

AbstractID: 4700 Title: An immersive virtual environment for training of radiotherapy students and developing clinical experience.

Purpose:

Radiotherapy equipment and techniques are rapidly developing and so efficient training is invaluable. However, the demands on clinical systems and the lack of trained personnel make it difficult to achieve. As an alternative approach we have developed virtual reality training tools, fully interactive and operating on a life size scale these can provide valuable experience for students and staff. We designed a study for 42 first year therapist students to investigate the usefulness of our training environment for learning a clinical technique that typically causes problems.

Method and Materials:

We have created a virtual environment that simulates an actual radiotherapy treatment machine, controlled via an actual handheld control pendant. The study was developed to simulate a "skin apposition" electron beam treatment. A virtual patient, based on the visible human female dataset, complete with rectangular markings for a range of different treatment sites, provided a range of treatment scenarios. At the Hull Immersive Visualization Environment (HIVE) we are able to project our graphics display onto a 5.3 m by 2.5 m 'Power Wall' utilizing stereoscopic visualization enabled via LCD shutter glasses. Such immersive interaction techniques (including the use of the Linac hand pendant) add to the user's sense of reality. To provide feedback, we have implemented a 'scoring algorithm' to assess how well the user has set up the beam/ patient.

Results:

The students reported the training environment to be realistic and following its use 93% perceived an improvement in their understanding of this clinical technique and 69% found the control system easy to master.

Conclusion:

Having implemented such training software and hardware we are beginning to perform academic studies to assess the impact of its use in the educational forum. We wish to understand which areas of multi-discipline training will benefit from such an approach.