Interactive Whiteboards: new tools, new pedagogies, new learning?

Reflections from teachers

John P. Cuthell, PhD

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Executive summary

In February 2003 an online questionnaire was posted on the MirandaNorth and Virtual Learning websites asking for data on the use of Interactive Whiteboards (IWBs) in education.   It was publicised across a number of listservs and message boards until November 2003.   More than 100 responses were received: data was drawn from 90 of these.

✳ 28% of respondents were from Primary schools
✳ 50% from Secondary schools.
✳ Promethean ACTIVboards were the most widely installed IWBs in schools (74%) and constituted 100% of the total in British Council Language schools.

Only a few Initial Teacher Training providers in Higher Education responded.   Since IWB installation in Higher Education was seen as the province of Computing Services, non-pedagogical factors determined the choice of board.   Teacher trainees are not necessarily being prepared for the IWBs used in schools.

There was a wide variation in the number of IWBs installed in classrooms.   Some schools had equipped all classrooms; others were in the process of doing so.   There was a trend in secondary schools to install a board in each department.   Other schools had installed boards in dedicated rooms that were available for booking.   Others were in ICT suites.

✳ The majority of Primary schools (54%) had between 11 and 15 boards installed.
✳ 47% of Secondary schools had 20 or more boards installed.

Teachers were most enthusiastic about use of the boards when they had one in their own classroom.   This was particularly true in Primary schools, where teachers felt that they had been empowered.   Teachers whose only use of the board was in an ICT suite, or on an occasional basis, experienced little change in their teaching style or the ways in which their students learned. All teachers who used the boards commented on the positive impact on their lesson preparation, range of resources used, delivery and the effects on student learning.   These effects had continued even after students had become used to them.

Teachers were able to support a range of learning styles and intelligences with the use of IWBs. Most teachers felt that the learning in the classroom had become more interactive and students more engaged with the learning process.   Interactive Whiteboards use is most effective when it is available for the whole of the teaching day.

Since this survey was self-selecting it should not be seen as indicative of schools in England.

Background

In February 2003 a questionnaire investigating the use of interactive whiteboards by teachers was posted on the Virtual Learning and MirandaNorth websites. The questionnaire was publicised on the MirandaNet site and MirandaLink, with the request that it be distributed as widely as possible. At the end of ten months ninety responses had been collated, the majority of which were submitted in February, May, October and November. The group was self-selecting: all were users of various makes of interactive whiteboards. In no way could the responses be described as representative of the teaching profession and interactive whiteboard users as a whole. The survey nevertheless indicates some trends in uses of the technology, and teacher attitudes towards them. The questionnaire is contained in Appendix One.

The number of whiteboards installed in schools is varied. Whilst the finance available may well be the greatest constraint in adopting this technology it would also appear that schools are initially installing small numbers of interactive whiteboards in order to evaluate their effectiveness.

Primary schools

Number of boards installed		
1 – 5	6 – 10	**11 – 15**
39%	7%	**54%**

Type of board					
Promethean	Smart	Hitachi	RM	Mimeo	Other
71%	17%	2%	4%		

The majority of the boards – 87.5% – were fixed. Only 12.5% of the schools used portable boards. Distribution of boards across each school varied: 53% of schools had interactive whiteboards installed in all classrooms; 11% in all classrooms and the hall; 24% in some classrooms and 12% in ICT suites only.

Secondary schools

Number of boards installed					
1 – 5	6 – 10	11 – 16	**20+**	30+	50+
26%	16%	11%	**26%**	8%	13%

Type of board					
Promethean	Smart	Hitachi	RM	Mimeo	Other
68%	16%	3%	3%	3%	5%

Only 15% of secondary schools utilised portable interactive whiteboards: most schools by far – 85% - used fixed boards and projectors. No secondary school teachers who responded to the survey evidenced all classrooms fitted with IWBs: however, however, 80% were sited in classrooms, 6% in each department, 3% in Science labs and 11% only in ICT suites.

