

Aims of the project

This study set out to explore the views of students who had successfully used handheld computers for studying artwork in a museum environment on the i-guide Gallery Project. The intention was to identify what it was that had helped enhance their motivation and improve their skills in analysing works of art. The project considered the wider implications of using new technology and is of relevance to other subject areas in a variety of educational contexts.

Dimensions of the study

Warren Comprehensive School in the London Borough of Barking and Dagenham is a mixed secondary school with approximately 1350 students on roll. Research was undertaken at the school as part of the ICT Test Bed Project, set up by the then DfES (Department for Education and Science) and funded by Becta (British Education Communications Technology Agency).

During the period July 2003-July 2004, three groups of A Level Art students aged 16-18 years old, and one group of female 14-15-year old GCSE Textile students visited the Dulwich Picture Gallery to take part in the project. Altogether the project involved 50 students.

Summary of main findings

Students were at ease with the technology and appreciated being in control of the pace at which they worked.

- Students improved their ability to analyse paintings and understand their context
- Students learned to value their own opinions more as they engaged in a constructive dialogue with their peers, teachers and gallery staff
- Students' confidence improved
- Students took greater responsibility for their own learning

Background and context

The school was part of the UK DfES/Becta ICT Test Bed Project which ran over four years from 2003-2006. This project explored the effects of high levels of ICT resources and support on educational development within three cluster groups from areas of social disadvantage (28 schools and 3 colleges). In my area, Barking & Dagenham, educational aspirations are low with only 10% of adults having had a successful experience of higher education.

Students studying Art & Design at Warren took part in a pilot initiative that explored the use of interactive wireless learning material with handheld computers (i-guide Gallery Project). The aim of the project was to use wireless technology to facilitate students' contextual analysis and understanding of works of Art

and to relate this knowledge and understanding to their own practice at school. It involved a partnership between the Art Department at Warren, Software Company Street Access and Dulwich Picture Gallery and was made possible through DfES ICT Test Bed funding. The Moose Foundation for the Arts funded the installation of a wireless network in the Gallery. 12 Tungsten C PDAs (Personal Digital Computers) were 'loaned' to the gallery for a period of 12 months from July 2003 to July 2004.

Dulwich Picture Gallery is the oldest picture gallery in England. It provides an introduction to masterpieces of 17th and 18th century Art, including Rembrandt, Rubens, Van Dyke, Poussin and Gainsborough amongst others. Despite the travel distance involved – the Gallery and the school are on opposite sides of London – the i-guide Gallery Project met with a hugely positive response from students and staff. This was evident in students' evaluation sheets, newspaper articles and the observations of teachers and gallery educators. We therefore felt it was important to fully investigate the nature of the activity, to report the impact and to identify factors which helped transform the students' learning experience.

Teaching processes and strategies

The project used teaching methods involving questioning and dialogue. These are part of the educational programme of the gallery whose aim is, as Durant (1996) outlines in her reflections on Museum Education at Dulwich Picture Gallery:

'A new way of looking?'

Reflections upon one teacher's experience of supporting learners using handheld computers

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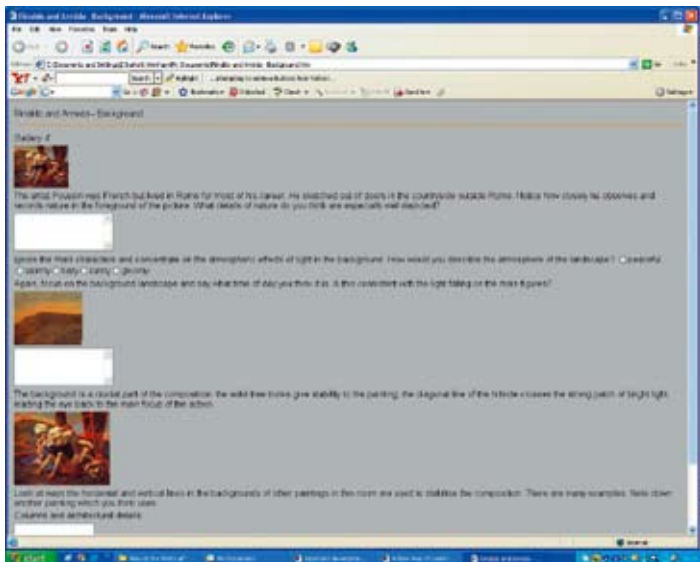
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"to make their collection of paintings accessible to those who previously felt excluded, disinterested or indifferent."

