

Embedding ICT @ Secondary



Use of interactive whiteboards in religious education

Contents:

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Section 1: Getting started	2
1.1 Introduction	2
1.2 What is an interactive whiteboard?	3
Section 2: Why use an interactive whiteboard?	5
2.1 Presentation, demonstration and modelling	5
2.2 Active engagement	6
2.3 Improving the pace and flow of lessons	6
2.4 What the research says	7
Section 3: Where do I go from here?	8
3.1 Planning to teach with an interactive whiteboard	8
3.2 Using software tools	9
Section 4: Pedagogy and the interactive whiteboard	13
4.1 Using an interactive whiteboard for a starter activity	14
4.2 Using an interactive whiteboard for the	16
• Introduction of new learning	
• Development of the learning by pupils	
4.3 Using interactive whiteboards in the plenary session	22
Section 5: Emerging technologies	24
Section 6: Further links and references	27

Section 1: Getting started



1.1 Introduction

Your interactive whiteboard has arrived in your classroom. You have had some technical training from the whiteboard's suppliers and you are ready to go. This booklet aims to help you take the first steps in using the whiteboard to support your teaching of religious education. You should find enough support here to get started, after which, we hope, you will soon find using the whiteboard both easy and exciting.

'I was really excited when I first realised I was getting an interactive whiteboard in my classroom. However, it was rather a challenge quite knowing where to start. The company that sold the whiteboard gave us some really motivating training and I became very excited about the possibilities, but I still wanted some further support to use it effectively in lessons to improve my teaching.'

'For the first few weeks I just used it in the same way as my old whiteboard – for writing on in handwriting. But I knew that I could save what I had written and I slowly started to revisit work we had already done. I could see that I could do so much more with the interactive whiteboard. A group of us who had the boards met and the people who had had them longest talked about them and demonstrated what they could do. This made me much more confident about trying different things.'

'I started to add pictures and text and found some great resources online. I also started to use some CD-ROMs that we had in the department and in the library. I am feeling my way gradually and I can see the long-term benefits in using this technology.'

1.2 What is an interactive whiteboard?

An interactive whiteboard is simply a surface onto which a computer screen can be displayed, via a projector. It is touch-sensitive and lets you use a pen on it (or in some cases, a finger) to act like a mouse, controlling the computer from the board itself. Changes made to information projected onto the whiteboard are transferred to the computer and can be saved and retrieved in future lessons. Everything that can be displayed on a computer can be projected onto the whiteboard and, if the computer is linked to

speakers and a DVD or video player, multimedia resources can be incorporated too. If the board is connected to the Internet, teachers can have immediate access to appropriate websites to enhance work in the lesson.

There are two main types of interactive whiteboard. Hard boards have a hard magnetic surface behind the screen and need special pens to write on them. Soft boards have a tough membrane on the surface which can be written on with a finger or a special pen. Most interactive whiteboards are supplied with specific software tools to exploit the potential of the board.



The basics

The best way to understand how a whiteboard works is simply to find one and to have a try. You will find that it is easy to control the computer from the board itself. The most important point to understand is that anything that works on the computer will work on the interactive whiteboard too.

Certain items of equipment are needed to use the different features of interactive whiteboards.

- **Essential pieces of equipment are:** the interactive whiteboard and supplied software, computer and data projector.
- **You should also consider:** additional software, speakers, multimedia, remote input devices such as a keyboard, gyromouse or voting devices.

Other issues that need to be taken into account are:

- Installation
- Maintenance/warranty
- Security
- Networking to the school network and the Internet

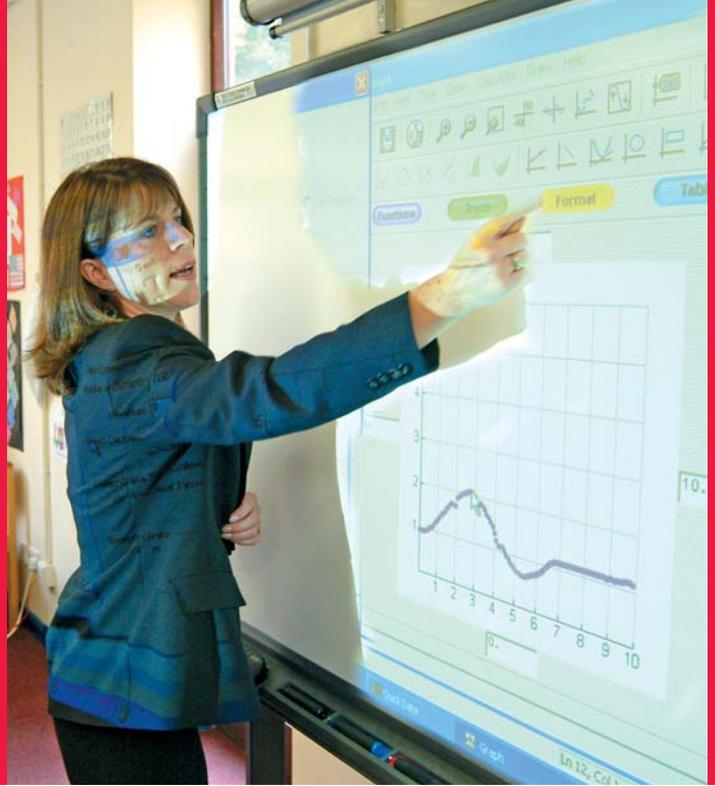
It is important to remember that there are likely to be additional costs that need to be allowed for when using an interactive whiteboard. For example, replacement projector bulbs are also needed. These are expensive but do last a long time.

For further advice on these issues and procurement visit www.whiteboards.becta.org.uk

'When we first looked into getting an interactive whiteboard for our department, we realised that we needed to take into account not just the costs of the board itself, but also the cost of the computer, the projector, speakers and training for staff. We were also really keen to be linked to the Internet but the classroom we wanted to use wasn't wired up for that, so it took a few months to sort out.'

'It all seemed to be going well until the bulb in the projector blew. We didn't have any in stock and one had to be ordered. It took a couple of weeks to arrive and it was quite expensive. Those of us who had become used to using the whiteboard felt lost without it.'

Section 2: Why use an interactive whiteboard?



Interactive whiteboards have the potential to improve teaching and learning in a variety of ways. In this section, we will focus on three key areas:

1. Presentation, demonstration and modelling

How the use of appropriate software and resources in combination with the interactive whiteboard can improve understanding of new concepts.

2. Actively engaging pupils

How pupils' motivation and involvement in a lesson can be increased through the use of the interactive whiteboard.

3. Improving the pace and flow of lessons

How the use of an interactive whiteboard can improve planning, pace and flow in lessons.

2.1 Presentation, demonstration and modelling

An interactive whiteboard is a valuable tool for whole-class teaching. It is an outstanding visual resource that can help teachers to present lessons in lively and engaging ways. It allows information to be presented using a wide range of resources, which can then be annotated by teachers and pupils to clarify and refine understanding. It can facilitate explanations of models by both teachers and pupils and contribute to an understanding of what happens to a model if a variable or rule is altered.

Teachers can use the board to demonstrate and present ideas in exciting and dynamic ways. The boards also allow pupils to interact with the new learning that is being demonstrated, as well as providing a valuable tool for teachers to model abstract ideas and concepts. Teachers can change what they put on the board easily, or move an object to a different place, making new connections. They will be thinking aloud as they carry out the process, making what they are doing transparent to pupils. They will gradually involve pupils, who can then add their own ideas to the board.

2.2 Active engagement

Evidence suggests that the interactive whiteboard 'increases enjoyment of lessons for both students and teachers through more varied and dynamic use of resources, with associated gains in motivation' (Levy 2002).

The careful use of a whiteboard can support teachers in effective questioning. Well-judged questioning, which is aimed at pupils refining their ideas and posing new questions, helps them to deepen their understanding of the concept or idea.