Higher Education

Number of boards installed (5 institutions)			
1	2	4	6
1	2	1	1

Type of board					
Promethean	Smart	Hitachi	RM	Mimeo	Other
23%	8%	54%			15%

80% of the boards used in Higher Education were installed in classrooms and ICT suites: 20% were portable.

Teacher Perspectives: Effects of Interactive Whiteboards on Teaching and Learning.

The majority of respondents were extremely positive about the effects of IWBs on teaching and learning, particularly those from Primary schools.   This is to be expected: to complete an online questionnaire about the effects of IWBs on teaching and learning presupposes an enthusiasm for the technology, together with an interest in the changes these can effect within the classroom. There was a strong link between the levels of enthusiasm and the number and location of boards within a school.   The vast majority of school respondents were extremely enthusiastic about the technology.   Those comments that were critical were from those with a limited number of boards, which had been allocated to an ICT suite or a bookable resource, which elicited the least enthusiastic response.   *…they have not changed the way I teach at all. I use the board to teach and demonstrate new computer skills to 5-8 year olds.   (Primary) … I lack training and time to practise.   (Primary) … some teachers very wary and find it hard to see how to use it creatively.* (Secondary)

These responses illustrate the difficulties of fully integrating the technology with personal praxis when access is limited.   As one Primary teacher commented: *At my previous school had I a board in my classroom – this was much easier to manage as I could make full use of it whenever I wanted rather than only in specific time slots.*

The effect of having an interactive whiteboard as an integrated part of teaching and learning is illustrated by this comment from a Primary school teacher.   … I *couldn't do without it. All my teaching and planning is done using the board -obviously where appropriate! Broadband Internet access into the classroom has dramatically improved the use of interactive web based resources. The Learning changes include higher motivation, lower stress and good collaboration.   Visual, Aural and Kinaesthenic learning models (VAK) are powerfully supported by the use of the board. There are noticeably improved individual ICT skills, as a result of 'immersion' in ICT.*

The Primary classroom, where the board is the site for teaching and learning, has produced the biggest changes.   The feedback from teachers reflects the impact that the boards have had on their professional practice and student learning.   Teachers see students interacting with lesson presentations, whilst peer support has become more apparent.   What the introduction of IWBs in many classrooms has enabled teachers to do is to reflect on the ways in which they teach.

My teaching is now much more visual which helps to support all children in my class, and particularly those with hearing, visual or speech and language difficulties. I use it for whole class, group, independent and individual work. I now prepare my literacy resources for the whole week

in one flipchart which allows for easy review of keywords, objectives and plenaries. The "ooooh" factor from the children has still not worn off after 8 months!

The activities support a range of classroom organisation styles. Teachers comment that the children have an opportunity to be far more active in lessons. The role of the teacher has been transformed by the ways in which ICT technologies can be integrated through the board. Instant images from digital cameras enable students to incorporate them into investigative work.

Secondary school teachers demonstrate similar levels of enthusiasm. One reports that, after having taught for ten years, the use of an IWB has radically changed the way in which he teaches. Interaction with texts and themes is encouraged by student use of the board. Work can be displayed for collaborative writing and editing. The use of embedded links has expanded the range of information and stimuli available for teachers to use with learners, and revision of key concepts can be incorporated in every lesson.

The focus here is rather different from the comments of primary teachers who use their boards throughout the day with the same class. The nature of the secondary school curriculum produces a focus where the teachers see the technology as empowering them, with the transformation of learning taking place 'inside the students' heads', rather than in terms of the activities and organisation of the classroom. The interests of the teachers are the subjects that they teach.

Despite this, there are consistent comments that have been made regarding changes in student learning: that students are able to participate in lessons more easily; that teaching in 2 and 3 dimensions facilitates understanding and that support for a wider range of learning styles is identified as an important contribution that the boards make to the classroom environment. The 'fun' element has returned to the classroom.

