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Radio-modem project

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The Correspondence School, Melbourne is the only state high school in Victoria which provides distance teaching to a diversity of students at the secondary level. In the secondary section of the Correspondence School. with which this paper is concerned, approximately 4500 students are enrolled this year. A majority of these students (approximately 3000) are enrolled at state high schools or independent schools, and do one or two subjects at the Correspondence School. However, there are approximately 1500 students each year who enrol with the Correspondence School only. These include adult students, travellers, itinerant workers, overseas and remote students, members of services and students referred to the school because they are unable to attend a school for a variety of reasons (medical, psychological, etc).

The project described in this paper deals only with those students who are currently enrolled in country schools. One of the common problems experienced by students in the country schools is the delay between the time their work is sent for correction to the teachers in the Correspondence School and the time when they get it back. The average "turn around" time is found to be 3 to 4 weeks. This causes problems particularly for the Year 12 students who work on a tight schedule and have to face an external examination at the end of the year. Incidentally that is the year level where the Correspondence School has the highest number of enrolments. The radio-modem project aims to provide an affordable means of reducing the turn-around time for these students.

The project's origin

The origins of the project have been described by Srivastava (1985). Towards the end of 1984, a proposal was put to the Country Education Project for the establishment of a link-up between five selected schools on an experimental basis. The main purpose of the project in its first phase was to improve the frequency of feedback on students' work. It was proposed that the use of the computer link would cut down this time considerably. Furthermore, currently the Correspondence School uses two-way radio communication to communicate with students. It was proposed that computer-communication combined with the radio communication would enhance the quality of correction and communication. The five schools selected in the project had been part of the experimental team in the initial radio pilot project and were familiar with the problems involved in such projects.

The schools selected were: Hopetoun, Ouyen, Managatang, Murrayville and Sea Lake. Since all the selected schools were from the Mallee area, this project was commonly referred to as the Mallee project. The project was approved at the end of first term, 1985. Initially, it was proposed to teach Mathematics, Physics, Accounting and English using computer communications. The set up was completed in second term 1985. There were certain technical problems in setting up the equipment, mainly due to the telephone switchboards used commonly in the Victorian schools and interference in transmission.

Starting from August 1985, student work started to be transmitted to and from Correspondence School. While technical problems in setting up the communication package took considerable time to sort out, these problems were minimal compared to the teacher resistance met in the introduction of the new technology. Some teachers for instance felt that corrections on a word-processor were impersonal. Obviously many teachers feared the new technology, although they had a genuine grievance about the awkwardness of having to type lengthy essays. Their fears, however, are gradually disappearing.

Certain schools, outside the project, have expressed an interest in joining the scheme. Another school having radio links has bought modem and necessary software to have the students taught Mathematics at years 10 and 11 using the communication system.

Using Radio-Modem

The Correspondence School has a two-way radio link with 44 country schools. The schools in the Mallee were the first on the trial of the two-way radio and already have a good level of expertise in radio communication.

They were therefore selected to be the initial participants in the radio-modem project as well. The master-station of the two-way radio is located at Mount Waverley, in Melbourne and is much more powerful than the country school stations. The Correspondence School radio-station is connected to the Mount Waverley master by a landline. The set up of the network is shown in Figure 1.

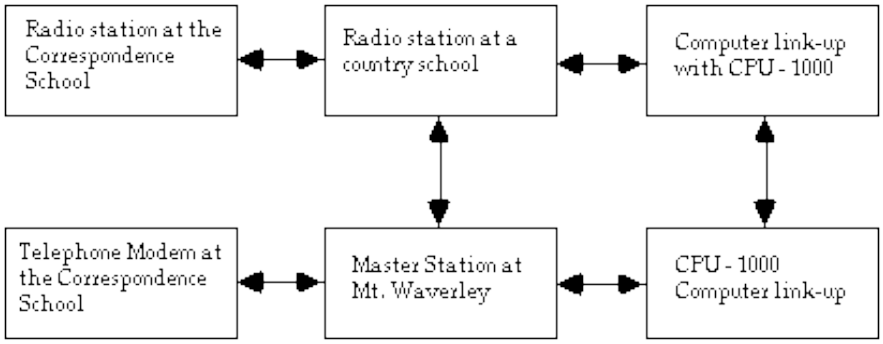

Figure 1: Radio-Modem set up

The computer data is transferred much the same as any voice message in between the country school aerials and the Mount Waverley aerial, by the use of special radio-modem equipment. It should also be noted that the radio rooms of all the schools concerned have retained all the facilities which existed before the radio-modem experiment. In other words, the interfacing between teacher and student(s) can take place in four possible ways:

