



How to use an

Interactive Whiteboard

really effectively in your
secondary classroom

Jenny Gage

- Examples from real classrooms
- Demonstrates different ways of teaching
- Cross - curricular materials
- Applies to all major types of whiteboards
- Practical resources on CD



How to Use an Interactive Whiteboard Really Effectively in Your Secondary Classroom

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How to Use an Interactive Whiteboard Really Effectively in Your Secondary Classroom

Jenny Gage



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To Eileen Furby

a fantastic head of department, who first gave me the opportunity and
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Foreword

In 2003, when the mere mention of an interactive whiteboard (IWB) brought a flutter to the heart of every ever-hopeful, hard-pressed ICT co-ordinator, Stephen Twigg, the then Minister for Schools, announced the provision of £25 million for the purchase of IWBs for schools. The following January, the then Secretary of State for Education, Charles Clarke, announced a further £25 million to be made available. The total £50 million was split between primary and secondary sectors, and secondaries were equipped with a department's worth of 'free' IWBs, projectors and speakers. Enterprising schools, such as the technology college in which I work, didn't miss the opportunity. My college chose a department with the most number of rooms, thus gaining the maximum number of 'freebies' allowed!

All this investment was due – it was explained by the Secretary of State at BETT 2004 – to studies undertaken at several universities up and down the country, each of which concluded that teaching with IWBs resulted in more focused learning and more students on-task than is usually the case otherwise. As if to underline the importance of the initiative and to provide an added incentive, the DfES has introduced new flexibilities on the use of Devolved Formula Capital Funding, from which schools are able, should they deem it a priority, to purchase ICT infrastructure and equipment, including interactive whiteboards, the rationale being that schools are best placed to decide where the money is spent and allow local solutions to be matched to local needs and priorities. Hands up how many of you are working in schools where, during a heavy shower, the water runs down your lovely new IWB because money was diverted away from the proposed new roof job! All this government spending and recent focus on interactive technologies must surely have some substance. There must be something in it.

In February 2005, the DfES published the 14–19 Education and Skills White Paper in which it sets out the importance of the use of interactive whiteboards in improving teaching and learning opportunities across the whole curriculum. It points out that the integration of the IWB encourages teachers to manipulate the

technology in order to encourage and develop active learning and extend the range of teaching styles. It also emphasises the importance of whole-class teaching strategies including teacher modelling and demonstration, prompting, probing, promoting questioning, managed whole-class discussion, reviewing of work in progress to reinforce key points emerging from individual and group work, and whole-class evaluation in plenary sessions.

The White Paper concludes that interactive whiteboards are powerful teaching tools that have the potential to:

- ⊙ enhance demonstration and modelling;
- ⊙ improve the quality of interactions and teacher assessment through the promotion of effective questioning;
- ⊙ redress the balance of making resources and planning for teaching; and
- ⊙ increase the pace and depth of learning.

One point deserves to be stressed from the outset: an IWB in the hands of a mediocre teacher is only going to offer mediocre learning experiences. In the hands of a skilled, imaginative and dedicated teacher learning and engagement are limitless. Technology, no matter how advanced, is never going to replace a good teacher; it can only enhance and extend teachers' skills and abilities. If you have any doubts about why you should be involved, just consider that children today live in a fast-moving, multimedia world where change is the norm. As teachers, we have to compete for their attention and their engagement; we have to embrace and use every opportunity to get and hold that attention. As teachers already using interactive technologies successfully in their classrooms have found, learning can acquire a new rigour and pace, with students actually competing to get to the front of the classroom in order that they get to interact first!

There is now an extensive range of commercial and non-commercial digital resources that teachers can use to enhance teaching and learning. E-learning credits (eLCs) are available to help schools purchase high-quality, curriculum-specific resources, and the pedagogical quality of the packages available continues to improve. Teachers do not need to spend as much time creating their own resources but they do need to know where to find them, how to adapt them for their own lessons and how to develop their teaching strategies to exploit them.