It can provide a focus and impetus to class discussions managed by the teacher and give stimulus to small group work. The whiteboard provides an engaging focal point in the classroom. It also supports a good pace in teaching, as all the resources are prepared in advance of the lesson and are instantly available.

areas highlighted and colour added. In addition, sections of text, pictures or diagrams can be concealed then revealed at key points during the lesson. This is done with teachers or pupils at the front of the room and becomes the focal point of the class' attention.



2.3 Improving the pace and flow of lessons

The use of interactive whiteboards allows for the creative and seamless use of materials, as lessons or topics can be structured around a single file. Files or pages can be prepared in advance and used to link to other resources deployed in the lesson. Teachers say that preparing lessons around a single file helps with planning and assists the flow of the lesson. It also allows for reflection after the lesson.

'It is very useful as a means of planning on the basis of past teaching and, following review with colleagues, we can share, adapt and develop according to needs' (teacher quoted in Glover and Miller 2001).

Objects and text can be moved around easily using the whiteboard, diagrams labelled, text, pictures and diagrams annotated, key

Pre-preparing text, charts, diagrams, pictures, music, maps, subject-specific CD-ROMs as well as including hyperlinks to multimedia files and the Internet can give lessons a crisp pace, as no time is wasted writing on the board or moving between keyboard and screen. These pre-prepared resources can be annotated on screen if required, using the handwriting tool, and saved for future use. Files from previous lessons can then be recalled to help with reinforcing previous learning.

These strategies can also engender a greater sense of involvement and engagement in the lesson in the pupils. The work they do on the board can be saved and referred to later. Flip charts or pages can be stored at the side of the board as thumbnails and the teacher can move backwards to an earlier section, if need be, to reinforce learning for the whole class or a small group. Pupils who are unclear about what has been taught can refer back to teaching points from earlier parts of the lesson.

2.4 What the research says

These benefits of whiteboard use have been highlighted in Becta's publication, *Getting the Most from Your Interactive Whiteboard: A Guide for Secondary Schools*

General benefits

- versatility, with applications for all ages across the curriculum (*Smith A 1999*)
- increases teaching time by allowing teachers to present web-based and other resources more efficiently (*Walker 2003*)
- more opportunities for interaction and discussion in the classroom, especially compared to other ICT (*Gerard et al 1999*)
- increases enjoyment of lessons for both students and teachers through more varied and dynamic use of resources, with associated gains in motivation (*Levy 2002*).

Benefits for teachers

- enables teachers to integrate ICT into their lessons while teaching from the front of the class (*Smith H 2001*)
- encourages spontaneity and flexibility, allowing teachers to draw on and annotate a wide range of web-based resources (*Kennewell 2001*)
- enables teachers to save and print what is on the board, including any notes made during the lesson, reducing duplication of

effort and facilitating revision (*Walker 2002*)

- allows teachers to share and re-use materials, reducing workloads (*Glover & Miller 2001*)
- widely reported to be easy to use, particularly compared with using a computer in whole-class teaching (*Smith H 2001*)
- inspires teachers to change their pedagogy and use more ICT, encouraging professional development (*Smith A 1999*).

Benefits for students

- increases enjoyment and motivation
- greater opportunities for participation and collaboration, developing students' personal and social skills (*Levy 2002*)
- reduces the need for note-taking through the capacity to save and print what appears on the board
- students are able to cope with more complex concepts as a result of clearer, more efficient and more dynamic presentation (*Smith H 2001*)
- different learning styles can be accommodated as teachers can call on a variety of resources to suit particular needs (*Bell 2002*)

- enables students to be more creative in presentations to their classmates, increasing self-confidence (*Levy 2002*)
- students do not have to use a keyboard to engage with the technology, increasing access for younger children and students with disabilities (*Goodison 2002*).

Factors for effective use

- sufficient access to whiteboards so teachers are able to gain confidence and embed their use in their teaching (*Levy 2002*)
- use of whiteboards by students as well as teachers (*Kennewell 2001*)
- provision of training appropriate to the individual needs of teacher (*Levy 2002*)
- investment of time by teachers to become confident users and build up a range of resources to use in their teaching (*Glover & Miller 2001*)
- sharing of ideas and resources among teachers (*Levy 2002*)
- positioning the whiteboards in the classroom to avoid sunlight and obstructions between the projector and the board (*Smith H 2001*)
- a high level of reliability and technical support to minimise problems when they occur (*Levy 2002*).

Section 3: Where do I go from here?



3.1 Planning to teach with an interactive whiteboard

Interactive whiteboards offer far greater potential for teaching than simply being used as electronic chalkboards. They can also enhance lessons more than a data projector and a computer used on their own. Using an interactive whiteboard to its full potential requires planning, and this will take time. However, lessons created for the whiteboard can be used again, with or without adaptations, which actually saves time in the long run. Whiteboards also allow for lessons to be improved and refined based on practice, and they are likely to benefit by being carefully structured to take full advantage of the whiteboard technology.

Interactive whiteboards offer a wide range of advantages in the teaching of all subjects. Many teachers say whiteboards have led them to plan collaboratively with other members of their departments, which has had the effect not only of saving time but also of improving the overall quality of what is produced.

Teachers interviewed also say that they feel their planning has improved because of the way the interactive whiteboard software allows them to structure their lessons before they teach them. The fact that lessons can be saved, complete with notes, and then easily altered, allows for improvement and refinement before the topic is taught again. Teachers can also create libraries of resources which build up as they use the whiteboard.

The range of content available for use with the whiteboard means that students sometimes grasp new ideas and concepts more quickly. This is partly due to the visual nature of the presentation, and partly because whiteboards offer ways of actively engaging pupils in activities. Teachers who have been using the boards for some time feel that the quality of some of their lessons has improved too.

It is not possible to say categorically that pupils' results will improve through the use of interactive whiteboards, but many teachers using them note that pupils are more engaged, more interested and more motivated. They discuss topics more and they seem to remember things better.

'I guess it's almost impossible to say whether your teaching improves with a whiteboard and how far a pupil's success is attributable to the use of the board, but I know that I have seen improvements in my students' work.

'Their enthusiasm has definitely increased and I think that is because I am able to find more interesting and relevant resources. Let's face it, they watch TV and play with their computers at home, so I can understand their lack of interest in some of the textbooks we have.

'I was really worried at one point because I realised that last term we'd written a lot less down than we would normally do. There seemed to be more talk in class, but talk about what we were doing and what was on the board eg "What if we did this...?" or "How would it change if we did that?" I was still concerned about the lack of written work, but when the end-of-module test results came back they were actually better than they had been the year before. Pupils seemed to find it easier to remember what we did in class. Well, that has to be a bonus!'

It is important to realise that using an interactive whiteboard on its own will not provide any magic solutions to problems. Nor should teachers feel obliged to use the whiteboard in every part of a lesson, or indeed in every lesson. Sometimes the whiteboard might only be used for a starter or a plenary. As with any resource, its use will have most impact when it is used appropriately to enhance teaching and learning.

Teachers need to understand the generic software that comes with the whiteboard and its potential for helping them to create curriculum resources. They also need to identify subject-specific resources that can enhance the work they are doing on the whiteboard; eLCs (eLearning Credits) are likely to be available to help them purchase these resources where necessary.

In summary, using an interactive whiteboard has the following advantages:

- The lesson can be pre-prepared, which can contribute to a brisker pace and more time for meaningful discussion.
- Links can be created from one file to another – for example, to a sound or video file or an Internet page. This saves time looking for another resource and keeps the lesson flowing smoothly. It allows for the integration of a variety of media, facilitating audio and visual tasks. This is particularly important in languages, where teachers are very aware of the value of pupils being able to see and hear language simultaneously.
- Structuring the presentation of new material around a series of pages demands a logical step-by-step approach that can enhance and enrich lesson planning.
- Files can be saved to the school network at the end of a lesson for pupils to access later. The files can be saved in their original format or as they appear at the end of the lesson, complete with annotations and final tasks. These can be a useful reference point for both teacher and pupils, to be drawn upon later for revision purposes.

3.2 Using software tools

In the introduction, we mention that an interactive whiteboard is, in part, a display board for your computer. This means that all the resources which are on your computer can be displayed on the interactive whiteboard.

