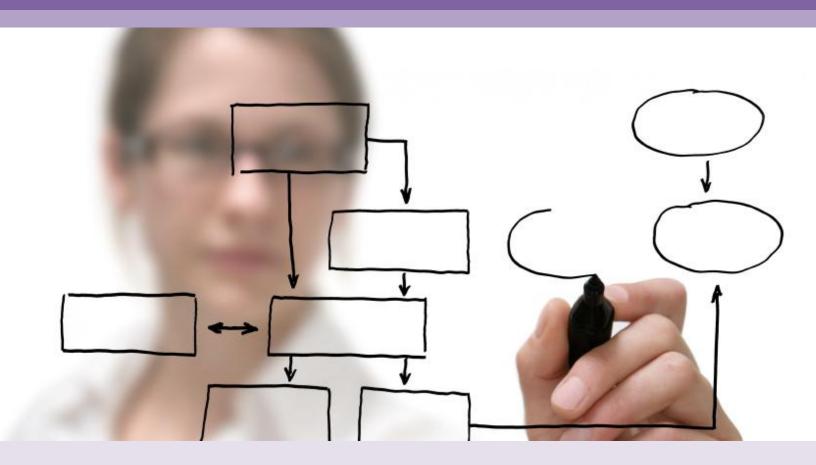# The Impact of the Interactive Whiteboard on the Learning Experience of the Undergraduate Historian

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History at **The** Higher Education **Academy**

Project overview

Although the use of the interactive whiteboard is relatively widespread in the primary and secondary education sectors, higher education has yet to fully embrace this new technology. Despite the fact that many FE and HE institutions are installing the boards in seminar and lecture rooms and that there is increasing interest in this form of teaching history, very little research has been conducted on their impact on the student learning experience. This project makes an initial contribution to this field. It is divided into three stages, relating to the levels of undergraduate study: level I (entry and introduction to the study of history at university), level II (development of key and subject specific skills) and level III (reflexivity and the higher order skills associated with critical analysis and source awareness). The project attempted to discern the ways in which the interactive whiteboard adds value to the student learning experience, making it more focused on the students' intellectual development, particularly in terms of the skills associated with each level of study.

Aims of the Project

This project had three key aims:

- To analyse the impact of the interactive whiteboard on student learning at the different stages of the undergraduate historian's career;

- To study the relationship between new technologies upon the subject specific and key skills associated with each level of study and the history degree;

- To develop a series of briefing papers in for wider circulation to help stimulate teaching ideas for colleagues at HE institutions.

Organization and Methodology

At each level, the participants prepared interactive teaching materials for use in the seminar environment which were linked to the specific skills and outcomes associated with each stage. The ways in which students interacted with the board and the impact upon their learning were studied.

Full details of the interactive whiteboard used in the project, and its functions, can be found at:

http://education.smarttech.com/ste/en-US/Classroom+solutions/Product+news+and+resources/SMART+Board+interactive+whiteboard/

Tutors formulated a series of key research questions, which informed the teaching materials chosen and the post-seminar questionnaires to students. These were:

In what ways does the interactive whiteboard make first year history more accessible and understandable to students?

What exercises involving the interactive whiteboard facilitate the development and / or acquisition of the basic skills associated with level I, such as an introduction to critical analysis, familiarity with historiographical debates and introduction to key historical methodologies and ways of approaching the past?

What exercises involving the interactive whiteboard facilitate the development and / or acquisition of the intermediate skills associated with level II, such as the development of critical analysis, engagement with historiographical debates, extended breadth and depth of subject specific knowledge and further and more specific familiarity with working with primary source materials?

What exercises involving the interactive whiteboard facilitate the development of the skills associated with reflexivity, encouraging students to reflect upon the very nature of the historical enterprise and to question evidence and debates?

What is the impact of these exercises upon student learning?

How can the interactive whiteboard help students work with primary sources, individually and collectively?

How do the exercises in seminars create life-long learners and enable them to be and feel like 'fellow travellers'?

Following seminars, students completed learning questionnaires, which were followed up with extensive interviews with individual students at different levels. The interviews were recorded and transcribed. The results were then analysed by the project team.

Results

Student interviews, questionnaires, and tutor observations were used to reach the following conclusions, which relate to three broad areas: student perceptions, work within seminars, and reflective activity beyond the classroom.