The contextual information the students needed to make the paintings come to life, and to help them understand the paintings, was provided on handheld computers. Using the Internet and wireless technology students accessed material called a 'trail'

relating to 3 or 4 paintings in the gallery. A trail consisted of a series of structured, interactive prompts that engaged the student in analysing works of art. Trails were initially devised by the educational consultant of StreetAccess to fit with the A Level syllabus; subsequent material for AS Level students, and GCSE Textiles students, was co-authored by myself and a gallery educator at Dulwich Picture Gallery.

The students used text containing simple questions that invite students to construct an understanding for themselves.



Typical screen grab

The findings

Learners' perceptions of the value of using the handheld computers included the following:

a) Recording

Students said they were at ease with using the technology to record their thoughts and the information about the paintings they gathered. The experience of learning became private and personal but they wanted to share their views with each other; a different approach to lessons or gallery talks where students often felt passive and 'talked at'.

b) Helping the students to analyse images

Students believed that the questions in the textual material helped them to analyse paintings and understand the context in which they were created. One student commented:

"Before we just used to go to a gallery and look at paintings and we would stand there silently, looking quite blank. With the handheld you get to ask questions, then look at the painting and make your mind up and it really helps to answer the questions in the handheld. ..It guides you through the painting pointing out things of interest and asking you what you feel about the artworks."

c) Constructing meaning in context

In the gallery I noted students testing out their ideas, and sharing their views. Using the prompts on the computer screen, they highlighted significant features of the painting. One student felt that the skills she developed helped her to analyse her own practice more, so that when she painted a self-portrait she could make a connection between her own work and the Artwork in the gallery:

"It (the interactive trail) helped us to consider the vital elements of the painting which I would not have considered in such depth otherwise"

They appreciated not being overtly directed as to how to view the painting; as they followed the 'trail' they modified their responses and compared ideas with others. It appeared that they began to value their own opinions and increasingly engage in constructive dialogue with peers, teachers and gallery staff. Students emphasised that the questions stimulated their thought and reflection: "...you actually got to be curious about the painting rather than just seeing it as a piece of art. You are curious about how that came to be or why the artist chose to do that".

d) Communicating with confidence

Less confident students appeared more able to participate in group discussion in the knowledge that their opinions were valid. They became aware of their deepening skills, understanding and knowledge. This in turn led to a desire to learn more, as one student wrote in her journal:

"The interactive trails run on the palmtops have really inspired and supplemented my knowledge of Baroque art...the trails, devised very cleverly, got us to explore several areas and elements of the paintings, from the use of colour, line, light and drama to symbolism and the wider historical and social context of the period."

e) Fostering autonomy, encouraging collaboration

Students' comments indicated a growing self-confidence. They adopted a more open, responsive attitude towards learning where they were in control of the activity:

"You give your own opinion rather than someone influence your opinion, you get to look at it in your own way. You choose the parts you want to look at rather than someone pointing it out and saying : Look at this bit or that bit...It gives you a new way

of looking at the paintings...It's like having your own file on the handheld, your own lesson...."

Personal engagement with questions and the provision of a manageable amount of contextual information seemed to be key to the growth in their own independence as learners. Students valued being able to offer a range of individual responses, each of which was valid.

Video footage revealed students discussing amongst themselves: *"...it gave us something to talk about"*. I was struck by the way they pointed out interesting features of the artworks to me and to each other, whereas normally they would adopt the position of being the 'novice' learning from the 'expert'.

Research methods

I used a number of methods to gather data including:

- observations of students working on the project, including video footage and photographs;
- students' sketchbooks;
- students' evaluation sheets;
- self-portraits produced in school after the visits;
- comments from students' work journals;
- notes and articles written by the educators at the Dulwich Picture Gallery;
- discussions and presentations;
- comments made by external moderators on the practical evidence of sketchbooks and on students' critical studies' assignments written after the visit; and
- focus group discussion with students at a later date, based on evidence from the earlier data we had collected and students' subsequent assignments.

I was supported by Dr Andy Convery, the Link Researcher within the Test Bed Team who facilitated teachers' action research. We conducted a discussion with 3 students that also covered learners' experiences since the project. We discussed how their learning had changed and the extent to which their appreciation of art and their experience of learning at school had improved. One student used her research to design a 'trail' for junior school visitors to the gallery. Another designed a website on Baroque art for teenagers in order to *"share my experiences and learning with other people"*, and the third presented an annotated, illustrated study demonstrating her understanding of the work she had seen.