What these teachers have identified are those aspects of learning styles that are difficult to meet in a conventional classroom: the Visual and Kinaesthetic aspects of learning so easily supported through interactive whiteboard technology. There is an awareness on the part of all of these teachers that the individual learning needs and styles found in the students whom they teach are more effectively met by the facilities offered by the boards that could be otherwise. As one commented, … *after 2 years of use, it would be hard to do without it …*

The teachers who are most heavily committed to the use of IWBs all stress the relationship between lesson preparation and successful deployment within the classroom: that lesson preparation is facilitated and that materials can be re-used. This focus on preparation frees time within the lesson for the teacher to address the process of learning, rather than the content that

has to be learned. *The investment of development time is soon repaid. More effective and efficiently delivered lessons allow more time to work with individuals or small groups with needs.*

The ability for teachers to be creative, and to use their ICT skills to promote learning for their students, rather than simply for teaching specific aspects of the ICT curriculum, is something that particularly appeals. For those teachers who have daily use of an interactive whiteboard in their classroom, then, *Promethean whiteboards are worth their weight in gold! I would find it difficult to go to a school without one now. Pupils use the board to actively learn.*

The view from one City Learning Centre is that the opportunity for increased pace of lesson and interactive teaching and learning has transformed the subjects that have embraced their use.

Transforming teaching?

It is clear from all of the comments from teachers (see Appendix One for full details) that teaching has been transformed by the use of interactive whiteboards. The transformation is most clearly seen in those who have daily access to a board in their classroom. Even those, however, who only have access to the board as a bookable resource have seen their teaching transformed.

* The visual element transforms the teaching of subjects such as Mathematics, Geography, Science, ICT and Design Technology. If students are able to move through the stages of a process and visualise each one, then concept acquisition is enhanced.

* Interactive language games involve the whole class: passivity is greatly reduced, and boys become much more engaged with the lesson.

* Teachers enjoy the process of building lesson resources that involve their creativity. This creativity extends to the classes they teach.

* Resource banks and lessons can be re-used and distributed through school networks for colleagues and students alike.

This is a tool, then, that empowers teachers in the process of teaching, and as such transforms classroom praxis.

Few providers of Initial Teacher Training responded to the survey. Of those who did, none saw themselves in a position to develop effective IWB pedagogy for new teachers. In part, this was a result of purchasing and operating decisions for IWBs being taken by central computer services in the university, and therefore out of their hands. This is reflected in the disparity between the makes of IWBs used in schools, and those used by Higher Education.

Transforming learning?

All of the teachers who responded to the survey felt that learning had been transformed. They spoke of the support for the range of learning styles, the fact that lessons became more interactive, and that learners had a role within the classroom as something other than passive recipients of knowledge. This was seen as the greatest transformation of learning effected by IWBs. The definition of interactivity for learners, however, has proved to be a slippery concept. A number of outside observers have commented on the apparent lack of student involvement in the learning process. The role of teaching is being transformed – and reinforced – by the use of the boards. Students, however, are still sitting in their desks, unless empowered by the teacher to interact with the board.

The dichotomy, then, is between those teachers who feel that learning is interactive and has been transformed, and outside observers, who cannot see much transformation or interactivity. It may well be that teachers who report a transformation in the learning process, more involved and interactive students and more effective learning outcomes are using a previous pre-IWB base for their comparison. It should also be borne in mind that these teachers are making comparisons in the context of working with a prescriptive curriculum, and that the IWBs provide them with ways in which to be creative, make teaching more effective and learning more fun. In summary, then, these teachers feel that learning has been transformed.

✸ V-A-K models (Visual, Aural, Kinaesthetic) are powerfully supported by the boards.

✸ ICT skills are seen in context to support learning.

✸ Learning involving data – charts, graphs, diagrams etc – is more effective.

✸ Investigative learning is facilitated.

✸ Students can participate in lessons.

