

**THE GOOD GUIDE TO  
INTERACTIVE WHITEBOARDS**

**HELP SHEET 1: INTRODUCTION TO INTERACTIVE WHITEBOARDS**

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**Helpsheet 1: Introduction to Interactive Whiteboards**

**Helpsheet 2:** Classroom Organisation

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**Helpsheet 4:** Organising your Computer

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**Helpsheet 7:** Training

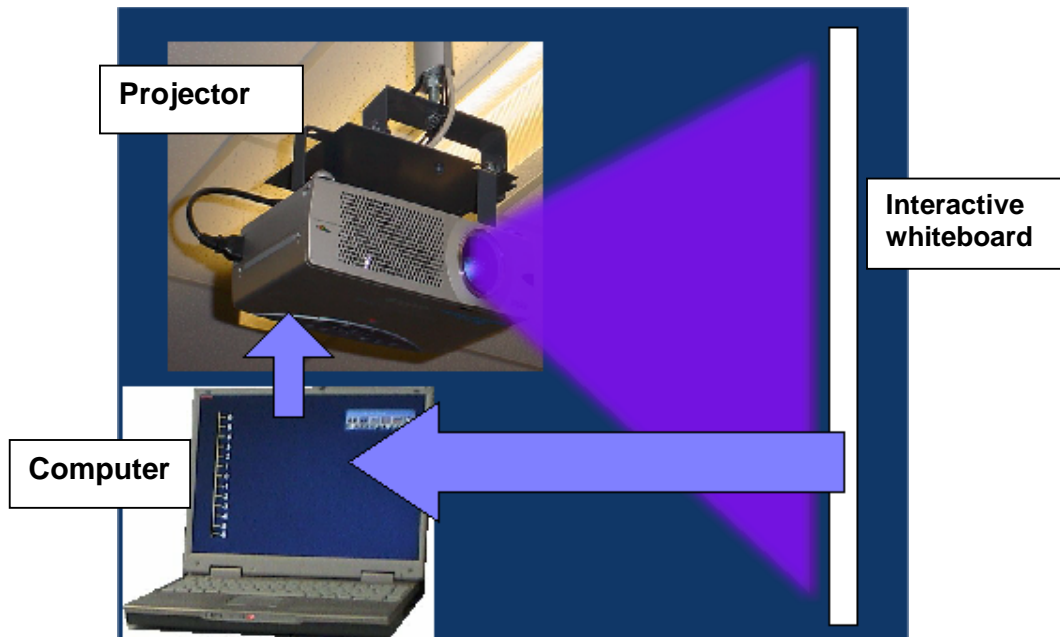
**Helpsheet 8:** Top Tips

**INSET Pack:** This pack is designed to help you organise a half day's training in school, from which it will be possible to develop an 'Interactive Whiteboard Action Plan'.

This helpsheet is designed to be used in conjunction with "The Good Guide to Interactive Whiteboards" audio-visual CD ROM. It may be photocopied and distributed within Educational Establishments. It can not be sold or reproduced by commercial organisations or for profit.

## What is an interactive whiteboard?

An interactive whiteboard is a way of controlling your computer from a board at the front of the classroom.



- 1) The computer is connected to a projector and to the interactive whiteboard.
- 2) The projector shines the picture of the computer screen onto the whiteboard.
- 3) The whiteboard is digitally interactive and as it is touched with either a pen or in some cases a finger, the computer thinks that this is a mouse click. In fact, it is possible to think of the pen or the finger touching the board as being a mouse.

### What does this mean for the user?

The fact that the computer can be controlled from the board means that everything that is used on that computer can be displayed in front of a class: CD ROMs, Word documents, PowerPoint files, the Internet or specialist software for a subject area. It also means that the teacher and the pupils can interact with the computer directly from the board.

If the computer is linked directly to **speakers** and a **video player**, multimedia resources can also be used in lessons. Sound files and video clips can be used to support any aspect of the teaching in a lesson.

