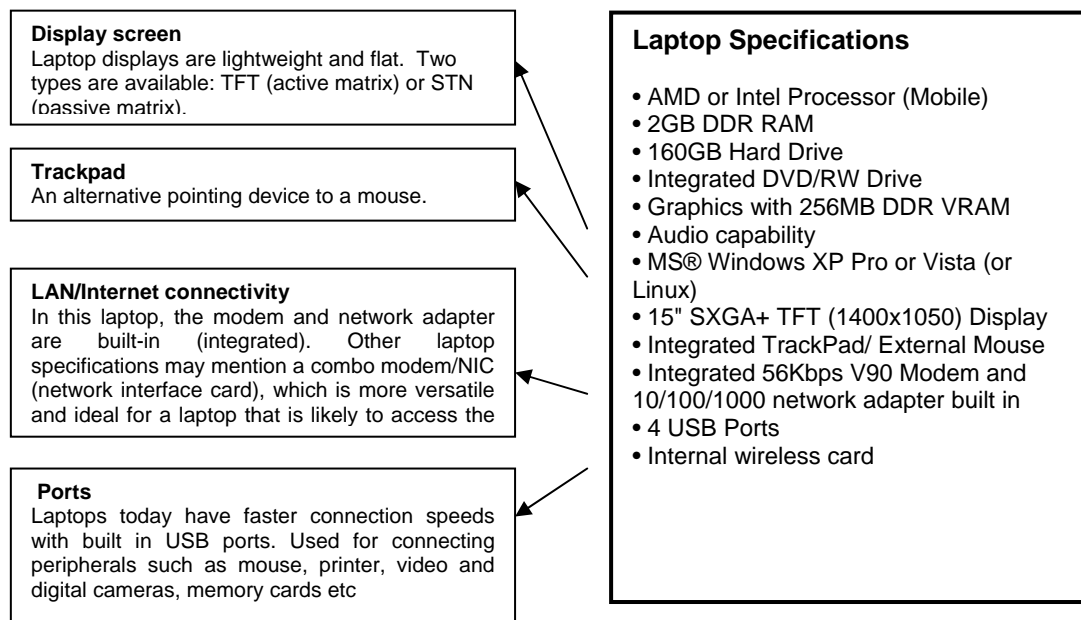
Laptops



What is a Laptop?

A laptop is a general term referring to a computer that has a built-in display and keyboard and is intended to be a portable personal computer. A laptop computer runs the same operating system and software applications as a larger desktop PC, but it is considerably smaller in size and lighter in weight. Today's laptops weigh between 2-10 lbs and can incorporate a wide array of modern technologies. Furthermore, a laptop contains a battery, which allows it to be used away from and one can use either term interchangeably.

The specifications of a laptop are very similar to those of a PC and the same basic criteria determine its functionality (i.e., processor speed, amount of memory and storage space). Refer to Advice Sheet 2 for more information on general computer specifications. However, there are a few components that are unique to laptops (i.e., pointing devices, display panels and external devices) and it is these items that are discussed in this advice sheet.



Possible Educational Uses

The roles of both teacher and student are changing with the introduction of laptops into the classroom because laptops have the potential to empower children in unique ways.. Laptops are both a window and tool: a window into the world and a tool with which to enhance learning. The technology offered in a laptop can be used to teach and to learn, to create and to share.

There are several advantages to using laptops in schools but one of the most notable is the fact that they offer an alternative to traditional computer room scenarios. Although highly portable, their processing power is in no way compromised. They can, in fact, perform like any desktop PC but have the advantage of being more readily integrated into classroom situations or learning activities. When laptops are connected to a digital projector, teachers or students can easily incorporate presentations or multimedia resources into lessons. This is especially useful in a second-level environment where teachers may frequently move from class to class, although classroom management issues do need to be considered in such situations.

Advantages of Laptops

The following are some of the main advantages of laptops:

- Provide flexibility in timetabling rooms.
- Laptops are a viable option where space is an issue.
- Provide mobility to facilitate individual work.
- Can be located in different locations in the school.
- Laptops can support group work.
- Provide access across the school curriculum.
- Provide internet access in a wireless network.

For Teachers

Giving teachers the option to take laptops home from school gives them the flexibility to work and upskill themselves (in terms of their IT skills) according to their personal schedules. They can prepare lessons, carry out administrative tasks and evaluate educational software programs in a more independent manner. A laptop connected to a multimedia projector is a very useful tool for presenting and demonstrating material in the classroom. Laptops are also a convenient way of connecting to the internet by cable or wireless connection.