This gives you the scope to use resources such as:

- Presentation software
- Word-processing software
- CD-ROMs
- The Internet
- Image files (eg photographs, drawings, diagrams, screenshots)

- Movie files (eg sections of video from television programs, VHS video cassettes or files from a digital movie camera)
- Links to sound files (such as sections from cassettes or radio or recorded by a pupil or member of the teaching staff). Any sound included in a CD-ROM or Internet page will also play, providing that speakers are attached.
- Whiteboard software, which has the additional advantage over presentation software that items can be moved on the screen.
- Subject-specific software.

available on a computer, eg colour, movement and sound, all of which are more difficult (but not impossible) to achieve in a traditional lesson.

It is probably the ease with which such features can be deployed that makes pupils say that the resources used on an interactive whiteboard are generally more 'exciting' than those used in 'traditional' lessons. However, teachers do often have to search around to find appropriate resources. Look at the **Further links and references** section of this publication for some ideas to help with finding suitable materials.

It is probable that lessons will involve a variety of these resources and that the teacher will pick and choose from what is available. Many of the resources listed above will take advantage of the features

In addition, most interactive whiteboards come with a useful range of generic functions which are likely to include some of the following:

Whiteboard function	Contribution to teaching and learning
Colour	The range of colours available on an interactive whiteboard allows teachers to use colour to indicate important areas for focus, to link similar ideas or to differentiate between ideas, or to demonstrate a process using colour. Examples of this might be a choropleth map in geography or a diagram of the digestive system in biology.
Annotations on the screen	These are useful for modelling thinking and for adding information, questions and ideas to text, diagrams or pictures on screen. Annotations can be saved, referred to again or printed off for pupils to use.
Inclusion of sound and video clips	This can significantly enhance learning in a lesson. The technology also allows screens from video clips to be captured and displayed as still images for discussion and annotation.
Drag and drop	This helps pupils to group concepts, identify advantages and disadvantages, identify similarities and differences, and label maps, pictures, diagrams, equipment for an experiment and much more.
Highlighting specific elements of the whiteboard display	Text, diagrams and pictures can be highlighted on the whiteboard, allowing teachers and pupils to focus on particular aspects of the display. It is often possible to cover part of the display and reveal it only when needed. This can be helpful when pupils are being expected to focus on just a part of a text or a picture. Some interactive whiteboard software includes shapes that can also be used to help pupils focus on a particular area. Sometimes, there is a spotlight facility which teachers and pupils can use to select and focus on a particular aspect of the lesson.

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continued	continued
Cut and paste	Sections can be cut and erased on screen, copied and pasted, undone and redone. These features help give pupils the confidence to take risks, as they know they can always go back or make changes.
Flip chart pages	These pages can be turned backwards and forwards, allowing teachers to go over particular aspects of a lesson or to recap areas that some or all of the pupils may not have understood. Pages can be viewed in any order and images and text can be dragged from one page to another. It may also be possible to make a link between pages, so that a teacher can move between a general statement and a more detailed analysis.
Split screen	Teachers can split the screen and display two different sets of things at once. This can be useful when exploring what happens if particular changes are made.
Rotate objects	This allows objects to be moved so that pupils can see symmetry, rotation and reflection.
Linking a digital microscope to the screen	This can provide a greatly enhanced experience when it comes to examining and discussing microscopic images.

These features can add significant value to teaching with an interactive whiteboard. For example:

- Using the drag and drop feature
- Using annotation and highlighting

Using the drag and drop feature

When using an interactive whiteboard, any item on the board can be moved to another position, using a technique called 'drag and drop'. This enables text or pictures to be moved anywhere on the board by pressing down on the item to be moved, holding it down and moving it, then releasing the pressure where you want it to stop – rather like moving a coin across the surface of a table. Using traditional methods, the same effect could be created by writing words on card or cutting out pictures and then sticking

them to a board. However, doing this on a computer is much less time-consuming, easier to manage and reduces the need to store paper-based resources.

Being able to move items on screen helps with activities such as:

- Matching
- Labelling
- Grouping
- Sorting
- Gap filling
- Ordering

Pupils can experiment by trying the task and, if their answers are incorrect, simply moving items and trying again. Pupils say they find this more motivating than doing a task on paper

where errors are permanent. There can also be a discussion based around what is on the interactive whiteboard. Using careful questioning, teachers can encourage pupils to explain their actions, thereby demonstrating their understanding and sharing their knowledge with the rest of the class.

Tasks using drag and drop are ideal for starters as they can be used to gain focus in the classroom. They can also act as revision from a previous lesson or a lead-in to the current lesson.

Drag and drop activities can also be useful during the main part of the lesson or plenary sessions, consolidating knowledge and applying the new knowledge and skills to other topic areas or providing a focus for extension.

Using annotation and highlighting

With an interactive whiteboard, all the materials that can be accessed through a computer can be used in lessons, including charts, diagrams, animations, sound and video. The variety of materials enables a greater selection of teaching strategies and activities to be used and for a wider range of learning skills to be addressed.

When working at the interactive whiteboard, it is possible to take a pen and make notes, add comments, circle, underline or highlight anything that is on the board. How this is done depends on the type of board being used, but the key teaching advantage is that the interactive whiteboard can prompt greater discussion in the classroom, when supported by probing questions by the teacher. Of course, it is possible to underline and add notes on a traditional board. The advantages of using an interactive whiteboard are that:

- The notes are added to pages that have been prepared before the lesson.
- The notes can be kept once the lesson is finished, rather than erased.
- Different colours can be used as well as items such as a highlighter, which could only be achieved using an OHP slide with traditional methods.

The flexibility of the whiteboard for this type of activity provides greater engagement for pupils, especially kinaesthetic learners.

Notes and comments can be added over the top of anything that is displayed on the screen and then the notes can be saved within the file. This means that pupils can access the file later or pages can be printed for the pupils' notes. This technique can be adapted to a variety of tasks – any task that involves sorting, matching, grouping or ordering items can be done effectively on the interactive whiteboard.

Section 4: Pedagogy and the interactive whiteboard

The teaching and learning strategies you need to use when teaching with interactive whiteboards will not be unfamiliar. The features that make for successful lessons are the same, regardless of the technology or equipment you use. Successful lessons are well-designed and well-structured. They have clear learning objectives and outcomes and are broken into teaching episodes. This structure helps pupils to understand the content of the lesson and to relate it to what they already know.

The Key Stage 3 Strategy publication **Pedagogy and Practice: Teaching and Learning in Secondary Schools** sets out the characteristics of the teaching episodes in a typical lesson. These include:

- A starter activity.
- An introduction outlining the purpose and objectives of the lesson.
- The introduction of new learning or the introduction of a task. Typically, this will be the main area of whole-class teaching and may be repeated at different points of the lesson.
- The development of the learning by pupils.
- Plenaries at the end or during the lesson, providing opportunities to review what has been learned and reflect on the learning process.

The lesson structure is the same, whether or not an interactive whiteboard is used. Some aspects of lessons, however, can be enhanced by the boards. For example, the interactive whiteboard is particularly useful when using a style known as inductive teaching, in which pupils are expected to reach hypotheses based on sorting, classifying and re-sorting information.

The teacher can model different ways in which information might be classified using the features of the board, such as moving objects, and using colour and highlighting, while bringing pupils into the process. Pupils can

then work in small groups away from the board, taking the classification process further. They can be drawn back to the board at intervals so that different groups can present their thinking to the class for discussion, before continuing with the task.

The following section shows the phases in a typical lesson and looks at the contribution that an interactive whiteboard can make to each phase. However, this contribution ultimately depends on the materials used and how teachers exploit them, as well as how they interact with the pupils. The role of the teacher is still central in an effective lesson. The appropriate use of an interactive whiteboard can significantly support effective teaching.

The case studies give some examples of how interactive whiteboards could be used in religious education to enhance learning and teaching during the different episodes of a lesson. Remember that these are only examples and that interactive whiteboards offer many more possibilities than suggested here.