Throughout the interview students referred to their sketchbooks, evaluation sheets written on the day of the visit, practical artwork

they had produced as a result of the visit and their critical studies submissions. We recorded and transcribed the discussion.

Conclusions and implications for learners, teachers and developers

The students gained key skills in analysing and reflecting in the gallery. They read, observed, questioned, analysed, interpreted and synthesised. They were motivated to apply the knowledge they had acquired to their subsequent practical art work in school:

"... I was encouraged and inspired to create my own paints in the way the 'Old Masters' had. I used a variety of organic sources (egg, stone, shells etc) to create my own paints which were very exciting and great fun!.... The skills acquired from the workshop and gallery visit really helped when it came to painting our own self portraits. It helped us to consider the vital elements of the painting which I would not have considered in such depth otherwise."

The learning framework enabled the students to look and examine without the teacher, which encouraged them to take responsibility for their learning. As students related the impact of their experiences I began to question traditional methods of teaching and the role of teacher. Handheld computers were enabling students to do things which could not have been done as effectively before. This is changing their perception of themselves as learners:

"We've always been told in statements, this is like this, this is why...but when you actually get a question that you have to answer yourself you get to give your own opinion rather than someone influence your opinion. You get to look at it in your own way."

Students appreciated opportunities for exploration in collaboration with others in a non-threatening environment. They acquired knowledge, made connections, shared their experiences with each other and tried out their ideas in practice. Educators had a crucial, but different part to play:

"...we still need guidance, that kind of interaction that you get from a person, like someone standing next to you...You do need some kind of interaction with somebody who knows what is happening in the painting. We each give different opinions; you take all those ideas and put it in your own idea. You can have three different looks at the same painting so you can see what other people say."

Whilst the art gallery was a potentially intimidating context, the technology helped to change students' attitudes towards learning and contributed towards developing confident learners able to construct knowledge and personal understandings.



Changing the learning context at school continues to present a huge challenge and these questions remain:

- To what extent can the informal experience of the gallery be transferred to other learning environments, particularly the more traditional expectations of the school classroom?
- In what ways can teaching strategies and approaches be changed to help learners at school experience greater autonomy and independence?

The richness of the experience enabled students to make meaningful connections between the work they had seen and their own practice. The use of appropriate software that enabled educators to author relevant educational content and encourage high quality engagement enabled both teachers and learners at Warren to become producers rather than consumers of software. An exciting and unexpected development of the project was that two of the three students interviewed authored learning material for their peers and this gave a new purpose and relevance to the activity.

The most important lessons learned from the project have concerned **how** pupils learn rather than **what** they learn. This can seem at odds with the institutions' needs, the content driven curriculum and current methods of assessment; but remains the main finding of the project and the thrust behind endeavours to construct pedagogy to support this in practice.

Reflecting on practice has been a significant feature of this project for both students and teachers and has played a crucial part in developing a vibrant learning community, which has changed students' perceptions of themselves as learners. Essential and thought-provoking clues to the question of how and why this form of learning is so different have been raised and it is hoped that giving learners opportunities to put forward their opinions and formulate independent critical judgements will prove central to this debate. The 'new way of looking' one student refers to can become a new way of learning.

I described my reflections in a teacher action research report entitled: 'Can 21st Century Technology be used to learn about 17th Century Art?' published in 2005 on the DfES ICT Test Bed Project evaluation website www.evaluation.icctestbed.org.uk

Further information on this and other projects that use handheld computers for learning:

The Barking & Dagenham PDA Project
<http://www.barking-dagenham.gov.uk/9-cias/ict-team/ict-team-pda.html>

Becta case study
Resources at Warren Comprehensive School: How ICT has impacted on Becta's self-review framework element 7
http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/warren_comprehensive_school.pdf

Learning with handheld technologies, December 2006
<http://www.futurelab.org.uk/resources/publications-reports-articles/handbooks/Handbook198>

Streetaccess i-guide trails can be viewed on
<http://www.streetaccess.co.uk/>



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This summary was commissioned by the National Teacher Research Panel for the Teacher Research Conference 2008, which explored and celebrated teacher engagement in and with research.

All conference materials are available at www.standards.dfes.gov.uk/ntrp

This publication has been supported by the DCSF Gender Agenda.

To find out more please email: research.summaries@dcsf.gsi.gov.uk