Multiuser Virtual Reality based learning environment
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To provide a learning environment to a group of students, a virtual reality based 3D-chatroom was realized.

A well known seminar room of the University of Hagen was modeled in VRML. This virtual room is equipped with a virtual beamer and screen, to render a live audio/video stream (e.g. a lecture) or the desktop of a shared computer. The introduced multi-user virtual reality seminar environment [1] consists out of the underlying DeepMatrix [5] Java-based client-server system, an interface to the existing 'virtual-university'-user-database of the University of Hagen, a streaming video Application (Real-Server, Real-Producer) and the opensource 'Virtual Network Computing' (VNC)-tool.

All the remote users are represented by realistic human avatars. Every user is able to control gestures of his avatar. Some of these avatar-gestures are especially adapted to a typical classroom situation, e.g. 'put one's hand up' and 'point to', to provide non-verbal communication to the users. Today’s VRML-browsers like Blaxxun Contact [3] and Parallelgraphics Cortona [4] are able to display Real-live-stream inside the VRML-world, if the Real-Player is installed onto the client-computer, so the streaming video could be used as a video-beamer application inside the modeled VRML-room.

To provide the users with a kind of a whiteboard an universal solution was selected. Not only Presentation-software like PowerPoint is frequently used to explain topics to a group of users. In different disciplines user-groups need different software-tools, or operating systems during seminar events. A universal solution is the remote control of a shared PC, simultaneously useable to all participants.