§31. Development of FECnet Utilization and its Application to Education

Matsuoka, M., Yamamoto, H., Nagai, A. (Dept. Indus. & Tech. Edu. Mie Univ.)
Fujiyama, S. (Fuchu Junior High School, Mie)
Nakanishi, H., Yamamoto, T. and LABCOM Group

The computer network, FECnet that uses the Integrated Service Digital Network (ISDN) was introduced at National Institute for Fusion Science (NIFS) for real-time analysis of experimental plasma physics and nuclear fusion research. Physicists at universities can access the network in NIFS directly and join the experiments with real-time images, sounds and so on, irrespectively of the traffic in the internet.[1] Real-time use of the system, however, has not been well tested yet. The purpose of the research is to demonstrate the validity of the system for real-time use through an educational application for junior high school students.

A junior high school accessed to LHD control room at NIFS via an ISDN (64 kbps) line and the network in NIFS by router connection. Researchers then gave remote lectures to the junior high school students. The software used for connection was an internet TV conference system, Enhanced CU-SeeMe. The remote lecture was given to the third grade of the students at Fuchu Junior High School, Mie, which has the experience of the remote lecture from the overseas.[2] The students had a lecture as a part of 10-hour unit to study "Energy and Communication" in technology subject.

The remote lectures were given twice, corresponding to two third-grade classes in the morning at December 4 (Friday), 1998. The figure is an example of the projected screen image of the computer at the school. Four camera images from NIFS and one camera image of the school as well as a character-based chat column were indicated in a screen. The smooth communication between NIFS and the school was possible except time-delay by several seconds for both images and sounds. We found fine adjustments of the communication in the software were crucial for smooth, stable communication, which was carefully done in advance.

In the lecture, an overall explanation of the LHD project was first presented and then a representative student counted down for an LHD experimental shot. Several questions were given by the students and the researchers in NIFS gave the answers in both Japanese and English.

The remote lectures clearly gave strong impact to the students, though the LHD project might too difficult for junior high school students to understand. Alternatively, simple questions by the junior high school students seemed fresh for the LHD researchers and might stimulate them.

The authors thank researchers to take part in the remote lecture. This work supported partly by the Telecommunication Advancement Foundation.

References

1) Ida, K., Nakanishi, H., J. of Plasma and Fusion Res. **73**, (1997) 377.
2) Fujiyama, S., Yamamoto, H., Matsuoka, M., Bul. of the Center for Educational Research and Practice Mie University **18**, (1998) 95.

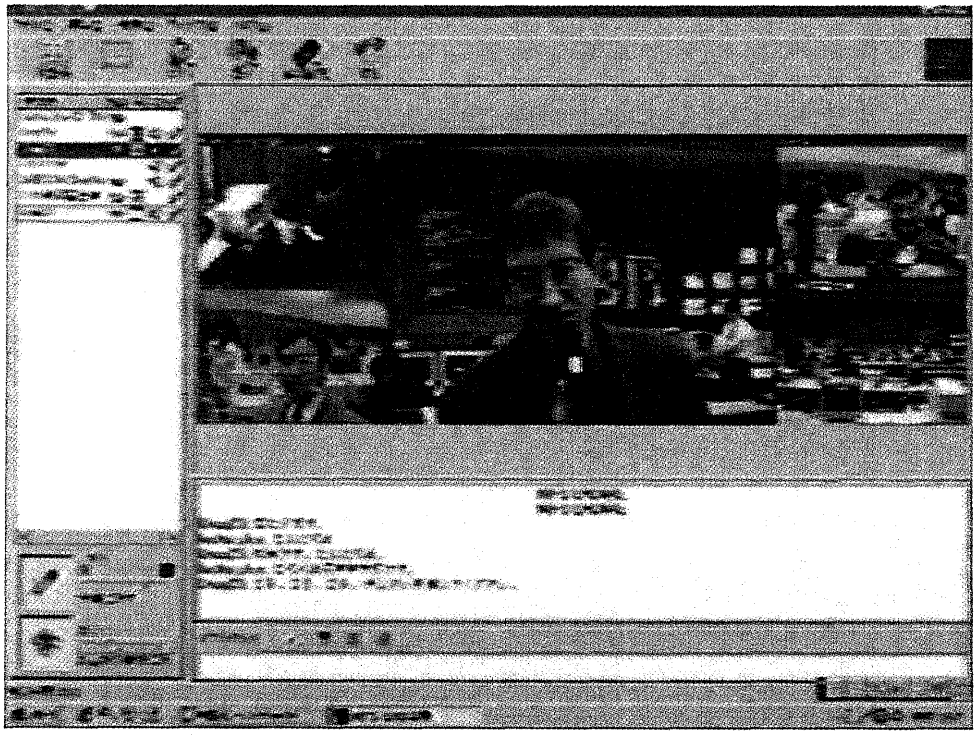

Fig.1 Screen image of the computer at the junior high school.