Significantly, how students reacted to the interactive whiteboard was defined by specific skills and exercised, rather than the level of study. Indeed, the project team found that student reactions to specific exercises differed little from level to level. The focus of the project, therefore, shifted to focus on the skills base itself.

Initial Student Perceptions

It was important to establish previous educational experience of the interactive whiteboard and pre-conceptions about interactive learning in order to measure the degree of change in student views. The following observations were made:

School experience

It was clear from the student interviews that the interactive whiteboard (Smartboard) was used in schools but in a limited way, rather like a normal blackboard. Within schools, the Smartboard was not necessarily an integral part of the learning process. When confronted with interactive exercises at University, therefore, the Smartboard retained some of its novelty value. Of course, this may change as the technology is used in a more interactive way in schools.

Negative preconceptions

Because of the association with the school learning experience, there were some negative reactions. Many students expressed the view that, given that they attend University to further their learning and skills, any association with school can only be seen as a backward step. Moreover, the views of tutors who disapprove of technology in learning and who place emphasis on more formal learning environments were adopted by some of their students. Initially, many students predicted that the Smartboard had the potential to limit discussion, since its positioning at the front of the room (within a traditional classroom layout) creates a specific physical dynamic. Many students feared the loss of individuality when making collective notes, since many of the exercises within seminars placed emphasis on collective work. Some students expressed a reluctance to engage with a programme that acts as an 'extended version of powerpoint', especially in seminars, which they perceive to be *their own time*.

In the Seminar Room

The use of the image

Within the classroom, initially many students saw the Smartboard as having a particular relevance for modules with a strong media element, such as film, still image and audio, partly because it was more practical than TVs, videos, and slide projectors etc. They welcomed the ability to *see* relevant visual primary sources in class and annotate them. Using the Smartboard to analyse primary texts (or images) was seen as positive, enabling the whole group to participate and hence a wider range of points to be identified. A number of students who described themselves as 'visual learners' found that working with the Smartboard helped their understanding of complex issues. Diagrams clarified problematic issues. Visual learners reported that they were able to work out what seemed quite abstract ideas more effectively than using 'straight' discussion, reading or listening to lectures. In other words, the Smartboard appears to facilitate different approaches to learning.

Note-taking

In general, the note-taking function (in which collective 'flip chart' notes can be saved and uploaded as a PDF or HTML file) was positively received, particularly when allied with the opportunity to upload slides onto VLEs and access them later. Some students took this opportunity to refrain from writing notes in class (mainly male students), though most tended to write their own notes too. Those who did not take notes in sessions with the Smartboard tended to be students who did not take notes in sessions without the Smartboard. Significantly, all tutors found that the note-taking facility enhanced debate because students were not necessarily busy writing notes and/or that they felt that had to say something 'worthy' of being recorded, although many students sensed that this owed as much to the format of the seminar. The uploaded slides provided a record of the seminar which could be accessed later, especially if a student had missed a session. Although this was seen as easier and more practical than borrowing another student's notes, a number of students said that they preferred the 'generic' notes, as they were more direct and as they felt that they had still been part of the seminar. Equally, most students were reluctant to rely on the generic notes alone, which might be less detailed or personal than their own. The majority of students tended to see the generic notes as additions to individual notes, although this may be that, across all modules, sessions with the Smartboard were the exception rather than the norm - 'conventional' behaviour (personal note-taking) is engrained and more difficult to change. The project team therefore agreed that Smartboard notes should not seek to replace students' personal reflections, because it is often through individual notes that students construct their own meaning and hence understanding. This raises interesting questions about student-based learning (putting students in charge of their own learning) and working collaboratively.

Students were often reluctant to participate in exercises designed to involve the students in directly interacting with the board, either because of the legibility their handwriting or because they felt it slowed down discussion. Having the tutor act as amanuensis was more popular, as tutors could record whilst the students talked, effectively preventing the tutor from dominating the discussion. Student-based learning, therefore, is not necessarily about the student being actively in charge (in the sense of 'doing everything').

