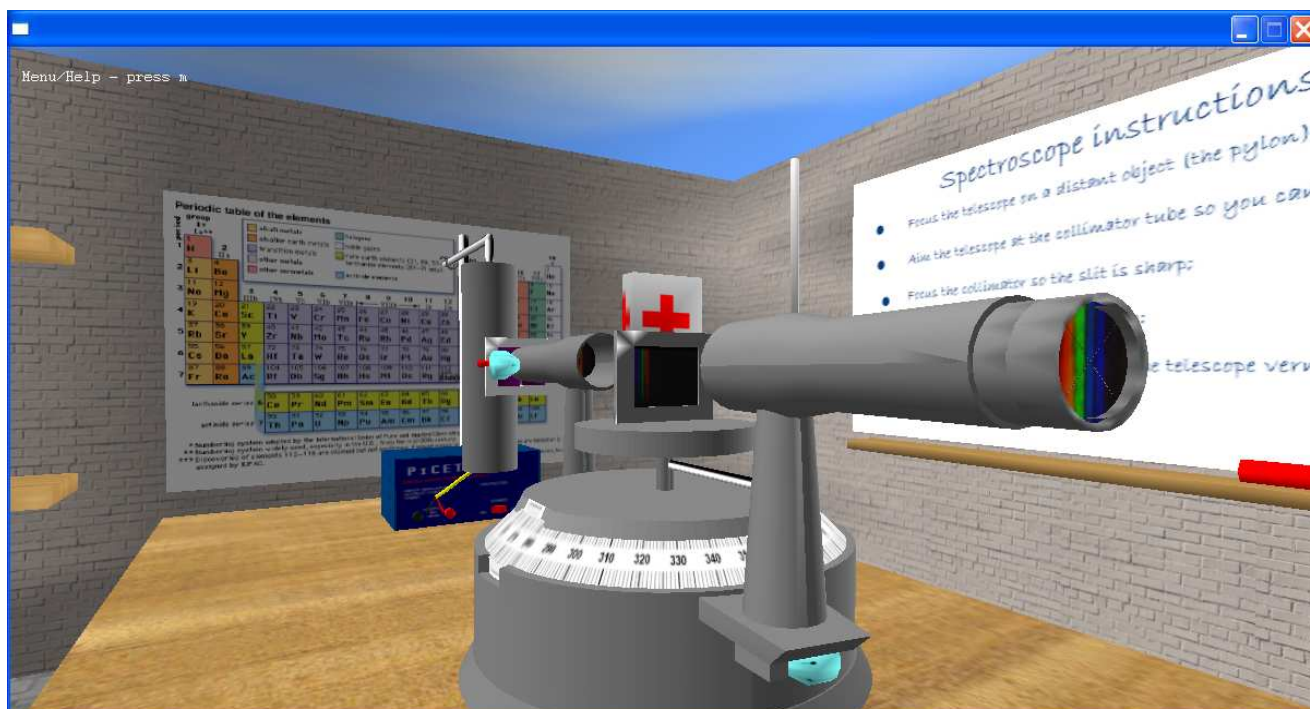


3-D Immersive Screen Experiments

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The aim of this work is to develop interactive activities that enable students to gain scientific understanding through virtual experiments. These experiments are rendered on a PC in 3-D and use photographs to represent the consequential views of an experiment, such as a spectrum. These particular views may be animated depending on the state of the experiment. This combines the photographic approach of the Interactive Screen Experiments with the advantages of a simulated 3-D environment where the user can interact with the apparatus in a more natural and intuitive way. The potential advantages are that users can quickly adapt to the environment and in particular the controls. They gain realistic views of the physicality of the experiment as they are not just seeing it from a particular viewpoint, but from wherever they see fit to place themselves within the experiment's scene. They are immersed in the experiment. It is possible to represent all relevant degrees of freedom allowing the user to explore a large experimental space. Whatever focus the user achieves carries over to the observations (see right). Furthermore, there is no need to represent scales, readouts or controls as separate parts of the interface; these can be rendered at their correct physical positions within the experiment.