These multimedia resources can be

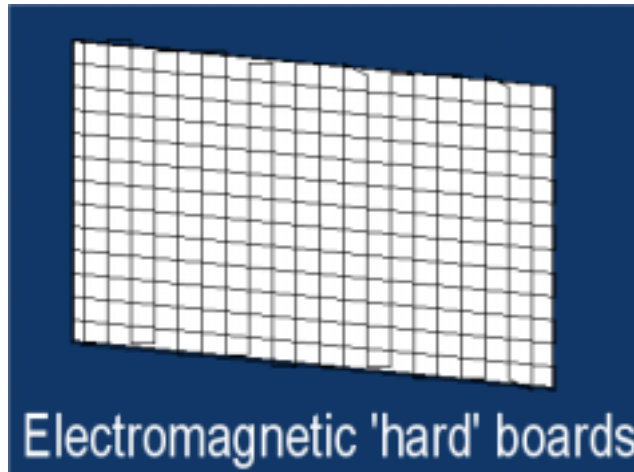
- 1) played from the video player through the data projector (although comments and annotations can not be added if working in this mode because the data projector is switched away from the computer channel to the video)
- 2) digital resources on the computer (for example: 'wav' sound files or 'avi / mpeg' movie files). If these are used, then other whiteboard software can be used in conjunction with them to facilitate annotation. (See section on Resources)
- 3) Files from the internet, such as 'Flash' files, which use sound and animation. Again, these can be used in conjunction with whiteboard software.

There are distinct advantages to using type '2' and '3' and you may want to look at issues of digitally encoding some of your existing audio and visual material.

## Which sort of board should we buy?

There are many different brands of interactive whiteboard currently available, but only two types of technology – electromagnetic and resistive.

### 1. Electromagnetic



Some boards have solid fronts with a grid of copper wire behind the hard cover. This type of board uses electromagnetic technology and always requires a special pen. These boards are often called 'Hard' boards.

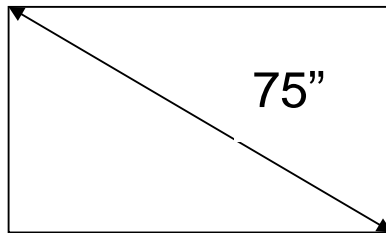
### 2. Resistive



The second type is often called a 'soft' board. They use something called 'resistive technology'. The board surface consists of two sheets of resistive material separated by a small air gap. When you press on the board with your finger or a pen, you close the air gap and thus register a contact point. This contact point's coordinates are sent to the computer.

### How do we make a decision about which type to buy?

- **Try various board types**
  - All boards feel and react slightly differently with differing levels of sensitivity and accuracy and teachers may find they feel more comfortable with one type than another.
  - Also think about the pupils. They will also use the board and, depending on the age group, manual dexterity and ability, they may prefer one type over another. This applies not only to how the board feels but how the pupils will be able to exploit the properties and resources of the board.
- **Size:** Think about the size of the board in your classroom. The larger the board, the larger you will be able to display your computer screen. Being able to see text and images clearly is essential if pupils are to understand the ideas that are being communicated. You need to look at the size of your classroom and decide how big your board needs to be. In general, the bigger the better. Boards are measured across the diagonal, typically in inches:



You should find out what the 'projectable area is – this is the area that can be projected onto.

- **Software:** look at the software that comes with the board. Different boards come with different software packages. You should look at the abilities of this software, the resources and the 'tools' (pen colours, highlighters, screenshots etc.) Look through all the helpsheets and highlight the key features which would assist your teaching.
- **Colleagues:** It is best to agree on one board type for the whole schools where possible as it helps with sharing resources and technical support from a school technician. However, if you already have a board in school – are you happy with it or do you want to try a different type? Have you spoken to colleagues at other schools or your LEA adviser? What do they recommend?
- **Other equipment:** The board is only part of the installation. You will also need to look at the computer and the projector. See the installation section for more details on this.