4.1 Using an interactive whiteboard for a starter activity

Teachers can use the dynamic nature of interactive whiteboards in a lively and engaging way in starter activities. Pupils can be set challenges using the board and can write their ideas on it. Teachers can also call up aspects of previous lessons to check pupils' recall.

Case study 1

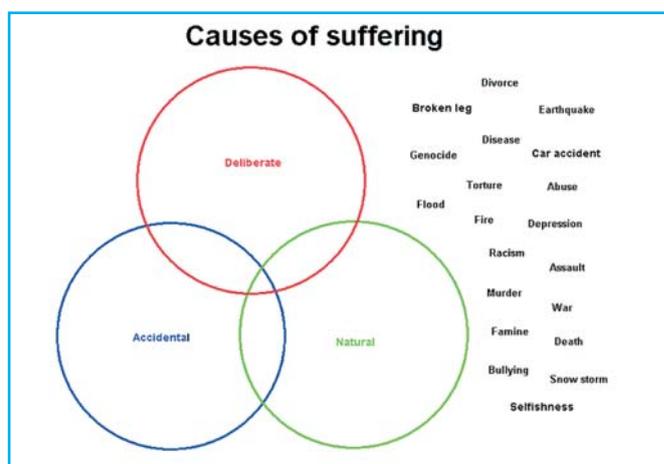
Year 10 GCSE pupils studying Christianity and Buddhism are beginning a unit of work based on the key question: Why is there suffering in the world? The unit aims to help them apply their understanding of religious and philosophical beliefs to a range of ultimate questions, and this lesson introduces them to types and causes of suffering. The work will subsequently move on to an exploration of Christian and Buddhist perspectives, focusing on the key concepts, evidence and arguments that would be used to answer this question.

The teacher wants the pupils to reflect on and evaluate their own and others' beliefs in response to the key question. The pupils already have some knowledge and understanding of key Christian and Buddhist beliefs.

Process

Using the whiteboard tools, the teacher creates a drag and drop screen introducing the types and causes of suffering, as a starter for the lesson. The activity is adapted from the *Badger KS3: Religious Education Starters* book, number 24.

The teacher introduces the key question of the day's lesson and explains the activity.



From Badger Religious Education Starters ISBN 184424 141 6 www.badger-publishing .co.uk

Pupils work in pairs to clarify the meanings of the three categories. The teacher then chooses pupils

to come to the board to move examples into the categories, giving the reasons for their decisions as they do so. The teacher encourages pupils to think about why examples belong in overlapping categories and to discuss any examples they feel have been misplaced. The shared visual resource helps pupils focus on their arguments and counter-arguments as the discussion develops.

By the end of the starter activity, many pupils have been actively involved in the task. Pupils have developed confidence in working with key concepts and arguments and are beginning to understand different perspectives and the theological and philosophical questions raised by the topic. The completed diagram provides an effective visual summary of the class discussion.

This activity is very flexible and can be reshaped according to the pupils' responses. For example, pupils could complete the classification choosing random examples, or try to complete particular categories at a time. Examples could be placed nearer and further from the centres of categories to try to illustrate classification arguments; extra examples could be added too.

After the starter, pupils work individually to create their own diagrams using examples and labels to explain why some examples belong to more than one category.

More ideas for starters

The theme of suffering could be introduced in a variety of other ways. Using the whiteboard allows teachers to present a range of visual material and to exploit these resources. Here are two more examples of possible starter activities that might be used with an interactive whiteboard to do this.

Example 1

Use of scrambled images

There are many powerful and poignant images that could be used to encourage pupils to look beyond the obvious in search of understanding about the nature and impact of suffering on individuals and communities.

Here, the teacher has presented the class with a 'scrambled' photograph showing a teenage boy caught up in a conflict situation. One pupil is invited to come to the board and move the pieces to re-form the photograph, guided by comments from the class.

What is happening in the picture isn't immediately obvious, although the central figure of the teenager is quickly pieced together. It is only as pupils zoom in on sections of the image that some corpses are noticed and begin to provide a context for the boy's anguish. The teacher annotates the image with pupils' questions and comments, notes the words they suggest to describe the teenager's emotions, and circles parts of the image that provoke particular comment or questions.

Pupils are asked to compose a slogan to accompany the image, based on the understanding they have developed as the picture is revealed.

The teacher then reveals the background to the image and asks pupils whether they want to re-write their slogan and why, and how they will do it.



Photo by Goran Tomasevic. © Reuters 1999.

The image is of 14-year-old Muharrem Alija. He is passing the corpses near the Kosovo village of Meja where 64 people were killed and 20 wounded on 14 April 1999, when a refugee convoy was bombed in error. What he holds in his hand is the last of his belongings.

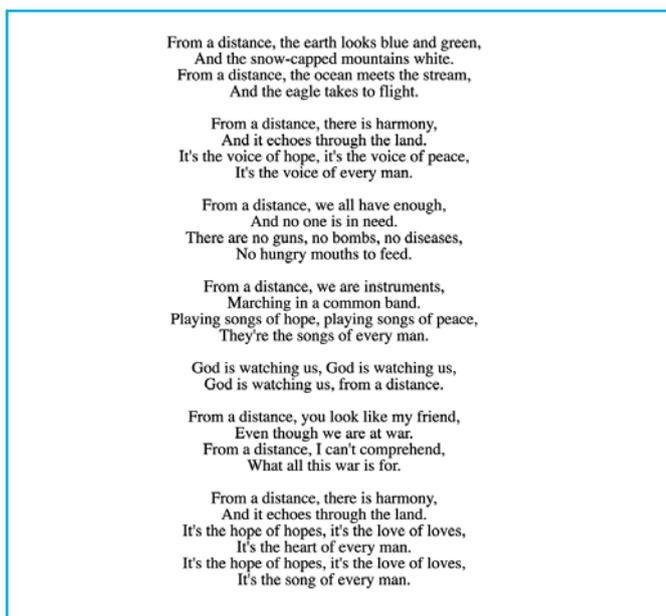
Example 2

Use of text and music

The teacher has chosen a song which highlights some questions about suffering.

The lyrics are displayed on the board and, as the song plays, one pupil highlights positive and negative themes in the lyrics. These are then debated in the class as the meaning of the song is discussed.

The song can be played via a hyperlink to a digital file. This allows the teacher to control the song easily from the board itself.



From A Distance
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4.2 Using an interactive whiteboard for the:

- Introduction of new learning;
- Development of the learning by pupils.

Interactive whiteboards are useful for introducing new learning and developing learning in that they allow teachers to collect all the resources they need on their computer. This means that teachers can structure lessons carefully in advance, ensuring a smooth flow and maintaining a good pace.

Interactive whiteboards can make an important contribution to the presentation of new information, modelling new concepts and processes, creating simulations, stimulating discussion and explaining new ideas.

Once pupils have begun to learn new ideas, it is useful if they can practise their knowledge or apply the new concepts to a different context. This may be a time to discuss what they have learned or allow them to consolidate learning before moving on, and can be done away from the board.

Case study 2

A Year 9 class has been investigating how key religious beliefs are expressed in ritual and symbolic ways in rites of passage.

In the previous lesson, the class explored how the baptisms of infants and believers are distinctive features of different Christian traditions, and how biblical sources are interpreted in different ways to support each. The whiteboard was used in the plenary of a previous lesson to present statements for the class to sort into a logical order in two columns

to create a summary of different practices. This lesson's activity aims to prepare the class for an extended writing assessment on the question: 'What is the significance of baptism for Christians?'

After sharing the objective of the lesson, the teacher displays the screen the class created in the plenary of the previous lesson and distributes print-outs. She explains that the lesson's activities will help pupils develop their understanding of the significance of baptism and enable them to plan their written work.

Infant Baptism

The baptism ceremony welcomes the baby into the church.

The parents stand with the baby and the godparents at the font.

The priest asks the adults three questions

1. Do you repent of your sins?
2. Do you turn to Christ?
3. Do you renounce evil?

The adults answer the questions on behalf of the child.