Conclusion

Where teachers have access to an interactive whiteboard in their classroom, and can base their teaching around it, their reactions are unfailingly positive. The boards are seen as technology that empowers them, affords them creativity and enables them to provide learning experiences that meet the needs of all of their students. Those schools that have boards in all their classrooms have seen the greatest effects: those that have limited resources that have to be shared, or where they are restricted to ICT suites, have seen the least impact on the ways in which teachers teach and students learn. Despite that, there have been changes in teaching and learning within those specific areas.

Teachers who have most enthusiastically embraced interactive whiteboards are those who have the ICT concepts and skills necessary to maximise their implementation.   Teacher creativity is an integral part of effective classroom use.

Where Interactive Whiteboards are installed in every classroom, and where the teachers have the ICT skills and training to use the boards, there is a transformation in the way in which they view teaching.   The technology has empowered them.

If learners are to use the affordances offered by IWBs and become interactive autonomous learners then classroom organisation and the role of students needs to move away from a model based on curriculum content and didactic teaching.   The problem is not with the technology, but rather the ways in which we choose to use it.

Appendix One: Teacher reflections

Primary

I couldn't do without it. All my teaching and planning is done using the board -obviously where appropriate! Broadband internet access into the classroom has dramatically improved the use of interactive web based resources.

Any Learning changes:

higher motivation. Lower stress. Good collaboration. VAK learning models powerfully supported by the use of the board. Improved individual ICT skills. 'Immersion' in ICT.

Lessons have been more 'animated 'as well as more visual. Images & diagrams can be explained more effectively on the 'big screen' even if they are in the text book. I also make use of the screen for video clips - no disruption of the class as everyone can see and are already sitting in the right places.

It does mean more work initially but the material can be saved and adjusted with ease.

Managing the resource library can be a problem as the material accumulates!! Also allows pupils to be able to read your writing when using 'Handwriting Recognition' plus the ability to take quick print outs for those who write slowly - e.g. when giving out homework instructions.

Pupils have larger, more colourful images & diagrams to help them understand topics being studied. Ability to vary colours of background & writing helps those with learning or colour difficulties. Pupils being able to manipulate objects/diagrams on the board facilitates their understanding & is also useful for cloze and revision work.

The fact that material can be easily recalled also helps those who were absent or didn't understand to 'catch up'.

The white boards mean a lot more work but have added an extra dimension to one's armoury of ways and means of teaching/explaining topics to pupils.

Yes, much more interactive, moving things about, links to the Web etc.

Yes, those that learn visually have a much better chance of retaining and understanding the information

Less photocopied material.

More interactive teaching rather than didactic.

Better prepared lessons and suitable material.

They are more focussed on the task on the board.

They enjoy seeing the gadgets in use.

I can have full lesson content planned and ready to show. Am completely reliant on computer system working!

Can keep children interested for longer with visual stimuli

Think they are a fantastic resource

I used a data projector before the whiteboard was installed so had used the PC to access internet and other computer programs to resource lessons. The whiteboard lends itself to my teaching style so I'm not at all sure they have changed the way I teach - they have extended the range of resources I can bring to any lesson. I probably prepare my resources with more care and plan in greater detail than I used to. It also allows me to share resources with other classes very easily.

It allows them access to a wide range of stimuli - visual, auditory. Broadband Internet access is a must. The interactive potential is worthwhile for some children, our mainly EAL intake benefit from wide range of material available to teachers to extend language development.

Children seem to gain in areas with visual input - charts, graphs data etc. Art is a big winner - looking at and discussing pictures etc. Maps and mapping.

Children and staff motivated by the technology.

INSET v. important if you're going to get the most from the kit. If you spend £4,000 on hardware you should spend the same on support!

Promethean v. supportive.

More lively and motivating teaching.

More thorough and enabling far more modelling with children

Yes, all keen to participate in using whiteboard

Huge impact on pedagogy. ICT in every classroom-based lesson.

Lessons fully interactive. Students now are active participants.

I am currently researching the whole scale pedagogical impact of interactive whiteboards in the primary school. I would welcome any advice here and would be happy to contribute to your project in whatever way you'd suggest.