1. radio-modem
2. telephone-modem
3. use of radio for voice communication
4. when all else fails, communication by telephone

Obviously the main aim of the radio-modem project is to develop this new means of implementing distance education interaction between teacher and students. However the participants into the project are keenly interested in developing multimedia interfacing.

Advantages of Radio-Modem over Telephone-Modem

While the capital outlay of the Radio-modem networking is a bit higher than that of the "normal" telephone networking, its subsequent running cost is almost nil, while the cost of the telephone rapidly becomes crippling when the networking extends over a large country area.

Computer networking using telephone-modem allows only one-to-one communication between the computers of the network, while radio modem networking can operate in two different modes:

1. normal one-to-one communication between any two computers of the network.
2. broadcasting from the computer of the master-station to all 44 country-stations computers.

Clearly this second facility is of crucial impact for a Correspondence School.

Finally the radio-modem, although much slower than its telephone counterpart, has the in-built capacity of being a self-correcting data carrier. The deterioration of the speed of transfer in bad conditions can become annoying to the impatient operator, but we feel that this is far less damaging than the risk of data corruption, the so-called "glitches", which could not be tolerated for instance in the correction of exam papers.

Evaluation of the Radio-Modem project

The project has not been operating for a sufficiently long period to assess the full implications and effectiveness of Radio-Modem. However, a series of unstructured interviews was conducted by Ian Conboy (1986) to determine the strengths and weaknesses of computer networking with the Victorian Correspondence School. These interviews indicated the following difficulties associated with the transfer of computer data:

a. the lack of keyboarding skills limits the use of the computer networking by students and teachers.
b. the transfer of electronic mail using telephone modem is fine but it limits student-teacher interaction due to heavy on-line cost.
c. there is a need for setting out clearer guidelines for the transfer of computer data.
d. there is a need for making adequate provisions for in-service of the personnel involved in the project and for providing necessary support for the maintenance of the computer communications equipment used in the project.

It may be pointed out that attempts are being made to address the difficulties mentioned above. Staff in-service has been organised to improve the staff keyboarding skills at the Correspondence School and the manufacturer of the CPU - 1000 radio-modem is working on the problem of improved speed. A new version of the CPU - 1000 is being developed. It is hoped that eventually it will be possible to transfer computer data through radio-modem at faster speeds. In the meantime the

Correspondence School is going to use a facsimile machine network with the experimental schools so that the problems of the keyboarding skills may be overcome and the system is used to a greater extent than at present. Hopefully the radio-modem will be improved soon so that the computer-radio link can be used.

Future Prospects

The new technology has vast implications for the entire field of education but the possibilities it opens for distance education far exceed those of any other field of education. This is so because computer technology helps to cut down the barrier of distance. For a computer it does not matter whether the student is in Melbourne or in Sardine Creek, students in both locations can receive the same quality of instruction through the computer. This does not mean that the computer would replace the teacher. The teacher still will play a central role in the education of the students but the distance will no longer remain a barrier in learning any subject, in a "normal" interactive fashion, even if the local school does not have a teacher to teach it locally.

Another advantage of using computer technology in distance education is that, unlike school-based students, distance education students do not have to work on a 9.00 to 5.00 timetable. They can work at a time that suits their convenience. The computer allows students to work at all times of the day or night. It is advisable however that such an arrangement be previously agreed upon by the student and the teacher particularly if the student requires interactive tuition at unusual times. Besides student-teacher interaction, computer technology also allows for student to student interaction and possibly could alleviate the problem of isolation so common among students in remote areas.

References

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