Engaging with Student Presentations

The project team found that, in using the Smartboard in student presentations (i.e. as an interactive PowerPoint presentation with generic responses to the contribution being recorded afterwards), students valued the process of making presentations much more (they found them to be 'a lot clearer and more enjoyable'). Students reported that they began to listen more carefully, as they wanted to be able to pick out key points, and since they knew that what was being said would play a real part in the following discussions. Student presenters felt as if their work was being valued, that they were being listened to by both tutor and other students, and that they were contributing to the shared goals of the group. Students were much more inclined to comment on other students' presentations, on occasion coming up to the board to make their own annotations to PowerPoint slides. Within this environment, the thread of debate and focus was not lost. Rather presentations become a meaningful vehicle for further group reflection and discussion, not just in the classroom but after formal teaching hours as well (see below). One student comment particularly illustrated this: We can 'raise points in response to… presentations *after the seminar*'.

General discussion

Some of the most interesting findings relate to how the Smartboard has affected overall seminar discussion. Students observed that, when using the Smartboard, seminars became much more structured and focused, allowing for a *clearer understanding* of ideas and concepts. Significantly, it encouraged students to participate more in discussions, as they were not necessarily trying to write everything down - they knew that a valuable record of the discussion is being made, and began to concentrate on debating issues:('Allowed you to participate rather than making notes'). It also allows the students to track how an idea has developed, how the debate has moved on in response to each others' contributions, making connections as they go ('Easy to see how the argument has progressed or developed'). Students were making links more easily between complex ideas and interpretations. All in all, rather than detracting from discussion and debate, the interactive whiteboard facilitated it – making the seminar much more effective and student led.

Student Evaluation of the Classroom functions of the Smartboard

The extent to which students valued each of the functions identified above can be seen in the following data, taken from questionnaire responses.

Q: In reference to your own learning within seminars, which of the following functions of the interactive whiteboard do you find most useful?

- working with primary sources together- 33.3%
- to display and annotate information - 66.7%
- to record seminar discussions - 66.7%
- to annotate multi-media presentations - 11.1%
- to brainstorm ideas on a particular topic- 66.7%
- as a tool for responding to student presentations -22.2%

Beyond the Seminar Room

Extending Discussion

Since collective seminar notes and annotated PowerPoint slides could be saved in an electronic format, classroom activity was enhanced by developing an extended learning environment (in this case a VLE), where students could continue to debate the themes covered in seminars. Online discussion boards were developed as a means of providing a more integrated, interactive learning environment. For many students, the discussion is concluded at the end of the seminar and, as a result, many significant lines of enquiry raised within the seminar session are not followed up fully. Tutors used monitored discussion boards to enhance the seminar sessions, providing students with an extra forum in which to raise issues, outlined in Smartboard seminar notes. Learning through discussion and debate is an essential skill for the undergraduate historian and provides a level of 'ownership', facilitating continued reflection on a subject after the seminar has taken place and after further study and reading. This use of the year-long seminar discussion allows students more time to reflect upon the key issues, to develop and express their own views, to see how their views *change* as a result of further study, and gain an understanding of how their own ideas evolve and change over time – this encourages flexibility of thought. The discussion board is a physical record of that change. Tutors found that Smartboard notes encouraged participation on discussion boards. It was clear that the students were using the Smartboard notes and the discussion board in conjunction with one another: '*The interactive whiteboard prompted me to add further comments to the discussion board because I can look at the issues that were raised in the seminar online and then make my contribution at the same time*'.

Reflection and Revision

In surveys and interviews, many students revealed that the most useful aspect of the Smartboard related to revision, reflection and recall. Student activity (the number of times Smartboard slides were opened and when) was tracked over the course of the year. This revealed that seminar notes were most likely to be used for revision purposes, but also as part of a continual process of reflection in terms of contributing to discussion boards and coursework assignments. Student interviews demonstrated that slides were used to rethink ideas and form individual opinions. In this way, the slides provided a point of recalling discussions, with the seminar becoming part of more active learning process with a real relevance to the assessed work students are expected to complete.

Dissemination

The results of the project were disseminated in presentations to the HEA Subject Centre National Conference (History) in Oxford in 2006, the South-West Subject Centre (History), the joint Royal Historical Society and Subject Centre conference on e-learning in February 2006, in seminars at Edinburgh University, Durham University and the University of the West of England, and through free private consultancy for a number of other institutions across the UK. Some of the funds from the project grant enabled the team to undertake these visits.

The other half of the grant has been spent developing a video-podcast showing details of all the seminar exercises in medieval, early modern and modern history, which will be available for download (hopefully through the Subject Centre website) from January 2010.