I include more "investigative" learning, where the teaching points are not merely fed to the children. I include ICT in more cross-curricular ways, such as to consolidate maths objectives, or to investigate topics. I have also used Presentation software to introduce key facts in RME and Environmental Studies.

The children see it now as a normal part of the daily routine. They are all comfortable using it. They have written on it during reading and art lessons using the write-on facility. They retain facts more easily when presented as a slide-show. Less confident children, who would not offer an answer are desperate to use the board during Interactive lessons.

Prepare materials before lessons, link easily with a previous lesson. Children are able to use materials provided.

They listen more, interactive learning,

It's exciting using an interactive white board for me as a teacher and for the children as learners.

More visual using graphics and videos rather than just talk and chalk. They have improved the teachers' writing!

Too early to assess but certainly easier for them to understand theories through more visual stimulation

Whiteboards in specific suites

The Interactive Whiteboard has introduced a new dimension in teaching and learning. Interactivity has made lessons far more interesting and the pupils and teachers more motivated.

The less able remain "on-task" for longer periods and are now eager to participate in lessons. Lessons have become much more interesting as a result of the interactivity.

I can plan at home and send my lesson by e-mail therefore not spending time at the beginning of each lesson writing out the objectives etc. I can use resources from the Internet with the whole class - a huge improvement on rushing round to see who has paper resources hidden away in cupboards.

Students find the display more interesting than using chalk/whiteboard markers. They are keen to join in. Using the board for art is particularly popular.

The projector is the most important piece of equipment. I would be happy to use a remote keyboard and mouse. This would enable me to walk around the room, not worry about casting shadows on the board and wondering whether student participants can reach the board - I could just hand over the keyboard/mouse.

Helped with presentations. More focussed on teaching than tools (i.e. whiteboard has taken away some of the need to write instructions or use board - although I still use it in conjunction with activity)

More direct interaction (i.e. I can face the class almost all the time - has improved my teaching style)

Has encouraged pupils to interact with lesson presentations

Peer support has become more apparent

Made ICT (more) fun.

My teaching is now much more visual which helps to support all children in my class, and particularly those with hearing, visual or speech and language difficulties. I use it for whole class, group, independent and individual work. I now prepare my literacy resources for the whole week in one flipchart which allows for easy review of keywords, objectives and plenaries. The "ooooh" factor from the children has still not worn off after 8 months!

The children have an opportunity to be far more active in lessons, by coming up to demonstrate or practise their knowledge using the board. They love using the board independently as a pair or group to further practise skills during working time.

I can't begin to imagine teaching without my IWB, particularly for literacy and numeracy. I'm also starting to use it more extensively in subjects such as science, history, geography and RE when I can present information and images on a large scale to the children for discussion/annotation/manipulation which helps raise their level of understanding. The use of digital cameras around school has meant that lessons such as "how we change as we grow up" in science can be covered using images of people familiar to the children which makes the whole lesson far more relevant to them.

This varies according to the individual lesson being taught. However in all lessons the materials presented are now much larger and therefore much more accessible to the children particularly those sitting at the back. On the whole I am now much more aware of the benefits of a large visual stimulus. My board allows me to move freely from one part of the lesson to the next and often previous lessons are referred to particularly if the material already taught is at the start of a flipchart.

The children are much more aware of the role of technology in their learning and have become competent when using IT themselves. They tend to focus for greater periods of time and their attention is at its best when there is an opportunity to work the board themselves.

Secondary

My lessons have changed a great deal. I rarely write anything on the board, everything is prepared in advance and presented in class.

I appreciate the move to using whiteboard technology for individual learning plans is an educationally sound one. However, I don't think the training costs and time implications are always taken into consideration. The training, not just in the technical use of the whiteboard has to be addressed, as does the pedagogic changes associated with individual learning.

quicker to get through material.

allows more opportunities for students to get involved in lessons.

makes my subject more interesting - Economics!

More hands-on learning.

Help to maintain focus/concentration.