This book sets out to provide you, the teacher, with practical help and assistance in understanding the IWB and explains how it can do for you what it seems to be doing for your colleague along the corridor. It offers practical, hands-on tutorials and advice on the best use of IWB software tools. It also provides advice on choosing, purchasing and installing an IWB, not because it assumes that you, personally, might have to make important resourcing decisions for your department/school, but that you are informed enough to be able to influence the decisions made by

others through understanding what you need in terms of hardware/software provision in order to do the job effectively. Most importantly, it looks at what you need to consider when integrating the new technology into classroom practice, including an outline of the various systems available, and offers practical information on the use of, and training to use, interactive whiteboards, as well as advice on their strategic management.

The future

Interactive technologies are here to stay and will continue to evolve. The current technology, which must employ a data projector and a touch-sensitive or matrix-type whiteboard, will probably give way to the fully interactive, wall-mounted, touch-sensitive plasma screen. Like a huge multimedia monitor it will act as a display and sound system for whatever computer is connected to it and be far more reliable than today's current offerings. But don't scrap that dry-wipe board just yet – or what will you use when the inevitable power failure occurs? It is sure to happen during your Ofsted inspection!

Chris Drage
Cisco Regional Academy Manager,
EiCAZ ICT support teacher,
ICT Journalist and author

About the author

Jenny Gage has worked for the Millennium Mathematics Project (www.mmp.maths.org) since 2001. Based in the Mathematics and Education Faculties of the University of Cambridge, the MMP works to help people see how exciting maths can be, and to provide a range of projects to help them enjoy maths. Jenny's role is to organise the Motivate videoconferencing project (www.motivate.maths.org), which provides videoconferences and accompanying project work for school students of all ages on a variety of mathematical and scientific topics. She also develops mathematical resources for the interactive whiteboard and gives courses for teachers on using an interactive whiteboard in the maths lesson.

Before working for the MMP, Jenny was a teacher for 15 years, teaching maths in schools in Derbyshire, Milton Keynes and Buckinghamshire. She also worked for the Open University for 15 years as a tutor on a number of maths courses. From 1998 until 2004, she carried out research for her PhD on how graphic calculators could help children in the 10–14 year age range to learn the basics of algebra.

When she isn't working, Jenny enjoys playing the piano, choral singing and going to concerts, and she always has at least one book on the go, often a thriller or a travel book. There is always time to read! She also enjoys exploring new places, both in the UK and abroad. Jenny is married with four grown-up children and two cats.

The Interactive Whiteboard CD-ROM

Minimum requirements to run the CD-ROM:

PC only

700 MHz

64 Mb RAM

CD-ROM

Windows 98 SE, 2000, XP Home or Pro (SP1)

Mouse or pointing device

In addition you will need Microsoft Office 2000 (or better). Smartboard or ACTIVprimary software to actually use the templates included.

If your CD does not start automatically after a few seconds, explore the CD and open the file “START.EXE”.

Users who have the software Macromedia Flash MX studio or other Macromedia Flash authoring software may experience difficulty in opening ACTIVprimary work files when they click on the activity buttons of the CD-ROM. In some cases, the Macromedia software may attempt to (incorrectly) open the files.

This difficulty is due to both types of software using the same file extension (.FLP).

As a workaround the user may either:

- ⊙ Uninstall the Macromedia Flash software
- ⊙ Open the ACTIVprimary software and locate the following folders on the CD-ROM:
 - MATHS__RESOURCES
 - ENGLISH__RESOURCES
 - OTHER__RESOURCES

The files can then be opened from within the ACTIVprimary software.

CD materials can be found at www.routledge.com/9781843122623

CD Resources

Resource Name	Type(s) of file in which it is available	Linked files (e.g. Excel, Dynamic Geometry)	Curriculum area	Features	Notes
Acids_alkalis	AS2, SMART, StarBoard		Science	Sorting activity	Properties of acids and alkalis, pH scale
Angle_estimation	Excel		Maths	Uses random numbers, reveal answers by moving chart	Estimation of angles – various degrees of difficulty
Arciple	AS2, SMART, StarBoard, PowerPoint		Maths	Use of circle annotations to simplify a problem for generalisation	Problem adapted from one on nrich.maths.org
Arithmetic_practice	Excel		Maths	Uses random numbers, reveal answers by changing font colour	Various degrees of difficulty
Circuit_symbols	AS2, SMART, StarBoard		Science	Use eraser tool to reveal hidden labels	
Coins_Investigation	AS2, SMART, StarBoard, PowerPoint	Excel	Maths	Linked spreadsheet	How many ways can you make £1?
Das_Wetter	AS2, SMART, StarBoard, PowerPoint		MFL, German	Use of images to stimulate conversation	
Difference_two_squares	AS2, SMART, StarBoard, PowerPoint	Excel	Maths	Linked spreadsheet, images to reveal using eraser or animation	Looking at patterns, finding a formula and proving it
Directed_number	Excel		Maths	Uses random numbers, reveal answers by changing font colour	Image of number line to facilitate