The priest sprinkles water on the baby's head and makes the sign of the cross on their forehead.

The blessing 'In the name of the Father, and of the Son and of the Holy Spirit' is said.

After the baptism, the adults are sometimes given lighted candles.



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The priest sprinkles water on the baby's head and makes the sign of the cross on their forehead.

The blessing 'In the name of the Father, and of the Son and of the Holy Spirit' is said.

After the baptism, the adults are sometimes given lighted candles.

Believers Baptism

The baptism ceremony involves the whole church

Some Christians travel to the River Jordan, or use a sea, river or lake.

Most believers are baptised in their local church, where a pool is sunk into the floor at the front of the church.

The believer usually wears white.

The believer makes a public declaration of their faith before the baptism.

The baptism has three parts:

1. The believer goes down into the pool
2. The believer's body is immersed in the water.
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The first task is to analyse baptism practices by identifying and interpreting key words and symbols in two forms of baptism ceremony. The meaning and significance of the occasion for the faith community is also considered. The teacher has used a website (www.request.org.uk) to help her create a file for the whiteboard showing each form of baptism. This uses video clips and spoken commentary to show the details of the ceremony and provide insight into its significance for Christians.

The teacher models annotating the screens on the whiteboard, highlighting key words or symbols and adding related concepts and biblical sources. She thinks aloud as she does this, making what she is doing clear to the pupils. She changes her mind about some of the annotations and explains why she is doing this.

Pupils then work in pairs considering the ceremonies and rituals connected to each type of baptism, highlighting and making notes on their own printouts. The teacher chooses pupils

to annotate the table on the whiteboard, highlighting key words and symbols in green or yellow and providing a brief explanation. Related key concepts or biblical sources are also added. Pupils who have missed anything can make notes on their own sheets, and pupils who have extra points to make also contribute to the discussion.

The next task is to identify the key beliefs reflected in each ceremony and annotate the sheets. Again, the teacher selects pupils to annotate the table on the whiteboard in blue, explaining the beliefs to the class and, where possible, showing their link to other key words, symbols or annotations. Pupils make notes on their own copies of the table with the new information. In this way, key teachings, concepts, symbols and biblical references are identified and commented on.

After this activity, the teacher explains the expectations for the extended writing task. She switches to another document on the interactive whiteboard, which outlines the assessment criteria for the essay in pupil-friendly language. Pupils start planning a draft, using the baptism display on the whiteboard and their own notes to help them. The teacher pre-empts referencing errors that could occur in pupils' extended writing by opening a new screen on the whiteboard and using a pupil volunteer and the pen tool to illustrate exactly how she wants various sources to be referenced.

The use of an interactive whiteboard is important in this lesson as it enables the teacher to use sound and video as well as text in a fluid way, which contributes to the pace of the lesson. It also enables pupils to share their ideas with other members of the class.

Case study 3

Pupils in Year 7 are following a unit of work on belonging to a faith community and are trying

to answer the key question: What makes a place sacred? In this lesson, the teacher wants pupils to consider the ways in which a shared sacred place can unite diverse communities from all over the world. He wants pupils to develop skills in investigation, especially by raising appropriate questions, interpretation of visual sources and empathy by applying their imagination to the thoughts and feelings of others.

During the previous lesson, pupils analysed some of the key characteristics of holy places and thought about why religious people make pilgrimages. The teacher ensured that this unit of work included local, national and global dimensions.

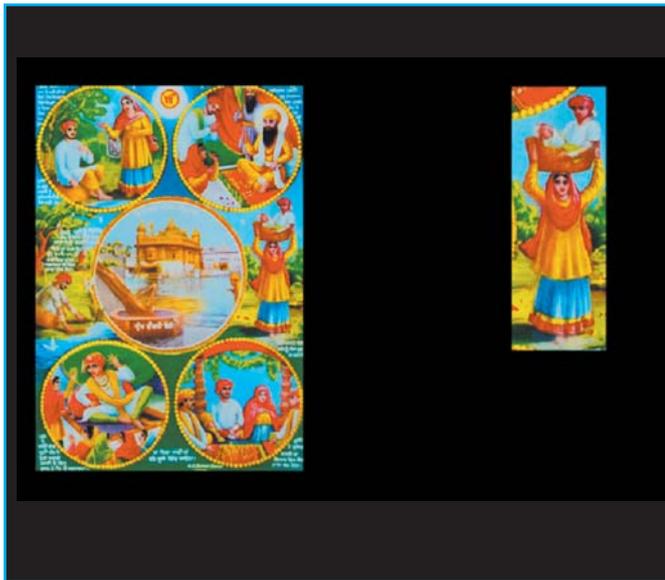
This lesson uses the Internet to investigate the importance of the Golden Temple to Sikhs. Pupils are familiar with some Sikh stories, beliefs, images and symbols. The lesson also aims to support the development of thinking skills and key skills of communication, working with others and ICT.

The teacher uses the RE resources on Becta's ICT Advice website (www.ictadvice.org.uk). She has found two versions of an interactive Sikh poster depicting episodes in the popular Sikh story of Rajni and the miraculous nature of the pool of water at the Golden Temple in Amritsar: www.cleo.net.uk/content/_files/GTnoCaptions.swf and www.cleo.net.uk/content/_files/GT&Captions.swf. She has also chosen a suitable website for pupils to investigate the Golden Temple today (<http://sikhs.tulwar.com/golden>) and all are bookmarked on her classroom's computer.

She opens the lesson by reminding pupils about the characteristics of sacred places and introduces the objectives of this lesson. She opens the interactive poster web page and tells the pupils that this depicts a famous story associated with the Sikh Golden Temple.

The pupils' task is to work in small groups in an attempt to interpret the poster and use their reasoning skills to sequence the episodes in

order to tell the story. The teacher uses the tools in the interactive whiteboard software which enable parts of the poster to be moved and enlarged. She chooses a pupil to control the images on the screen. When he touches different parts of the poster, an enlarged version of that section is presented so pupils can work on interpreting one section at a time.

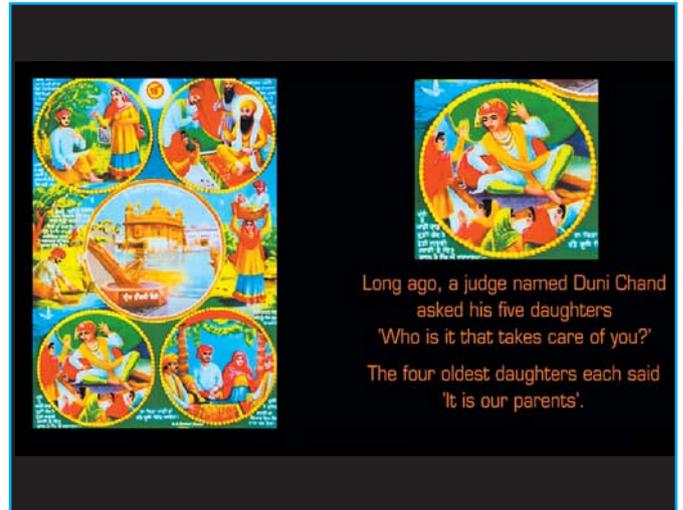


The teacher helps the pupils to speculate about what they think is happening, by asking questions such as:

- What is the relationship between the people shown? Why do you say this?
- At what special event might Sikhs sit around a fire?
- Why do you think the woman is carrying a man in a basket on her head?

In this way, the class composes its own narrative to explain the poster.

The teacher then uses her bookmark to change to the second version of the story (www.cleo.net.uk/content/_files/GT&Captions.swf). This contains the same poster, but with a sequence of hotspots telling the story of Rajni. A different pupil controls the whiteboard to reveal the correct sequence and interpretation of the story.



This provides an opportunity for pupils to:

- Compare their speculations with the actual narrative.
- Clarify their understanding of why this story is important to Sikhs.
- Demonstrate through discussion their understanding of the religious significance of Rajni as a miracle narrative associated with a place of pilgrimage.

During the discussion, key questions about Sikh values and the Golden Temple are identified and the teacher encourages the class to generate further questions and relate the story to the importance of the Golden Temple today.

