

# Virtual education: A reality for radiography?

*From left: Senior lecturer in radiography for the University of Teesside Philip Cosson with Shaderware's technical director and computer programmer, Neil Willis.*



**As the Department of Health announces it will fund virtual reality training for radiotherapy students across the UK, similar technology is being put to the test in diagnostic education. Will investment follow and how might this change the face of radiography education? Eleanor Sheath investigates.**

News that the government is to fund Virtual Reality Radiotherapy Training (VERT) nationwide has been hailed by The National Radiotherapy Advisory Group as a step that will revolutionise cancer treatment by increasing clinical training capacity.

Developed by the University of Hull and the Princess Royal Hospital, the interactive VERT training suite is a virtual replica of a radiotherapy room which gives users the sense of being present in an actual treatment room.

There is no equivalent government funding for diagnostic education, but all eyes are on 14 radiography students from the University of Teesside as they begin clinical placement. This is the first UK diagnostic cohort to train using a virtual reality simulator, so their performance working with real patients could have implications for the future of clinical placements.

Dr Audrey Paterson, SoR director of professional policy, said: "There is much discussion as to whether virtual training can replace clinical time. We don't know the answer to this question yet but

what is clear from the evidence is that the time spent on clinical placement is very much enhanced by the confidence and skills built in the virtual environment."

### **Gaming technology made real**

The Teesside simulator was masterminded by senior radiography lecturer Philip Cosson and developed with the help of MSc students from the Teesside School of Computing.

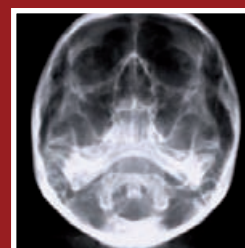
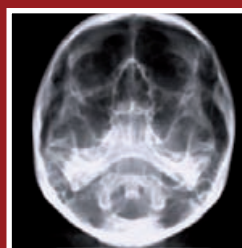
The Shaderware system harnesses the 3D technology of computer games to help teach the radiography curriculum, making use of information from the USA's National Library of Medicine to simulate the conditions of an xray unit.

The simulator uses an ordinary computer screen, a mouse and a keyboard to allow the student to see the xray room and patient in the xray tube. The student can then use the mouse to position any equipment in the room and then click to display the final image.

Philip's project has received two grants from the University of Teesside. It is now developed enough to be a commercial product. A license has



The Teesside simulator works like a computer game. Students use the mouse to position equipment in the virtual xray room. Once they are happy with the positioning the xray image is displayed.



already been sold to a university in Sweden, but so far there has been no marketing of the product in the UK. If the Teesside students do well on placement, however, this could encourage further funding to develop Cosson's project.

#### Society lends support

The SoR is fully supportive of work to develop virtual systems for radiography training. Dr Paterson said: "The Society played a central part in securing DH funding for the Hull project and hopes to see a similar investment in diagnostic systems such as the one at Teesside.

"The students are really enthusiastic about learning from virtual reality and it is my expectation that eventually we could trade off placement time for time in the simulator. This would mean that placements are used for developing other skills often less prioritised such as delivering difficult news. We are looking to institutions like Hull and Teesside to publish their findings on the use of virtual reality in radiography education so the profession can use the evidence and build on what they have learned."

## In the hotseat

Philip Cosson, radiographer and senior lecturer in medical imaging at the School of Health and Social Care, shares his experiences teaching with the virtual reality system he has developed at the University of Teesside.

#### What do students learn best through simulation?

Before students have been in a department setting they often have trouble picking up the basic terminology of the equipment used. It has surprised me how fast students doing the full 14 hours virtual training here have learnt this. By using a simulator they can see exactly what's being referred to.

The simulator also helps with learning procedural steps, knowing which procedures come in which order. This is not something you can easily learn from a textbook as you learn from trial and error:

#### Are there less risks associated with virtual teaching?

The virtual environment allows our students the opportunity to learn without putting themselves or patients at risk. Because we no longer need to

use a live xray room to train students they are at less risk of being exposed to radiation.

The student has also tried procedures out before they begin practising on a patient. Patients have traditionally been very understanding about having trainees practising on them but if something goes wrong it can worry the patient and take the confidence of the student away.

#### What if you're a computer-phobe?

The majority of students have said they get a lot out of using the simulator and some will even download it at home to use in their own time.

Some students do have problems with the format, they may not be natural video gamers and find the system hard to relate to. But we have found to get around this we get students to work in pairs on one computer. In most cases one will 'drive' the computer while the other talks them through, so you get a buzz of conversation in the class room and you're not forcing someone who's not confident with computers to struggle alone.

#### Is it an expensive way to teach?

Some things cost and you have to bite the bullet because it's the right thing to do. This is an ethical consideration in my view, we shouldn't have students practising on people if there is an alternative, even if it's going to cost more.

Using the simulator means in some areas we have even reduced our costs. For example, it is very expensive to maintain a live xray room at a university. Now we use simulators we can use a dead xray room which means no annual service contract and a saving of £10,000 or more.

#### Can virtual reality replace clinical placement?

I don't think it will ever take over entirely. In aviation they recognise computer training as augmented hours but it has not replaced flying time.

We have a way to go with the technology until a virtual clinical environment could replace placement. It's a powerful way to learn, but the UK needs to invest more if we are to fully develop these systems.