Resource Name	Type(s) of file in which it is available	Linked files (e.g. Excel, Dynamic Geometry)	Curriculum area	Features	Notes
Egyptian_arithmetic	PowerPoint		Maths		Egyptian division and fractions
Energy	AS2, SMART, StarBoard, PowerPoint		Science	Images to stimulate discussion	Advantages and disadvantages of energy sources
Factor_game	AS2, SMART, StarBoard, PowerPoint		Maths		Game – factors, primes
Finding_formulae	AS2, SMART, StarBoard, PowerPoint		Maths		Formulae from geometric patterns
Finding_information	AS2, SMART, StarBoard		English		Match question with source of information
Fractions_decimals_ratio	Excel		Maths	Uses IF formula to give feedback	Displays fractions and ratios as images, checks if equivalent
Graphs_background	AS2, SMART, StarBoard		Maths	Template	Blank sets of axes
Graphs_equations	AS2, SMART, StarBoard, PowerPoint		Maths		Graphs and equations to match
Graphs_template	Excel		Maths		Bar graphs, pie chart – display your own data
Handling_data	AS2, SMART, StarBoard, PowerPoint		Maths	Copy and paste from one page to another	Create/interpret a frequency polygon from data
Heart	AS2, SMART, StarBoard		Science	Hidden labels to reveal using eraser tool	Labelled heart diagram
Hot_cold_cubes	PowerPoint		Maths	Animations	Investigate addition/subtraction of directed numbers
Investigating_Fibonacci_numbers	AS2, SMART, StarBoard, PowerPoint	Excel	Maths	Linked spreadsheet	Investigate connection between Fibonacci numbers and Pythagorean triples
Investigating_quadratic_graphs	Excel		Maths	Use of sliders	Investigate how coefficients relate to shape of graph
La_Casa	PowerPoint		MFL, Italian	Images and text to stimulate conversation	
Magic_square	AS2, SMART, StarBoard, PowerPoint		Maths		Investigate a magic square with a difference – can lead to use of algebra

Resource Name	Type(s) of file in which it is available	Linked files (e.g. Excel, Dynamic Geometry)	Curriculum area	Features	Notes
Matching_expressions	Starboard		Maths		Sort expressions into groups which are always the same
Parts_of_speech	AS2, PowerPoint		English	Hyperlinks between pages	Identify parts of speech – feedback given
Past_tense	AS2, SMART, StarBoard		MFL, French		Match parts of the past tense
Periodic_Table	Excel		Science	Use View>Full Screen	
Population_statistics	AS2, SMART, StarBoard		Maths/Geography	Copy and paste from one page to another	Create/interpret cumulative frequency graph of contrasting demographics
Pythagoras	AS2, SMART, StarBoard, PowerPoint	Geometers Sketchpad	Maths	Linked DG file	Demonstrate and prove Pythagoras' Th
Reflections.flp	AS2		Maths	Reflection in a horizontal/vertical axis	
Religions	AS2, SMART, StarBoard		RE	Images to promote discussion	
Roman_Emperors	AS2, SMART, StarBoard, PowerPoint		History	Images to promote discussion	Create an obituary of a Roman Emperor
Squares	AS2, SMART, StarBoard		Maths		Strategy game – squares do not need to be horizontally based
Squares_investigation	AS2, SMART, StarBoard, PowerPoint		Maths		Investigation of number of squares on a 'chess board'
Straight_line_equations	Excel		Maths	Uses sliders	Gives feedback on equations of straight lines
Student_Spanish	PowerPoint		MFL, Spanish	Linked sound files	Exemplar of using student work/sound files
Student1_French	PowerPoint		MFL, French	Linked sound files	Exemplar of using student work/sound files
Student2_French	PowerPoint		MFL, French	Linked sound files	Exemplar of using student work/sound files
Theories_Universe	PowerPoint		History	Animations	Aristotelian and Copernican theories