The class is then organised into groups of three, each group with a wireless laptop. They open a new web page identified by the teacher on the whiteboard. This interactive page provides 360° views of the Golden Temple, taken from nine vantage points.

Each group is allocated a particular view and its task is to produce a brief spoken commentary to accompany its view from the perspective of a Sikh visitor. This is to be produced in the style of a video diary, focusing on the thoughts and feelings of the Sikh visitors as they observe the scene before them, as well as comments on anything which particularly catches their eye.

Pupils are shown how they can use a different section of the website to research information they need for their video diary commentary. The teacher wants the pupils to develop their skills of investigation and enquiry, and use thinking skills to work out what they need to find out in order to comment on the imagery of their own particular clip.

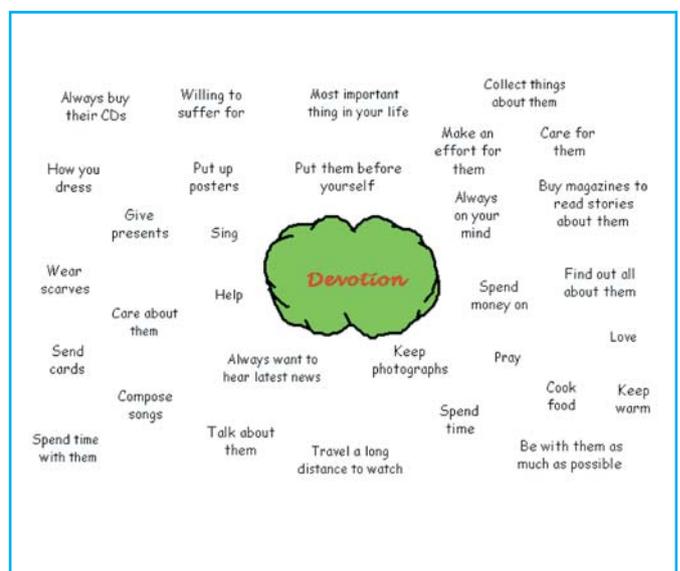
When it is time to present their video diaries, the laptops are packed away and the focus is switched back to the website on the whiteboard. Pupils from each group can control the 360° camera by dragging the image around while the accompanying commentary is read. Each presentation lasts between one and two minutes. As each clip is different, the interest of the class is maintained and pupils respond well to trying to enter into the thoughts, feelings and experiences of their imagined Sikh visitors. They are given an opportunity to reflect on what they have learned in a homework task that requires them to focus on just one image from the lesson that particularly interests them and explain why this is interesting, what questions it raises and what they have learnt from this.

Case study 4

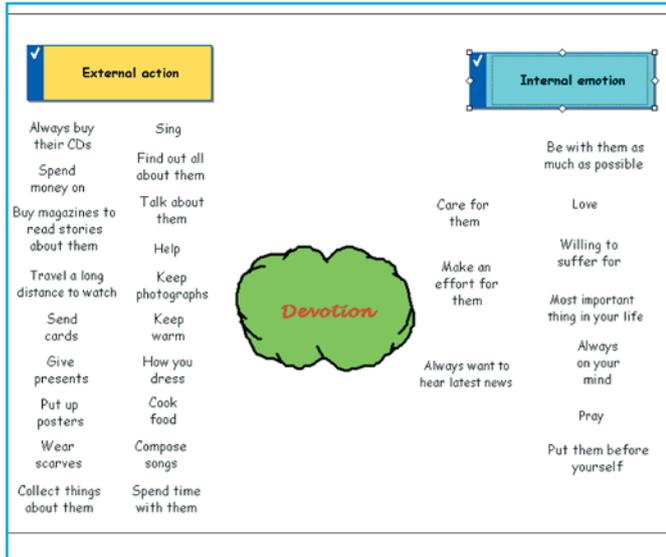
Pupils in Year 8 are studying Hindu worship and spirituality. The lesson is focused on helping pupils to understand the concept of 'devotion' (bhakti) and, through this, how Hindu worship shows devotion in tangible and symbolic ways. In the lesson, pupils are seeking to answer the key question: How do Hindus show devotion in worship?

The pupils have already created a wall display of Hindu deities and are familiar with interpreting meaning from their appearance and associated symbols.

The teacher prepares a file to use on the whiteboard before the lesson. This includes a screen on which pupils can build up and classify their ideas, as well as a short digital video clip. She begins the lesson by using the interactive whiteboard to complete a mapping activity to show the meaning of 'devotion' and ways in which this may be demonstrated. Pupils suggested a range of examples of how devotion is shown using examples from their own lives referring to family, pets, friends, sport teams, pop stars etc. The teacher quickly types in the pupils' contributions in a random arrangement.



When there are enough examples, the teacher moves on by discussing how some of these show devotion expressed as an internal emotion and some as an external, visible action. Two volunteers are invited to the board and the class helps them to rearrange the examples to classify their ideas into categories of internal and external expressions of devotion.



In the final part of the lesson, pupils work individually to explain the concept of bhakti and to complete a diagram in their books showing how Hindus express devotion during worship, and how and why these use all of the five senses. For homework, pupils are asked to focus on why they think that Krishna gave the following teachings in the Bhagavad Gita:

Be it a leaf, or flower, or fruit or water that a devoted soul may offer with loving devotion (bhakti)

That do I accept

For it was loving devotion (bhakti) that made the offering

(Bhagavad Gita 9:26)

Although many examples are easy to place, this activity provokes discussion about the relationship between internal and external expressions. The pupils comment that there are far more external examples of devotion than internal devotions, which gives the teacher the opportunity to raise the question of why this should be so and whether it is possible to be devoted to someone or something without showing it in visible ways. These questions prompt some useful comments about whether you can love or care for someone without showing it, and why some examples show stronger devotion than others.

The teacher closes the document and introduces the question of how Hindus show devotion in their worship. She then uses the whiteboard to show the digital video clip she had included in the file, showing Hindu worship. Pupils are asked to concentrate on identifying any features that are similar or different to their own examples. The discussion in this part of the lesson concludes with two pupils, using the whiteboard marker pens and suggestions from the class, ticking examples of devotion from their own list which the class has also identified in the film extract.

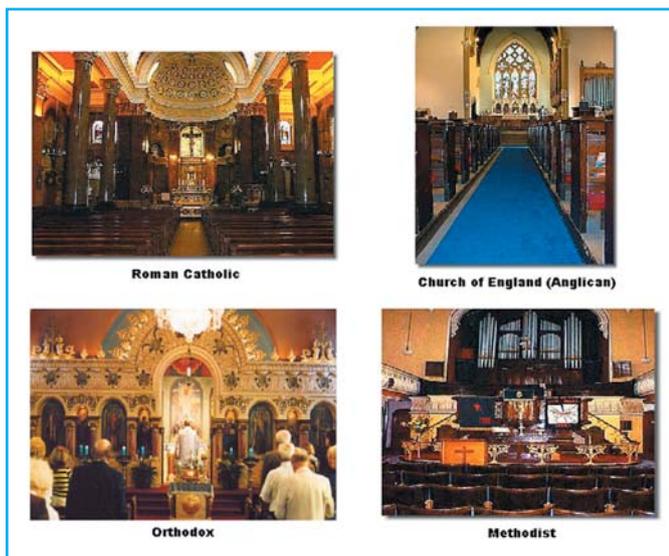
Case Study 5

A Year 7 class is preparing for a visit to a local church as part of an investigation into ways in which Christian beliefs are expressed. They are developing skills of interpretation and analysis, drawing their attention to some of the diversity of forms of worship within Christianity. In the previous lesson pupils looked at key Christian beliefs in relation to elements of worship. This lesson moves on to the expression of Christian beliefs through church buildings. The key question for the lesson is: In what ways do churches reflect different Christian beliefs and forms of worship?

The class works in small groups during the lesson, each group focusing on a different Christian denomination. They are given a range of research resources and an A3 sheet showing an image of either an Orthodox, Anglican, Roman Catholic or Methodist church.