I have taught for 10 years now and interactive boards have radically changed the way I teach. Teaching is in fact now more relaxed and less stressful. Dreading the day my bulb blows!

I am able to create much more interesting lessons as I am now able to use a wide range of resources during lessons.

Students enjoy using them during lessons for presentations or board work. They respond much better in lessons as there are more resources being used.

The ability to save work done in class by myself and pupils is very useful both to me and to pupils who can access it from the school network; secondly, PowerPoint demonstrations for grammar

and vocabulary work on the whiteboard have proven very useful, especially for teaching to all boy groups.

Amongst others - Encouraging interaction with texts and themes; it makes it easier to display pupils ICT based language work to whole class for marking and correction purposes

They encourage more student participation and allow me to use a wider range of resources

Any Learning changes:

They can demonstrate their knowledge more easily and are keener to participate.

As a geographer, the board has brought lessons to life through the ready incorporation of pictures in flipcharts, and the accessing of relevant live internet material, e.g. weather data and other geographical sites. Linked with a video player, it has also allowed large screen projection. Finally, revision lessons have been enhanced by being able to refer back to lessons when key concepts were covered.

Students have been able to participate in lessons more easily, through annotation of diagrams, adding their suggestions visually, etc.

After 2 years of use, it would be hard to do without it. I have tried online marking of work submitted by e-mail but as yet the volume by this means is low.

I can prepare and save more complicated pieces of work and use them at a later date. I can find resources from many different sources. The children use the board and therefore interact far more than with a blackboard because it does not matter if they go wrong.

There are more visual resources, pre-prepared work can be saved and it is more detailed and colourful. A whole day's work can be prepared in advance and work can be retrieved at any later date. Information can be called up from the Internet or on our own network. Children are able to use the board easier than blackboards and see words and images moving in to correct positions, helping them remember facts faster.

I love it!

Mathematical concepts can be delivered more effectively and be offered to a wider range of "learners" through audio/visual material previously unavailable with "traditional maths" teaching.

Motivation to learn through interactive lessons has increased. Teaching in 2 and 3 dimensions has enabled more pupils to understand, previously difficult to demonstrate, concepts.

The investment of development time is soon repaid. More effective and efficiently delivered lessons allows more time to work with individuals or small groups with needs.

Allow more planning to involve pupils , and increase the variety of resources from the web that I can use with pupils to engage them.

They have to participate more and can be challenged to engage, plus they see it as more fun. They become sometimes the person delivering to their peers.

Interactive boards have to have planned use to be fully effective and will as time passes require and allow the creation of e-resources. More things to spend the Curriculum On-line money on.

Pupils benefit from clear visual impact and retain information more readily

use of video recorder, scanner and printer enhanced my use of the whiteboard and has widened the resources and type of material I can use to suit my pupils

Drastically. I would find it difficult to go to a school without one now. I can give demonstrations to the whole class that I used to have to do in small group. I can show videos, websites, audio clips, etc. Pupils use the board to actively learn.

As above, they can actually write on the work, make changes, do puzzles, etc. Lessons can be saved for pupils to access later.

It's a wonderful teaching tool. Unfortunate that the expense is so prohibitive. Every classroom needs one.

I have had to/been able to become more imaginative. Greater variety of images available. As a biologist I use diagrams etc. all the time. Greater interaction between student and material, e.g. movable labels, hidden sections, ready access to Internet for research - individually and whole class. Many of the drawing tools are extremely useful.

Being immediately more appealing to the eye I hope to have both captured their imagination with a wide of diagrams, photographs, microscope images and have helped the information to "stick". They have been more involved with their learning because they can interact. The less able also enjoy the tickertape and that I let them chose the flipchart colour each week.

Although it is time consuming to assemble the material I have enjoyed the preparation. I do not like using another person's material as it is never quite how I want to teach. It is immensely useful to save a lesson's notes so that no-one should have any problem picking-up from where we left off. The screening of videos is also a great improvement on a TV. I would not wish to go

back to the old "whiteboard". The only problem is when there are problems and then one is stuck!

as the name suggests the lessons are more interactive and they let you do or show items which were not possible before

Lessons are more "fun"

Promethean whiteboards are worth their weight in gold!