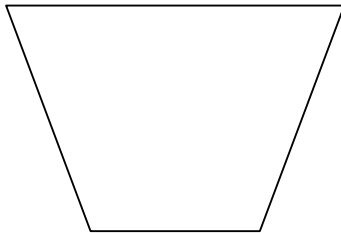
This is a very important decision. The board will become one of the main tools you use in your classroom and you need to be sure you have made the right decision.

## Installation

Correct installation is essential to ensure that the board is safe and to facilitate correct usage. A good whiteboard company will be able to advise you on many aspects of installation, but the following points should all be covered.

- 1) **Health and safety:** A whiteboard is a piece of electronic equipment and as such there are some risks involved. Trailing leads, faulty electrical sockets or poorly mounted boards / projectors could all pose potential risks to the users. Before installation the following should be considered:
  - Check safety of all electrical sockets and relocate any sockets if they are not in the correct place. Running extension leads across a classroom can pose risks.
  - Trailing leads. Keep this to a minimum by using trunking.
  - Installation: Where possible, ensure that projectors and boards are fixed by a professional team. Mobile boards pose greater risks than fixed boards and projectors.
  
- 2) **Where in school to install:** It is important to decide which classroom will be home to the new interactive whiteboard. In research, teachers have told us that they make most progress once they use a board full-time. This may create difficult decisions in school but in the long-term, it may be a more successful strategy. The school should have a policy on where new boards will be placed as they are acquired and a way of ensuring that all staff do have opportunities to observe and use the board(s).  
 In general, a computer laboratory is considered to be one of the least desirable rooms for a board. A teacher in an ordinary classroom can achieve a great deal with a board and a single computer. In a computer laboratory, pupils will spend most of their time working on the computers and the board will be little used.
  
- 3) **Mobile or fixed:** A mobile board has the advantage that staff can share the resource, but the following disadvantages have been highlighted by teachers:
  - a. Set-up time for the board (typically 10minutes) can detract from lesson time
  - b. The projector and board are easily moved which means taking time to re-align the board
  - c. There are more leads and wires trailing and these will need trunking, taping with gaffer tape but still pose an increased risk over a fixed system.
 Many schools which began with a mobile system have since had the whiteboards and projectors fixed and noted improved usage of the boards.
  
- 4) **Location of board in classroom:** The board should be located as centrally as possible, with space around the board for the teacher and pupils to move. Items such as chairs, tables, bookshelves and other storage units should not be kept away from the board. In primary schools, a carpeted area for sitting in front of the board can be useful. In secondary schools, pupils should be able to turn their chairs to see the board easily. The section on Classroom Organisation deals with this in more detail.
  
- 5) **Height of board:** The top of the board should be easily accessible to users and this may mean that the board is mounted lower than a traditional whiteboard. Many menus for software are located at the top of the screen and having to return to the computer because the user is unable to reach an area of the board is frustrating.

- 6) **Projector:** The quality of the projector selected is very important as it dictates the quality of the image on screen. The following things should be considered:
- a. **Lumens** – this is the brightness of the image. For interactive whiteboard use, teachers have recommended 1500 to ensure good quality images. You may want to look at a filter to prevent ‘glare’ from the projector if you are using this brightness.
  - b. **Sound capabilities** – Many projectors can now also act as speakers. This can boost the sound level in the classroom.
  - c. **Lamp life** – this refers to the length of time a bulb will last (subject to suitable maintenance). Typical lamplife would be between 2000-4000 hours. Replacement costs (typically £250+) should also be examined.
  - d. **Resolution** – The two most common resolutions at present are SVGA (good quality) and XGA (better quality). These differences are reflected in the price with SVGA retailing at around £800 - £1000 and XGA at £1200 to £2500.
  - e. **Weight** – This can be important for portable projectors as the lighter they are, the easier they are to transport. It can also be a consideration if they are to be ceiling mounted as it may affect the way in which the projector is fixed.
  - f. **Installation** – You will need to look at the ceiling in the room where the board is to be located. Is the ceiling solid or ‘suspended’? Are there joists or ceiling tiles? The type of ceiling can affect installation costs and should be discussed with your board supplier.
  - g. **Upside-down projection** – If the projector will be ceiling mounted, it may be fixed upside-down and there should be an option to flip the image so that it appears the right way up.
  - h. **Keystoning**- This happens when the projector is projecting at an angle (named after the shape of a keystone in a bridge!)