The teacher has prepared a file to use with the whiteboard, which includes images of four different places of Christian worship. The whiteboard is used to display the images on

one screen. This is the first page of a flipchart sequence prepared in advance by the teacher. The other four pages contain enlarged colour images of the individual churches, each with a series of hotspots linking to other images and comment. The teacher uses the hotspot facility and the whiteboard's zoom facility to encourage pupils to search for detail, clarify ideas and form questions.



The groups are asked to answer the key question for the lesson and prepare a short visual and spoken presentation about the beliefs and related forms of worship expressed through the features of the church allocated to the group.

The A3 images are used to draft the groups' analysis. While preparing their presentations, pupils can go to the whiteboard to look more closely at the large images, and to use the hotspot and zoom features to explore the place of worship further. They are also encouraged to think about any distinctive features the whiteboard image does not show, as well as to interpret the beliefs underlying the image.

The flipchart images on the whiteboard are then used to provide the visual aid and focus for each group's presentation with the speakers, or their assistants, using the whiteboard markers to

highlight features or annotate the image to illustrate their points about belief and worship in 'their' church. The rest of the class is asked to look out for similarities and differences; in particular pupils are encouraged to ask and answer questions to clarify the reasons for these.

The lesson creates a busy, purposeful and positive learning environment and supports the development of skills that pupils would need for future learning in RE. Pupils are given the opportunity to collaborate, develop expertise in a particular area and teach each other using simple whiteboard tools. Pupils are able to respond to unfamiliar features and concepts, use religious vocabulary more confidently and raise valid questions about reasons for diversity in Christian worship.

4.3 Using interactive whiteboards in the plenary session

Interactive whiteboards can contribute hugely to plenaries. Pupils can use the boards to present some of their ideas to the rest of the class for discussion, encouraging them to review and reflect on what they have learned. Learning can be reinforced with games and quick quizzes and the interactive whiteboard can also be used to point pupils to extension activities, such as websites related to the topic.

Case Study 6

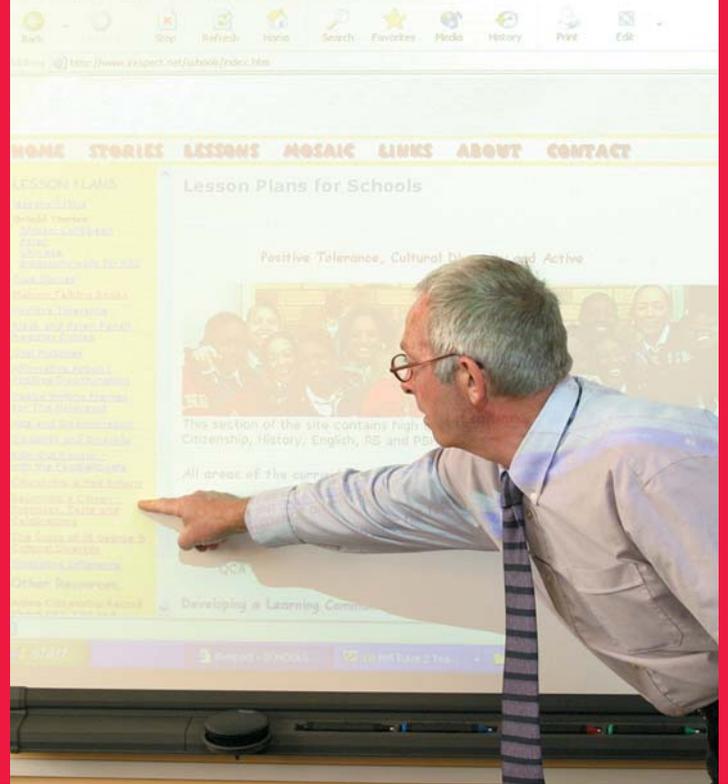
During the plenary of the lesson in case study 5, the original flipchart page of all four images of Christian places of worship is displayed again.

Working against the clock, volunteers from each group are invited to come to the front in turn and use what they have learned in the lesson to identify either key similarities or key differences

between any of the four churches. They annotate the pictures on the whiteboard using two coloured markers, explaining why they have identified the features as similarities or differences, while the class questions them further. Groups unable to contribute a comment are 'out', and the last remaining group becomes the 'winner'.

The teacher saves the final annotated flipchart as a new document to provide a record of the lesson and as a potential future recap resource for the class.

Section 5: Emerging technologies



Interactive whiteboards have paved the way for a host of interactive technologies in the classroom. Some of these require an interactive whiteboard in order to work, some complement an interactive whiteboard, and others can work with just a computer and a projector.

Slate or graphics tablet

This wireless piece of equipment, which is about the same size as an A4 pad of paper, allows an interactive whiteboard to be controlled from anywhere in the room. This is done by the teacher or pupil holding the slate and using a special pen on it. The cursor on the board moves in line with the movements on the slate.

The tablet has advantages for classroom management, as the teacher can be situated anywhere in the classroom and still control all the functions of the board. In addition, the slate allows pupils who do not want to come to the board, or who are not physically able to do so, to participate fully in lessons.



Remote keyboards

Teachers or pupils can enter text onto the computer from anywhere in the classroom when using the remote keyboard. The keyboard works wirelessly with the computer, with any text typed being displayed on the interactive whiteboard. This is useful for shared writing activities or for a pupil to make notes directly onto the interactive whiteboard during class discussion.



Remote mouse

All the actions of a computer mouse can be carried out from any position in the classroom by this wireless device, also often known as a gyromouse.

Rather than moving over the surface of a desk, the remote mouse can be moved through the air to control what is happening on the screen. The remote mouse can be used from anywhere in the room.



Tablet PC

Using wireless connections to transmit data to a projector, the tablet PC can be used freely from anywhere in the room. Tests are currently being carried out to assess the value of using tablet PCs in this setting through the DfES Testbed project.

Voting devices

Voting devices allow teachers to ask pupils to vote electronically on questions. These could be multiple choice questions, with several options to choose from, or pupils could be asked to express an opinion across a range of answers (eg from A = agree strongly to E = disagree strongly). Some voting devices allow numerical answers to be entered. Teachers can even ask pupils if they understand or are if they are ready to move on. As pupils vote anonymously, they are less likely to be afraid to admit that they would like more time on a section of work.

Results from the vote are displayed immediately on the interactive whiteboard, allowing for immediate feedback on questions. Some software allows for detailed analysis of the results in order to offer more support to pupils who are scoring below the expected levels.

Digitizer

A digitizer is rather like an overhead projector that can enlarge opaque objects. It allows any small object to be enlarged and displayed on an interactive whiteboard. A teacher could, for example, open a book and place it on the digitizer. The page of the book would be displayed clearly on the board. Using the right software, images can then be annotated or saved.

Video conferencing technology

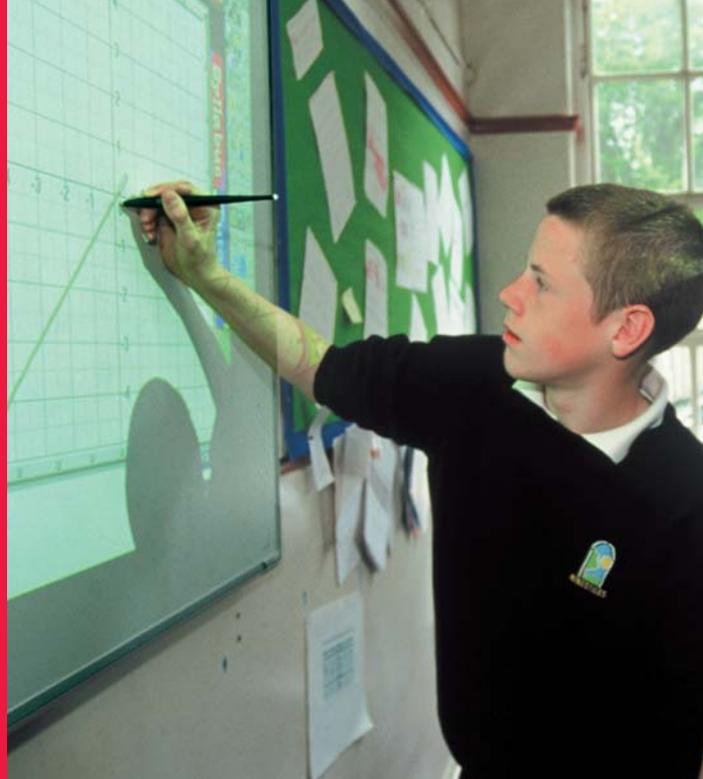
A computer with a webcam offers the possibility of video conferencing during lessons. Links can be established with people outside the

classroom and live streaming video displayed on the interactive whiteboard. Video conferencing technology enables 'experts' to contribute to lessons – for example, by linking up the classroom with a specialist who is able to answer pupils' questions from a laboratory, a museum or overseas. The video link can be recorded and replayed later in the lesson using the interactive whiteboard, to analyse or recall what was said during the interview.

