Small group language tuition using multimedia conferencing over the JANET Mbone Service.

Jane Hughes & Martina Angela Sasse
Department of Computer Science
University College London

Abstract

This paper highlights some of the conclusions of project ReLaTe and shows how issues it raised are to be addressed by the project's successor, ReLaTe2. It also summarises the new project's major aims and presents progress to date. The original ReLaTe project was an enquiry into the feasibility of teaching foreign languages using multimedia conferencing over a packet-switched network such as the JANET Mbone Service. It generated considerable useful information about the usability of individual conferencing tools as well as raising both technological and pedagogical questions.

ReLaTe2 is a JISC-funded project which runs for two years from October 1996. It researches issues, both technical and pedagogical, arising from the use of the Mbone multimedia conferencing tools for distance language tuition. It is a joint project between the University of Exeter and University College London.

Background

ReLaTe2 is building on the work of the earlier ReLaTe project [1], funded by BT and JISC. The original project built a demonstrator system, based on the Mbone conferencing tools piloted in the MICE project [2], [3], and used this for small group language tuition in a field trial with tutors and students from Exeter University and University College London. The field trial consisted of four ten-week courses, in Advanced French, Business French, Latin and Portuguese. In this section, the main conclusions arising from the field trial are summarised.

The principal conclusion of the project was that it was certainly feasible to teach foreign languages over a network such as the JANET Mbone service, using the Mbone conferencing tools, vic, rat and wb. A considerable amount was learned about the usability of the individual tools, the demands of such an application and the training and support needs of non-computing user groups. It was also concluded that work remains to be done in some areas before such an application can become routine.

One major problem to be addressed is the impact of the network itself. Audio quality during the field trials was subject to extreme variations and was cited by both tutors and students as an area where improvements were needed. Packet loss was found to be the main cause of poor audio quality.

In addition, the variability and seeming unpredictability of network conditions can generate uncertainty, and hence lack of confidence, in the user. This sense of uncertainty is compounded by the fact that most diagnostic tools are designed for expert users with a reasonable understanding of networking. It appears that there is a need for users from non-computing disciplines to be able to differentiate between a local difficulty (such as faulty equipment) and a probable network problem, whether this is provided through improved training or some form of on-line help. Secondly, they need to be able to report problems and call on technical support when necessary. Allied to this is the requirement that a service network be regularly monitored, to reduce the number of problems that end users actually encounter.

Considerable time was spent with users in the requirements capture phase of the ReLaTe project and this was felt to have been worthwhile. An integrated interface (incorporating audio, video and shared workspace tools into a single window [1]) was a significant contributor to the success of the project. A similar interface might well be appealing to other user groups and it is probably the case that an integrated interface needs to be built for most application areas.

The tools themselves were found to support this particular application well, although there were some usability problems identified with individual tools [6]. The shared workspace proved to be a key feature - both the great success of the project amongst teachers and students and the area where most demands for new functionality were made.

Particularly heavy demands were placed on the audio tool, rat [4]. It is encouraging that despite fluctuations in audio quality and great variation in packet loss, the students were satisfied with the amount of the target language they spoke and heard and felt they had made progress on their courses.

Like many users of real-time multimedia conferencing tools, this user group wished to see them integrated with applications and resources with which they were already familiar. Extensions to the system requested by teachers included the integration of courseware and other support material such as facilities for student and teacher record-keeping, student notes and vocabularies. Users also requested the incorporation of some means of asynchronous communication, to facilitate completing, submitting and marking of homework.

As far as training is concerned, users considered the very short training sessions they were given to have been adequate. There is room for further investigation here, however. It is possible that with more training they would have made fuller use of the system's functionality.

Aims of ReLaTe2

The second phase of ReLaTe aims to address some of the issues highlighted by the first project, as well as having its own agenda. The primary aim is to broaden access by making a similar system available on PCs running Linux and Windows95.

The facility to synchronise audio and video streams will be used regularly (for most of the first phase of ReLaTe the workstations used were not sufficiently powerful to decode multiple video streams at frame rates high enough to make synchronisation meaningful [5].) The intention is to investigate the impact of this feature on language learning. Further improvements to audio, including enhanced reality speech, will be investigated in conjunction with project MEDAL (funded under the MNA initiative by the EPSRC, project number GR/L006614).

Additional facilities and functionality are to be incorporated, with the aim of exploring the balance between synchronous and asynchronous tools needed in such a distance education application. The use of digital recordings of the conference sessions, to the benefit of students and tutors, will also be investigated.

In addition, further field trials will be run. The first of these, a full academic year's course in French, is in progress. This course is a genuine resource-sharing measure (students at Exeter University are being taught by a tutor from the language centre at University College London) and is also an examinable course for the participating students. Links with European universities will also be exploited. The new trials will provide a platform for investigating and developing new teaching methods and materials.

It is also hoped that, by the time this project reaches its mid-point, active monitoring of the network service will have developed to keep pace with demand, so that users are able to experience as reliable a service as possible.

Acknowledgements

The author would like to acknowledge the following contributors to the work reported ihere: at Exeter, John Buckett, Mark Pack and Gary Stringer; at UCL, Angela Sasse, Vicky Hardman, Isidor Kouvelas and Anna Watson.

Special thanks are also due to teachers and students from the Foreign Language Centre at Exeter University (Director Elizabeth Mathews) and the UCL Language Centre (Director Dolores Ditner) and to the expert assessors, Marie-Danielle Chamary, Marc-Georges Nowicki and Dr. Carmo Ponte.

ReLaTe (Remote Language Teaching over SuperJANET) was a BT/JISC funded SuperJANET Applications project from September 1994 to December 1996. ReLaTe2 is funded by JISC for two years from September 1996.

References

[1] Buckett J. et al.: “ReLaTe - Remote Language Teaching over SuperJANET” - Proceedings of NetWorkshop, 1995.

[2] M. J. Handley, P. T. Kirstein & M. A. Sasse (1993): Multimedia Integrated Conferencing for European Researchers (MICE): piloting activities and the Conference Management and Multiplexing Centre. Computer Networks and ISDN Systems, 26 (3), 275-290.

[3] P. Kirstein, M. Handley, M. A. Sasse & S. Clayman (1995): Recent Activities of the MICE Conferencing Project. Proceedings. of INET’95, Hawaii.

[4] Hardman, V., Kouvelas, I., Sasse, M.A., Watson, A.: “A Packet Loss Robust-Audio Tool for use over the Mbone” - Department of Computer Science Research Note. RN/96/8

[5] Kouvelas, I., Hardman, V., Watson, A.: “Lip Synchronisation for use over the Internet: Analysis and Implementation” - Proceedings of Globecom96. London UK, November 96.

[6] Watson, A, Sasse M. A.:”Assessing the Usability and Effectiveness of a Remote Language Teaching System”. Proceedings of ED-MEDIA’96, Boston, July 1996.