Can the projector you are looking to buy correct a ‘keystone’ projection? This means it would straighten the image to make it rectangular.

- i. **Image throw distance** – How far can the projector shine the image? This affects where the projector needs to be sited.

In selecting a Projector, your whiteboard supplier should have the best advice available, but do ensure that you get what you really want and not just an inferior projector where the price has been reduced. Try talking to two or three companies before making your decisions.

## 7) Security

Another major consideration is security. Projectors and computers are valuable items and sadly, many have already been stolen from schools. Look into ways of protecting your valuable equipment.

## Maintenance

There are some issues relating to maintenance of the board system:

- 1) **Cleaning projector filters** – The Projector sucks in air to cool the system. With this air, it also sucks in whatever is in the air - dust, hair and skin particles for example. If the filters become 'clogged' with this material, it means that the cooling system does not work properly and there is a risk that the bulb could overheat, substantially shortening its life. Bulbs are expensive (typically £250+) so keeping the filters clean not only protects the projector but also saves money.
- 2) **Spare bulbs** – Every so often the bulbs will need replacing. Spare bulbs should be kept or school in school or there should be a way that they can be replaced quickly and easily. If the projector bulb does not work, neither does the whiteboard. This can be very disruptive to teaching. Check whether there is any sort of guarantee with the bulb and, if so, are there conditions that govern this guarantee? This is a tricky area and it pays to be aware of exactly what is bought and how your purchase is protected.
- 3) **Ordinary whiteboard markers** - Use of ordinary whiteboard markers is not recommended with most interactive whiteboards. Some manufacturers do make a point of saying that you can use an ordinary whiteboard marker, but the question must be asked: "Why invest in technology, so that you can do what you did with your old, traditional whiteboard?". If you are uncertain about what you can use on your board, check with your supplier. If a marker pen has been used in error, check with your supplier about the best way to clean the board.
- 4) **Aligning the board** – The projector needs to be aligned to the whiteboard and a series of points touched (either with a pen or with a finger) to 'teach' the computer where the projected image is on the board. This process is often called 'calibration' or 'orientation'. If the cursor and the pen/finger do not match when touching the board, then the board will need to be realigned. This needs doing much more frequently with a mobile board where it is easier to move the projector or the board by mistake.

## Total Board Cost

When purchasing an interactive whiteboard, there is the sum of money for the whiteboard (typically around £1400 (Jan 04)) but, there are other sums which should be taken into account in order to ensure proper use and ongoing usability of the board:

<b>Essential Features</b>	Interactive Whiteboard
	Computer
	Data Projector
	Installation (include rewiring costs and trunking)
	Maintenance costs (staff time in cleaning filters), spare bulb for projector
<b>Important Features</b>	Networking of the Computer to provide network and internet access
	Training
	Security
<b>Desirable features</b>	A range of software tailored to curriculum requirements
	Peripherals, which could include: <ul style="list-style-type: none"> <li>• speakers,</li> <li>• video player,</li> <li>• remote keyboard, mouse or control mechanism,</li> <li>• science or technology equipment</li> <li>• voting devices</li> </ul>
	Data transfer facilities (such as a USB storage device or CD burner)

### THE REVIEW PROJECT

*Research & Evaluation of  
Interactive, Electronic  
Whiteboards*

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The REVIEW Project is based at the University of Hull, supported financially by 'nesta' (National Endowment for Science, Technology and the Arts) and Promethean Ltd. The Project has been undertaken in collaboration with the Midlands Leadership Centre, University of Wolverhampton.

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