Digital repositories

As the use of digital technology develops, so too will banks of resources that can be searched and downloaded to provide short video or audio clips for lessons. Searching the Internet for material can be time-consuming and ultimately frustrating, so the advent of resources which can be quickly and easily accessed and customised for particular lessons is a welcome development.

Section 6: Further links and references



There is a wide range of further sources of information, advice, resources and other materials available to help you make the most of the interactive whiteboard in supporting learning and teaching.

The Department for Education and Skills wishes to make it clear that the Department, and its agents, accept no responsibility for the actual content of any of the non-Department materials suggested as information sources within this document, whether these are in the form of printed publications or on a website.

Department for Education and Skills

www.dfes.gov.uk

Homepage for the Department for Education and Skills (DfES).

www.dfes.gov.uk/ictinschools

For information on all policy areas relating to ICT in schools.

www.curriculumonline.gov.uk

Online catalogue of digital learning resources.

www.learnevaluations.co.uk/findeval_intro.aspx

Homepage of Evaluate, a Guardian newspaper-run, DfES-appointed evaluation service for products registered on Curriculum Online.

www.schoolzone.co.uk/evaluations/findeval.htm

Features independent evaluations of thousands of web-based learning materials, as well as details of educational suppliers and products. DfES - appointed evaluation service for products registered on Curriculum Online.

www.teachernet.gov.uk

Homepage of TeacherNet, the Government gateway for educational professionals.

www.teachernet.gov.uk/teachingandlearning/secondary/ks4/

TeacherNet information about Key Stage 4.

www.publications.teachernet.gov.uk
Online publications for schools service.
View, download or order paper copies of
the latest publications.

www.standards.dfes.gov.uk
Homepage of the DfES Standards Site,
containing information on the latest
educational initiatives.

www.standards.dfes.gov.uk/keystage3/
Information on ICT across the curriculum
in Key Stage 3.

British Educational Communications and Technology Agency

Becta main site
www.becta.org.uk
Website of the Government's key partner
in developing and delivering its information
and communications technology (ICT) and
e-learning strategy for schools and the
learning and skills sector.

Interactive Whiteboard Catalogue
www.whiteboards.becta.org.uk
Online resource enabling you to look at
interactive whiteboard solutions, services,
suppliers and pricing before having a site survey
carried out. Using the site, you can compile a
shopping list of items and find all the necessary
information to place an order with a supplier.

ICT advice for Teachers
www.ictadvice.org.uk
Advice from Becta on the use of ICT in
different areas of the curriculum.

Teacher Resource Exchange
www.tre.ngfl.gov.uk
Database of resources and activities
designed to help teachers develop and share
ideas for good practice. All resources on the
TRE are checked by subject specialists to
ensure they are of the highest possible quality.

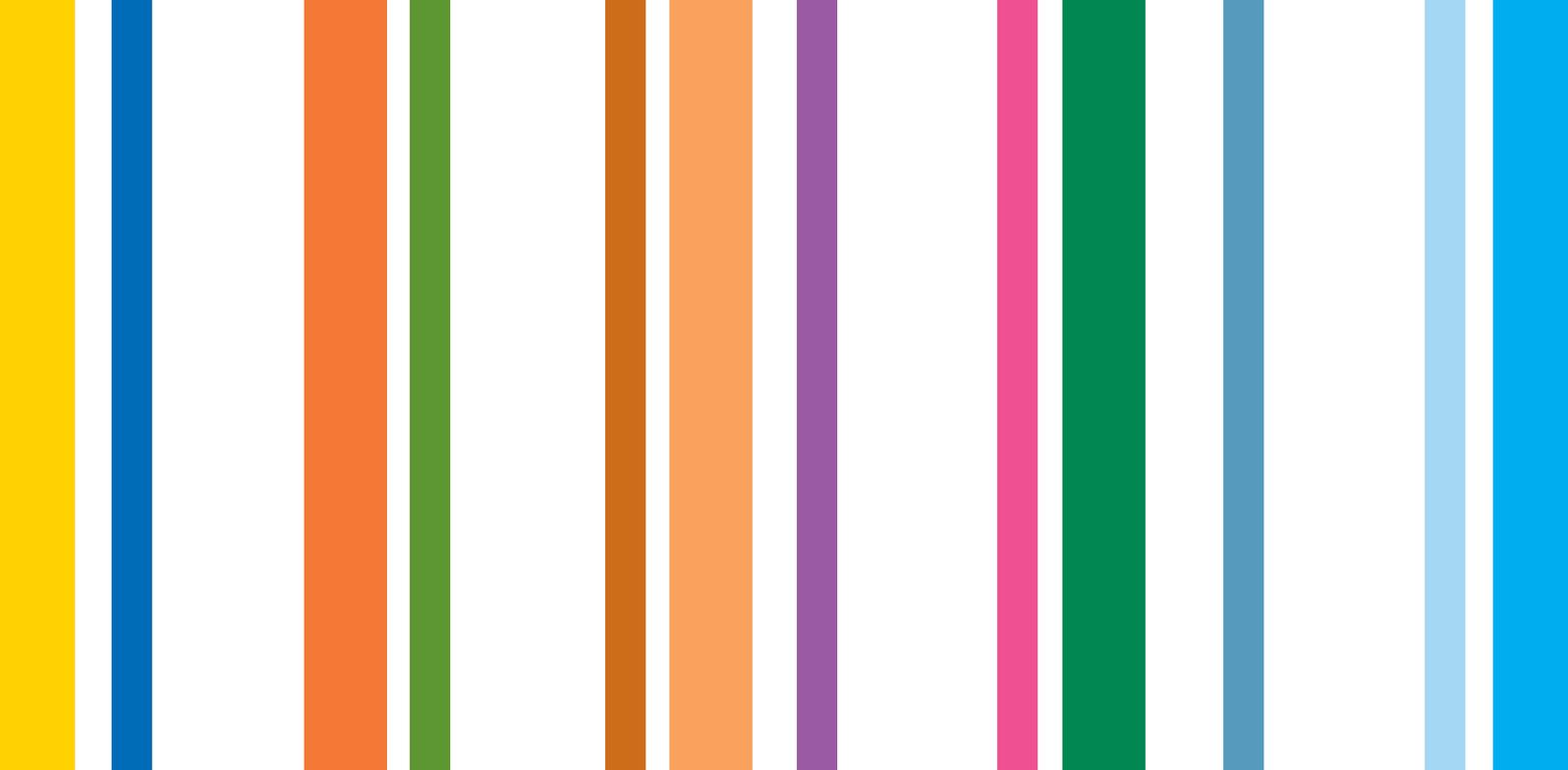
National College for School Leadership
www.ncsl.org.uk
For information and advice on the strategic
leadership and ICT course.

Qualifications and Curriculum Authority (QCA)
www.ncaction.org.uk/subjects/ict/inother.htm
For information on ICT in subject teaching.

Subject association websites religious education

RE Today
www.retoday.org.uk

**Association of RE Inspectors, Advisers
and Consultants (AREIAC)**
www.areiac.org.uk



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