Enable rapid demonstration of techniques. Children can model in front of class. Pre prepared notes etc can be stored, tweaked and used again

More visual and kinaesthetic learning going on

Could not teach without one

I use a wider range of resources

I use visual pre-prepared materials

I save resources to access next time

I involve the students more actively

They are more attentive, motivated and participate more

They experience a much richer range of materials

As an English teacher, I can visuals of texts and annotate them for analysis and to demonstrate the reading process. Writing can be developed as a group activity etc.

Teaching ICT, I can demonstrate and mark things on the image. Smartboard allows screen capture, which is useful.

Students can give presentations and can operate the board themselves in explaining answers / ideas.

I have material ready prepared.

Drawing shapes is easier

I use the internet in lessons more

Children can use it.

Lots more.

By interacting with the board they enjoy lessons more. Feedback is quicker. Lessons are more visual so they find concepts easier to understand

I have been able to create higher level activities for KS3 using the record tools and pupils enjoy using it too! I am now starting to using videos. It takes a long time to prepare but it is worth it when you see the pupils reaction! I have been using a variety of software such as Easiteach, Teaxease and Power Point. I have found some good Web sites.

Pupils are more attentive to the listening activities since they have something to watch!

Emphasis much more on preparation of materials & using internet to support whole class teaching. Lots more use of PowerPoint by me & by the pupils.

Very good motivator - they LOVE being given opportunities to present their own flipcharts or PowerPoint presentations.

Excellent for recapping prior lesson materials.

I love them but desperately want to find ways to share / create resources. My subject is RE and as a dept we are having to create all of our resources from scratch. Any ideas / suggestions gratefully received.

I am able to use modern languages software on a more regular basis. Before I could only use it when the IT suite was available.

I am able to use more colourful and authentic stimuli (ie photos, clipart etc) in order to illustrate work - much better than flashcards! The Internet is now available on my screen so teaching about the weather forecast etc. can now be far more authentic. The boards enhance interactivity - the students are able and keen to use the board too so there is the possibility for children to develop their presentation skills.

I'm also a great fan of the fact that I can store my lessons on disk and re-use them. Obviously the preparation time is an issue, but I'm happy to spend time creating the materials.

The jury is still out on this one, but anything colourful and as technologically advanced as what they have at home can only be a good thing! I'm of the opinion that the board facilitates the accessing of a variety of learning styles.

I'm in charge of training the staff at our school and would be more than happy to chat about the boards if you'd like more information. Personally I'd not like to teach WITHOUT a board now (I've had one for a couple of years). But we do have some staff who are still unsure. The main problem seems to be time. Preparation takes a great deal of time if staff are not confident. We found that training in general windows applications was necessary as saving and retrieving files proved problematic.

The ability to change the background colour is helpful for dyslexic students.

more research is needed, it engages them, they like sounds and pictures, it motivates them to learn more, for longer, many things are happening at this resource, I cannot stand back and observe them as I have to participate in the process, this is a good question.

Feedback- even year 11 students are frightened of the power centre that is the area near the teacher's space, and have to be positively encouraged to even touch the white board, and even then they have been conditioned through their school years that you do not touch the teacher's board or be punished

Special School

At the moment I am in possession of an interactive whiteboard which is on loan to me from the LEA. I think it is brilliant and I use it for about 80% of my lessons. I have now got to the point where I can't bear the thought of being without one!, and so I am hoping my school will be able to fund the purchase of one when I have to return it. Ideally I would like a wall mounted one.

CLC

The opportunity for increased pace of lesson and interactive teaching and learning has transformed the subjects that have embraced their use.

More opportunity for participation and also it provides access to a much wider variety of materials.

H.E.

We used them constantly with student who also took control of the boards. The students were teachers doing a Master's degree in IT in Education. They allowed me to pass control of the teaching to the students who presented something each evening.

