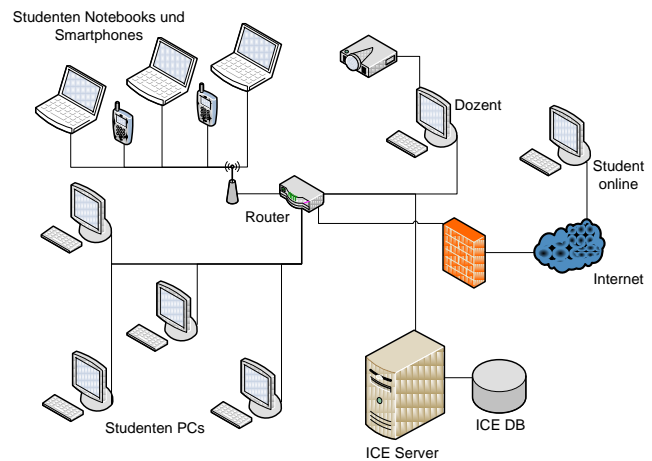


# Interactive Computer-aided Education

Teachers create graphics, text and images for their lectures and seminars on a computer, present them via data projector and put them on the Internet before their lecture. Many students bring the materials stored on their laptop or as a printout and complement them during a lecture.

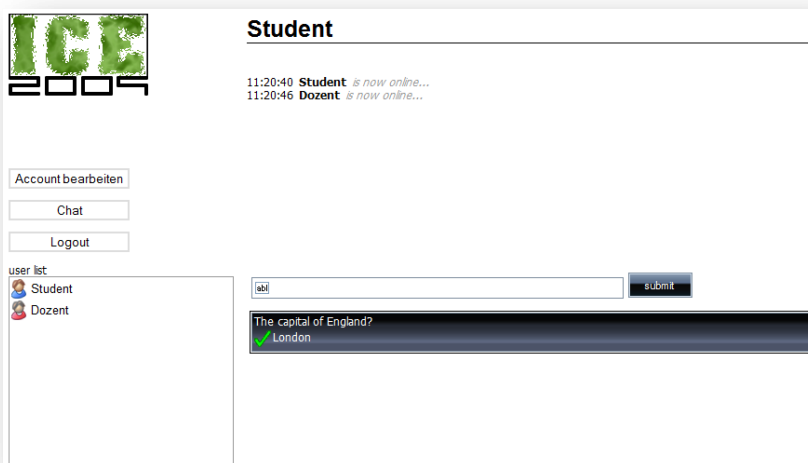
To explore how students and lecturers can benefit from new technical possibilities, the "Interactive Computer-aided Education" project (ICE) was created. It manages an education network with clients for students and lecturers. ICE includes a web application with real-time chat, an OpenOffice.org macro and a question tool.



Picture 1 - ICE network

## ICE web application

Talking about lecture contents is important for knowledge transfer. But there are unwanted side effects: teachers` concentration is interrupted, discussions and questions posed by seminar participants increase the noise level and the concentration decreases. ICE remedies this situation: The web application included provides a chat where Students can ask questions. These questions are visible to all and can be answered by the tutor at the next opportunity, or by other students. The advantages are obvious: teachers are not interrupted during their lecture. Nonetheless, they do not have to dispense with serious discussions or repetitions of difficult content.



Picture 2 - ICE web applikation

## ICE Macro

By using the OpenOffice.org macro the lecturer can ask questions out of a presentation. The questions appear in the student browsers and must be answered within a specified time. Replies are visible to the teacher only. Evaluation is carried out promptly and offers a variety of uses:



Picture 3 - Question for students

- Results are presented by data projector, anonymously. Students and lecturer get feedback and discover whether the subject matter is clear or not.
- Individual students` responses are stored in a database and can be used for evaluation.
- Individual students` responses are stored. The lecturer can address students with knowledge gaps selectively during seminar or exercise.
- Answers are not stored by individual student. The teacher can use them for post processing.

Correspondingly, ICE allows teachers immediate and statistical feedback on their lecture. Questions from

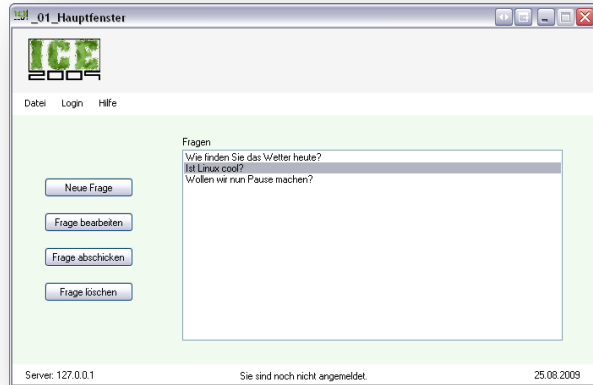


Picture 4 - Evaluation (lecturer view)

students and responses to questions can be used for post processing. Lecturers receive information about the success of their teaching style.

## ICE Tool

Academics that do not use OpenOffice.org presentations can use the ICE tool to ask the students questions. This stand-alone application allows them to save a list of questions and send them as desired. The analysis is presented in both the web application and the ICE tool.



Picture 5 - ICE tool

## ICE Installation CD

Use of ICE requires no complex software to be installed for students. They simply call the ICE web application in their browsers and login. JavaScript must be enabled but plugins are not needed. Teachers can access the Web application in their browser, too. OpenOffice.org with ICE macro or the ICE tool is necessary for

sending questions to students. Administrators of ICE must install the web application on a server with MySQL database. For easy installation there is an ICE CD which installs all necessary components (XAMPP, OpenOffice.org, ICE macro, ICE tool and ICE web application) as needed. If desired, the CD sets up a lecturer account, student accounts and a lecture within the web application so the lecture can start immediately. Alternatively administrators can insert accounts manually.



Picture 6 - ICE CD

The ICE project will be developed further and expanded with new features.