For Students

Students can use laptops in two ways — they can use them in class as part of an integrated lesson, which can be either teacher- or student-directed, or they can use them at home where their use is totally student-centred. Allocating laptops for student use on a full-time basis can be advantageous for the following reasons:

- Students can explore their preferred learning styles independently
- Students can collaborate on assignments with peers via email
- Students can prepare and present homework or project work using multimedia
- Students can access learning support if educational software programs are made available for home use

Within school time, students can use laptops constructively in the following ways:

- As a personal support tool for those students with special needs, enabling them to participate more fully in mainstream classes
- To manage student-directed learning more efficiently
- To enable 'anywhere anytime' computing and communication via wireless networking technology, particularly when conducting project work

Technical Considerations

Essentially, a laptop is a fully functioning computer squeezed into a small case. Its portability does come at a price though and this price–performance trade-off should be given due consideration prior to purchase. Other significant issues include the following:

- A laptop will not be as powerful as a similarly priced desktop computer
- Upgrading components in a laptop is not as easy as with a desktop (i.e., increasing the storage capability)
- A laptop is more vulnerable to damage given the fact that it is moved around constantly. Some laptops are designed to be more robust to take on board use in classroom like environments
- Laptops are available with the majority of operating systems such as Microsoft XP pro, Vista Pro, Apple Macbook OS X.5 and various Linux & Ubuntu flavours

Laptops can be categorised into notebooks and sub-notebooks, although these lines are blurring as high-end systems get smaller in size and increasingly powerful.

- Notebooks normally weigh about 2–3kg. They run on internal rechargeable batteries allowing 1 to 5 hours of computing use.
- Sub-notebooks are smaller than notebooks (the keyboard and display being significantly smaller) and usually weigh less than 2kg. They have similar processing power to notebooks and include an internal modem and add-on capabilities for peripherals.

Display Screens

Unlike most desktop monitors, a laptop display is a totally flat panel. Flat-panel technology is highly advanced, but it is also fraught with its own particular idiosyncrasies. Given this fact, laptops should be seen working before being purchased so that screen quality can be assessed. Most laptop display screens are based on either active-matrix (TFT) or passive-matrix (STN) technology.

- TFT (active-matrix) displays are shipped as standard in newer laptops. They have a wider viewing angle, provide clearer, crisper images, but they use more power.
- STN (dual scan or passive-matrix) displays are less expensive than active-matrix displays and use less power, but they tend to be more difficult to read in bright light or sunlight. Laptop screens should always be viewed from a slight angle as, occasionally, graphics and text can only be seen clearly when viewed directly from the front. Screens of this nature are not recommended, as they would hamper group work being done with the laptop.

Pointing Devices

Different laptops employ different pointing devices, the most common of which are discussed below:

- TrackPad — a small touch sensitive pad that the user touches with their finger in order to control the cursor on the screen
- TrackPoint — a small device in the middle of the keyboard that the user pushes in various directions in order to control the cursor on the screen
- Trackball — a small ball set in a block (similar to an upside-down mouse) that can be rolled in any direction in order to control the cursor on the screen
- Touch screen — more expensive laptops may come with a stylus, which can be used directly on the screen to control the cursor
- Mouse — a standard mouse can be attached to a laptop at any time

External Devices

Some drives may be external to the laptop. For example, DVD drives can either be built-in or they may be external and connected via a cable. Some companies may offer DVD drives, Zip drives or CD writers as interchangeable, 'modular' features.

Purchasing Considerations

When purchasing a laptop for school use, the teaching and learning needs of the school should determine what's suitable and what's not suitable. Consideration should be given to the following ten points when looking at the various models and specifications :

- **Expense:** Laptops are considerably more expensive than desktop computers, ranging in price from €480- 750 (inc VAT) depending on processor, memory, warranty etc
- **Portability:** While laptops are prized for their portability, they can be easily lost or stolen. Given the high cost of replacement, measures need to be taken to protect them.
- **External Devices:** Are external devices (e.g., CD/DVD drive) included in the price?
- **Mouse:** Is there a need to purchase a separate mouse? Students with special needs may find the usual laptop pointing devices difficult to manage.
- **Batteries:** Notebooks use either Ni-MH (nickel metal hydride) or Li-Ion (Lithium ion) batteries, the latter being more expensive but superior to others. Some systems allow a second battery to be inserted instead of another component, such as a floppy drive. This could be a useful feature if the laptop is likely to be used away from a power source for extended periods.
- **External Monitor/Projector:** It is advisable to check if the laptop has a monitor connector (socket) as this allows an external monitor or Digital Projector to be connected directly to the laptop.

- **Warranty:** Read the warranty agreement carefully and be familiar with the technical support provided. A three year warranty, including next business day and including 'on site', parts and labour is recommended.

The use of laptops in schools empowers the learner with the necessary skills for participation in the information age society.

Relevant Web Sites

Laptops Initiative (Engaging Learners)

www.laptopsinitiative.ie/

This site is dedicated to sharing the learning from an Irish initiative aimed at enhancing literacy and inclusion in second-level schools through the use of mobile ICT. It complements the 'Engaging Learners' book and DVD that resulted from the Laptops Initiative and provides details on these and other sources of information about the project. The site is also intended as a forum for opinion and discussion on the integration of mobile ICT and related matters.

CNET Reviews

http://reviews.cnet.com/Notebooks/2001-3121_7-0.html

Details, reviews and prices from a wide range of Laptop manufacturers

Wikipedia

<http://en.wikipedia.org/wiki/Laptop>

This website includes an introduction to laptops, history of laptops, categories, related devices, laptop parts, upgradeability, security, brands and manufacturers.

Note: While the advice sheets aim to act as a guide, the inclusion of any products and company names does not imply approval by the NCTE, nor does the exclusion imply the reverse. The NCTE does not accept responsibility for any opinions, advice or recommendations on external web sites linked to the NCTE site.

This Advice Sheet and other relevant information are available at:

www.ncte.ie/ICTAdviceSupport/AdviceSheets