The fact that the boards were a gateway to the internet served to allow us to stand in front of a large portal at any time. The students used them as a stepping stone to their own work - to best practice and as a result were centred in the field rather than taking notes from the side.

We have different types to enable ITT trainees to see different versions. This is not a good idea as the differences are a problem for the real users - Smart seem easiest to deal with, Hitachi has poor pens (batteries run out easily). Promethean needs quite a powerful PC to run software.

In HE the central Computer Services manage the PCs and it can be hard to get the driver software installed.

Any Teaching changes:-has increased the use of PowerPoint where it is simply a screen - I rarely use OHTs now. This also involves linking to other docs

-has encouraged me to demonstrate interactive worksheets, Hot Pot tasks, CD-ROMs and to ask student-teachers to participate in this process

-has allowed us to conduct brainstorming via ACTIVstudio facility and to convert to text, thus modelling that kind of activity for classrooms

-we have sometimes used annotation with Word docs. This would also allow us to explore marking issues, for example

-the intention always is to model uses that they can imitate if schools have whiteboards; so they learn both the 'content' used in that session and the associated methodology

-it allows more direct participation

-they can more easily share and demonstrate electronic materials that they have created

I use the board in several ways in the 'in what ways box', i.e. student participation, didactically, and video-conferencing.

Critical reflections

Primary

At present they have not changed the way I teach at all. I use the board to teach and demonstrate new computer skills to 5-8 year olds.

I am aware that the board can be used for many different teaching approaches but I lack training and time to practise.

Keen to try out without worrying about making mistakes

At previous school had board in my classroom - this was much easier to manage as I could make full use of it whenever I wanted rather only in specific time slots. We are hoping to move towards this in my current school.

Secondary

Slowly changing practice in classrooms but some teachers very wary and find it hard to see how to use it creatively.

Require more training and think that having the primary software will make it more user friendly

Resolution is inadequate for writing on board. Much the same effect could be achieved with simpler & cheaper means - a projector.

H.E.

cannot guarantee to be in a room with a whiteboard to cannot plan for it. Also different types have different functionality - so again impairs planning.

We have different types to enable ITT trainees to see different versions. This is not a good idea as the differences are a problem for the real users - Smart seem easiest to deal with, Hitachi has poor pens (batteries run out easily). Promethean needs quite a powerful PC to run software.

In HE the central Computer Services manage the PCs and it can be hard to get the driver software installed.

Appendix Two

Interactive Whiteboards: new tools, new pedagogies, new learning?

Personal details (leave blank if your prefer)

Name :   **Institution:**   **Email address:**

Sector (please ring): pre-school/primary/middle/special/secondary/HEI/LEA/company/charity/ other___

Could you please complete this questionnaire by marking the appropriate response?

Does your school have any interactive whiteboards?   YES/NO

If Yes, How many boards does your school have?

What make?   Fixed   Portable

If they are fixed, where are they located?

How frequently do you use them?					
Every lesson	At least once a day	For specific subjects	Once a week	Less than once a week	Never

If 'Never', thank you for your time.

In what ways do you use interactive whiteboards?					
Small group	Whole class	With individuals	Student participation	Didactically	For video-conferencing

Where do the students sit?		
In front of the board	At their desks	Both

Where is the board located?		
Behind the teacher's desk	At the side of the desk	On another wall

Can the students reach the top of the board?　　　　　　　　　　　　　YES/NO

What materials are used with the board? (Tick all that apply)		
Commercial software	Web-based materials	Teacher-created materials

How were you trained to use your interactive whiteboard?			
By the company	By LEA advisers	By a colleague	I'm self-taught

How have interactive whiteboards changed the way in which you teach?

How have interactive whiteboards changed the ways your students learn?

If you have any other comments please add them to the back of this sheet.

If you would like to receive information about further interactive whiteboard developments please provide:

Name:　　　　　　　　　　　School:

Address:

Postcode　　　　　　　　　　　　　e-mail address: