Wedgwood IT Group

Whiteboard guide

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Whiteboard guide

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Whiteboard introduction

Standard whiteboard

It's all a matter of evolution

In the beginning there were classroom blackboards on which the teacher/presenter wrote with chalk so that everyone in the room could see. Then came whiteboards with marker pens, which did the same job but looked neater and without chalk dust all over the place. The drawback with both whiteboards and blackboards is that the only way to save what was drawn was to copy it onto paper.

Flipcharts, another progression on which the presenter wrote and drew on large pieces of paper, so the presentation notes could be kept afterwards. This is especially useful during brainstorming sessions when ideas brought forward need to be kept (or there would be no point in brainstorming).

Copyboard with printer

Electronic copyboards look just like regular whiteboards but have the ability to print out what is drawn after the presentation. The copyboard prints onto A4 paper so that notes can then be handed out afterwards. Alternately, A4 sheets can easily be photocopied and distributed.

Copyboards have evolved further so that they can be connected to computers. The presentation can then be printed, saved, edited and emailed. This works by loading the software that comes with the whiteboard onto the computer. The copyboard then connects into one of the computer serial ports with the supplied cable. Everything that is drawn on the whiteboard is subsequently downloaded to the computer for saving and printing.

Standard whiteboard conversion system

Devices are also available to convert normal whiteboards into copyboards.

Front projection interactive whiteboard

Interactive whiteboards can act in the same way as copyboards, but are designed to work with a computer and multimedia projector. A multimedia projector takes the image that is normally displayed on a computer screen and projects it onto a large white projector screen. This allows everything that would appear on the computer screen to be seen by everyone in the room.

They are called ‘multimedia’ projectors because you can also use them with a video source such as a video recorder, DVD player or satellite system. Interactive whiteboards replace the usual white screen and projects the computer image directly onto it. The ‘interactive’ part is that the whiteboard becomes one huge touch screen. A computer is normally controlled by a mouse but you can touch the interactive whiteboard to control the mouse cursor instead. As you move your finger across the whiteboard, which displays the computer image, the mouse cursor follows. You simply tap the screen twice with your finger to perform the normal double-click as you would do with your mouse. This is great as you can do all this from the front of the class or meeting room.

Setting up an interactive whiteboard is straightforward. Connect the serial cable into a serial port on the computer and load the touch screen software with the CD that comes

with the whiteboard. Connect the projector to the monitor port on the computer and project onto the whiteboard. You then run the whiteboard software on the computer which guides you through a 30-second 'registration'. 'Registration' simply means that you put your finger onto crosses projected onto the interactive whiteboard so that the touch screen knows where the mouse pointer should go when you touch part of the screen. All have full instructions and are easily set up. You don't have to be a computer expert.

All interactive whiteboards come with software so that you can use it as a copyboard as described above. Run the software and you can then write or draw on the whiteboard with your finger or the pens provided and save it onto the computer. Most software also has built in OCR - Optical Character Recognition software. This means that you can write on screen and the computer will recognise your handwriting and turn it into computer text (just like the text you are reading now).

Interactive whiteboards come in two basic forms, front projection and rear projection. Front projection whiteboards (see picture above) have the projector in front of the whiteboard. The only drawback with this is that if the presenter stands in front of the screen, they will cause shadows. Rear projection positions the projector behind the whiteboard so that no shadows occur. This gives a neat finish in a boardroom and the whiteboard just looks like a huge computer monitor. In-wall rear projection system and rear projection cabinets are available.

Plasma screen with interactive overlay

Plasma screens are large, thin computer monitors generally 42" or 50" in diameter. Interactive touch screen overlays are available for these that give the same functionality as an interactive whiteboard.

Guideline costs

Normal whiteboard	£10+VAT upwards
Flipchart with stand	£80+VAT upwards
Copyboard with built-in printer	£800+VAT upwards
Copyboard that connects to computer	£900+VAT upwards
Standard whiteboard conversion kit	£500+VAT upwards
Interactive whiteboard (front projection)	£1000 – 2000+VAT plus £1800+VAT upwards for data projector
Interactive whiteboard (rear projection)	£7000 – 12500+VAT plus £1800+VAT upwards for data projector
Interactive overlay for plasma screens	£2000+VAT for overlay plus £4000+VAT for 42" plasma screen

The above price and prices quoted elsewhere in this publication are guideline costs only for evaluation purposes. For current products and prices please visit

www.interactive-whiteboards.co.uk

www.plasmascreens.co.uk

www.multimedia-projectors.co.uk

Interactive whiteboards

Front projection interactive whiteboard

Front projection interactive whiteboards

As you can see from the above picture, the projector sits in front of the whiteboard and shines the computer image onto the screen. In this example the projector sits on the table, but projectors can also be ceiling mounted. This is called front projection. Rear projection is where the projector is out of site behind the whiteboard. Rear projection is extremely expensive in comparison.

Front projection whiteboards range in size from around 47" to 77" in diagonal size. They come either with a wall mount bracket, desktop stand or floor stand on wheels. Portable versions are also available for presentations on the move. These tend to be around 47" screens to keep the weight down. You still need to take a computer with you, usually a notebook, and also a projector which can weigh as little as 1.3kg.

Setting up an interactive whiteboard is very straight forward and all come with full instructions:

- Plug in and switch-on the whiteboard, computer and projector.
- Connect the computer to the projector with a single cable (provided).
  This projects the computer image onto the whiteboard. You will just have to adjust the focus and zoom to get the projectors image to fit of the whiteboard nicely.
- Connect the serial cable provided from the whiteboard to the serial port on the computer.
  Easy to follow diagrams come with the whiteboard.
- Load the software CD that is included with the whiteboard, onto the computer.
  This software talks you through the registration of the whiteboard, which just involves touching the whiteboard on a series of crosses. Registration lets the whiteboard know were the cursor is on screen.

The computer software only needs loading once on either a desktop or notebook computer. The software will work with both PC's and Apple Macintosh computers.

Rear projection interactive whiteboards

Rear projection cabinet interactive whiteboard

Rear projection interactive whiteboards work the same as front projection whiteboards. The difference is that special screen material is used because the projector is mounted behind the whiteboard. Rear projection cabinets, like in the picture above, have the projector mounted in the cabinet under the screen and use a series of mirrors to project the image onto the screen.

There is also room in the cabinets for a computer base-unit, video recorder/DVD player and many have cable management systems for connecting to visiting laptop computers. (Visiting laptop computers will need to load the software from the whiteboard CD).

Rear projection in-wall system

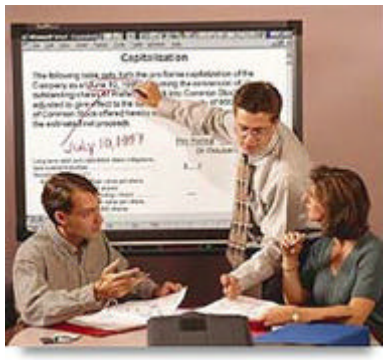
In-wall systems are also available where the rear-projection whiteboard is built-into a wall that has an area behind it to house the projector. Partition walling, i.e. a false wall, is usually used. This gives a wonderful effect of a huge computer monitor on the wall.

Interactive whiteboard uses

An interactive whiteboard can be used in four ways:

- As a large touch screen when used with a multimedia projector. Software packages such as Microsoft Word, Excel and Powerpoint can be projected from the computer onto the interactive whiteboard. These programs can then be updated, saved and amended as normal using your finger or special pens. You can also annotate the projected image to highlight areas and capture these onto the computer.
- As a copyboard that connects to a computer so that notes can be printed, saved and emailed
- As a conventional whiteboard
- As a projector screen

Applications in presentations and training



- Write over the top of programs to highlight and annotate points (see picture above)
- View and navigate the Internet from the whiteboard. Surf and display websites which the entire room will be able to see
- Students/audience members can approach the whiteboard and add their contribution to the discussion
- Present ideas to large audiences
- Display movie files or DVD's from the PC
- Work on word processing documents, spreadsheets or design projects with your colleagues
- Can be connected to video conferencing systems

Stands and wall mounts

Most interactive whiteboards are priced without either a wall mount or a floor/table stand. Make sure that your preferred mounting option is included in any quotes you may receive. Floor stands can cost from £200 to £500 (guideline price).

Technologies

The interactive whiteboards needs to know where you are touching the screen. Interactive whiteboards use one of two technologies for this. The technologies are:

Resistive technology - Two pieces of resistive material with a small gap between then are used to detect where a person touches the screen. The co-ordinates correspond to the area on the computer monitor. Whiteboards based on resistive technology do not require a special stylus to write on the board, a finger can be used just as well. Smartboard interactive whiteboards use this technology.

Electromagnetic scanning technology - This uses special pens and the frame of the whiteboard detects where the pen is on screen. Because of this, if the whiteboard screen is damaged you can just replace the screen. The electromagic interactive whiteboards normally come with several pens. Hitachi Starboards and TDS Activboard interactive whiteboards use this technology.

Choosing a multimedia projector to go with your interactive whiteboard

An interactive whiteboard without a projector attached is just a copyboard. If you do not already have a multimedia projector you will need to purchase one at the same time as the whiteboard. There are over 100 different projectors on the market, so below are the main points you will have to find out before you purchase one:

Brightness - This is measured in ANSI lumens. For most class and meeting rooms you will need a brightness of around 1000 ANSI lumens. This will allow you to have the lights on and the blinds open in most average sized rooms.

Computer resolution - You need to buy a projector that has the same resolution as the computer you will be using with it. Most computers use 800x600 pixels (called SVGA) or 1024x768 pixels (called XGA). To find out what resolution your computer used then follow these instructions on any Windows PC:

- Click on 'Start' then 'Setting' then 'Control panel'
- Double click the 'Display' icon

- Click on the 'Settings' tab
- Look at the 'Desktop area' section to see if it is 800x600 or 1024x768

You can also use multimedia projector and interactive whiteboards with Apple Macintosh computers.

A basic projector with 1000 ANSI lumens and SVGA 800x600 pixel resolution will cost around £1800+VAT. An XGA 1024x768 pixel projector will cost around £2500+VAT. These projector prices are guidelines.

If your computer uses XGA 1024x768 resolution and your budget is only large enough for an SVGA 800x600 projector, then you can lower the computers resolution to SVGA 800x600. This can be done by following the instructions above but move the slider in the 'Desktop area' to 800x600 and click on 'Apply'.

Interactive overlays for plasma screens

Plasma screen from the side

A plasma screen is a large 42" or 50" widescreen monitor which has the advantage of being very thin so that it can be hung on walls. Plasma screens can be used with computers and video recorders/DVD players etc.

Plasma screen with interactive overlay

Plasma screens which have an interactive overlay on them work in exactly the same way as interactive whiteboards. The advantage of using a plasma screen is that a shadow is not made by the presenter as he/she gets with front projection interactive whiteboards. Plasma screens also have a lifespan of around 30,000 hours use. Projectors used with interactive whiteboards only have an average of 2,000 hours lamp life and lamps for most projectors cost in the region of £350+VAT each. Guideline prices.

The biggest disadvantage with the plasma screen is the screen size. A 42" screen will cost in the region of £4000+VAT and the overlay £2000+VAT. Compare this to a 70" interactive whiteboard at £2000+VAT and a basic projector at £1800+VAT and the plasma screen works out more expensive. A 70" interactive whiteboard will allow for larger audience sizes than a 42" plasma screen. Plasma screens give a far neater finish in a board room environment and far superior pictures when using video recorders, satellite systems or DVD players to show television or video.

For more information on plasma screens for use in pubs/clubs, retail environments, for presentations, as display boards and home cinema use, then please visit www.plasma-screens.co.uk

Video conferencing

Interactive whiteboards and touchscreen plasma screens can also be connected to video conferencing equipment. The same computer image can then be displayed at every location connected. Any notes made can then be saved to computer and emailed/faxed to the other locations. When looking into video conferencing equipment do make sure it will work with interactive whiteboards.

Copyboards

Overview

Electronic copyboards look just like regular whiteboards but have the ability to print out what is drawn after the presentation. The copyboard prints onto A4 paper that can be handed out to people attending your presentation. Alternately, A4 sheets can easily be photocopied and handed out. The built-in printer sits just under the copyboard (see above picture).

Most copyboards have an optional pack that allows them to be connected to computers. The packs include cables and computer software. The whiteboard images can be downloaded to the computer and printed, saved, changed, faxed and emailed all over the world. This works by loading the copyboard software onto the computer. The copyboard then connects into one of the computers serial ports with the supplied cable. Everything that is drawn on the whiteboard can then transferred to the computer.

Unlike interactive whiteboards, where there are many manufacturers, most copyboards sold in the UK are Panasonic Panaboard copyboards.

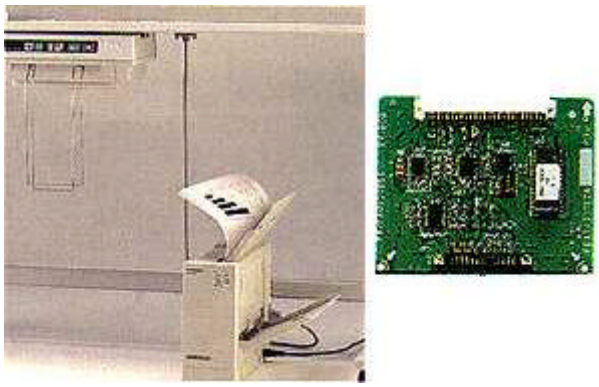
Thermal or paper copyboards

Most copyboards have a built-on printer that allows instant printing of what has been drawn. Like fax machines, these come in two types. Thermal printers print onto thermal fax paper. Paper printers print onto plain paper using ink cartridges that have to be replaced when they run out. Plain paper is obviously a nicer printout, but you can always photocopy the thermal printout for handouts.

Stands and wall mount brackets

You will also need to purchase either a wall mount bracket or floor stand with your copyboard.

Optional printer interfaces



Some copyboards allow you to attach a normal laser or inkjet printer to print out notes rather than use the built-in printer. You don't need to have a computer attached to do this, although most require an optional printer board at additional cost. This has its advantages as laser printers are very cheap to run when producing large amounts of handout notes from the image on the copyboard.

Whiteboard to copyboard conversion kits

New devices have come onto the market that stick onto standard whiteboards (with rubber suckers) to turn them into copyboards. You can then connect them to a laptop or desktop computer to download whiteboard drawing to. Again, the notes can then be saved, printed, faxed and emailed.

You use specially designed pens to write on the whiteboard which uses infra-red and ultrasound technology to determine where on the whiteboard you are writing. These devices are extremely portable and can be used on any whiteboard.

Schools and ICT

A history lesson with Mr Aston

There was a buzz of excitement as Mr Aston entered the history classroom to teach his next class after lunch. His students were all looking at the new objects in the room.

"What's that, Sir?" came a chorus from all directions.

"Wait and see" replied Mr Aston, "Now settle down. Today's class is about the Great Fire of London".

A look of boredom immediately spread like a wave through the assembled faces. The students began slowly opening their text books to the relevant chapters. Mr Aston waited a moment.

"Books away. There's to be a change this lesson."

Mr Aston pressed the 'On' button on the remote control in his hand and light shot from the projector onto the interactive whiteboard at the front of the classroom. The class woke up as the light on the whiteboard slowly turned into a computer image on the screen. The screen was red with the words "The Great Fire of London" written in white writing. The students were clearly intrigued.

"This is what is known as an interactive whiteboard. The projector you see on the desk is taking the picture from the computer and showing a PowerPoint file I created earlier on this most interesting of subjects", said Mr Aston.

"Corr. That would be great for games, Sir" said one of the students to laughter from around the classroom.

"That's not a bad idea" said Mr Aston looking thoughtful, "but since computer games weren't invented in17th century London we won't be playing any today".

He thought to himself that playing the Windows Minesweeper program on a screen this size would be worth seeing.

Mr Aston went over to the interactive whiteboard and tapped on the screen once with his finger. The next slide in his PowerPoint presentation then dissolved onto screen with an audible computer 'ding'. The students were looking intently at the new slide which asked the question "Where did the fire of London start?"

"Where did the fire of London start?" said Mr Aston "Does anyone know?"

The usual lack of response as no-one knew the answer was no real surprise.

"I want you to remember this question and the next five".

Mr Aston then tapped on the whiteboard again and showed the next slide with another question. He repeated this another four times with time for the students to read the questions in between.

"Time to watch a short program on the Great Fire".

One of the students asked where the television had gone. Mr Aston pressed the video button on his projector remote and the PowerPoint presentation disappeared. He then picked up a video recorder remote and pressed play. The video started and the television program on the Fire of London appeared on the whiteboard. Because the screen was 70" in diameter rather than the normal 28" television they usually used, everyone in the classroom could see the video with ease.

"We'll leave the lights on for this video, so that you can make notes of the answers to the questions your just saw."

It was still possible to see the screen with the lights on because of the brightness of the projected image.

The program was half an hour in length and the students seemed to enjoy a video for a change. Mr Aston then stopped the video recorder and pressed the computer button on his projector remote control. The PowerPoint presentation returned to the whiteboard. Mr Aston tapped on screen and, as this was the last slide, his PowerPoint presentation finished. He then went to PowerPoint's menu bar with his finger. The mouse cursor followed his finger across the screen. He tapped the screen once at 'File' on the menu bar and then tapped once on 'Exit' on the menu that appeared. PowerPoint shut down leaving the familiar Windows desktop on screen.

Mr Aston then loaded the copyboard program that came with the interactive whiteboard. Up came the program with a large white area on the screen. He then picked up a special whiteboard pen and wrote the first question he had asked on the board in red. His handwriting was well known to his students, as they had watched him write on the blackboard in history lessons for four years now.

He then tapped the question with his finger and a black box appeared around it. To the class's amazement he tapped on a small letter 'A' in the corner of the black box and his handwriting disappeared and was replaced by computer text.

"Who wants to answer the question on the whiteboard?" asked Mr Aston.

Many hands shot up and he pointed at a small boy who hurried over to the front of the class to the whiteboard.

Mr Aston handed him another pen which wrote in blue ink this time. The boy wrote the answer on the whiteboard and Mr Aston talked him though converting his writing into computer text.

Mr Aston got different students to write the questions and answers on the whiteboard. He asked a series of new questions whose answers were contained within the television program the students had seen earlier.

Mr Aston decided that he would like all the students to have copies of the questions and answers on screen, as he thought these would be useful to the students later for exam revision.

He used his finger on the whiteboard to select 'File' and 'Print' on the screen. The 'Print' dialog box appeared on screen. He wanted 20 copies, one for each student. He clicked on the number of copies box to highlight it. He then pressed a button that was on the side of the whiteboard. A keyboard appeared on the screen and Mr Aston pressed the 2 and 0 on the screen keyboard to enter the number into the 'Print' box. He then tapped on 'Print' and the laser printer next to the whiteboard started turning out the first of the 20 sheets.

A bell sounded heralding the end of the lesson. It has gone quite quickly, for a change. He asked one of the students to hand out the printouts before the students left for their break before their next class. It had been a good lesson. Mr Aston pressed the 'off' button on the projector remote and the interactive whiteboard picture disappeared.

Mr Aston was very pleased with himself. He had been given lessons on general computer use and a short course on the Powerpoint program. The schools computer technician had only spent 20 minutes showing him how to set-up and use the new equipment. It seemed so straightforward that he wondered why he had ever felt nervous of all the new technology.

He had plans to use the interactive whiteboard to show students how to research history projects using computer encyclopaedia programs such as Microsoft Encarta. He even thought about connecting to the Internet and showing the students websites of museums, National Trust country houses, and how to find information on local history. Endless possibilities to teach students and learn more himself at the same time.

Allowing himself a smug smile, Mr Aston enjoyed his coffee break testing out Windows Minesweeper. Just in case the Head wants to know how it works, he grinned to himself.

Resources

Whiteboard guide

If you have found this Whiteboard Guide to be useful and would like to share it with your colleagues or give it away on your website, then please feel free to do so, provided the guide is kept in its original form and not amended in any way. Copies of this guide can be found at www.interactive-whiteboards.co.uk

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