THE LEARN-ED DISTANCE TEACHING SYSTEM - RESULTS OF USE BY DISABLED STUDENTS

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ABSTRACT

The LEARN-ED distance teaching system has been developed to allow students with a disability or temporary disabling condition to participate in higher education. The key feature of the system is that teaching activities and other live events can be relayed to students at different locations, and they can interact with those participating at the site of the live activity. This paper reports on the studies conducted at the University of Dundee to verify that the terminals used in the system can be suitably adapted to allow these students to participate in the live events.

BACKGROUND

A number of interactive distance education systems have been devised to allow students (including those with a disability) to participate in education when they can't be physically present in the teaching venue. [1] Where live access is provided, it invariably provides video showing the output of a document camera or a view of the same screen display that is visible to the students in the lecture room. Both of these solutions require a high bandwidth video image to give sufficient quality to show the details of the material being presented.

In late 1994 a consortium was set up with partners in Slovakia, Hungary and Austria, and was lead by a team from the University of Dundee in the UK. In considering access to lectures, the project team constructed a system based on an approach that uses desktop based Internet videophone links with lecture material being made available as HTML pages distributed using the World Wide Web (WWW). Control of the presentation of the lecture material on the terminals of the remote students is provided by the system.

Because the material is distributed as HTML pages, it can be transduced into another media or reformatted at the student's terminal. This process is almost impossible if the material were distributed as a live video stream. Furthermore, the system can be used in situations where the link between the local and remote sites is of relatively low bandwidth (PSTN or primary rate ISDN).

RESEARCH QUESTION

The validity of the approach used in the LEARN-ED system has been studied extensively and reported in [3]. The key research question in this study was that the terminals used in the system could be adapted so that they could be used by students with disabilities

METHOD

Trials of the LEARN-ED system were carried out with individual motor-impaired students. Each trial followed the following method:

An introduction and a background questionnaire was administered to determine general background details and the level of prior computer experience.

An action script was used by the experimenter to direct the instruction of the participant through the process of starting the software, connecting to the lecture and using the system to listen to a short lecture, delivered by the second experimenter from a different room using the LEARN-ED system. After the short lecture, the shared Whiteboard facility was used to demonstrate potential tools for collaboration on documents in group project work.

At the end of the session the participant was asked for their feedback on usability of the system, particularly as it affected their ability to attend classes from a location other than the class location.

RESULTS

Each participant demonstrated the ability to carry out the scripted tasks required to use the system to attend a live event such as a lecture. Each participant also made the following comments:

PG: (Useful? 4/5) Found the system quite easy and enjoyable to use. She had some difficulty understanding what the other participants said when there was background noise. She reported that the system would be useful if she could attend lectures from home

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Subject	Age	Gender	Length of computer use	Computer use for education	Year of study	Main Subjects	Disability / Condition	Used WWW	Used CU-SeeMe
PG	20	Female	13 years	Daily	3rd	Applied Computing	Cerebral palsy	Yes	No
RC	21	Male	6 years	Daily	3rd	Business Admin.	Wheelchair user paraplegic	Yes	No
VT	22	Female	4 years	Daily	4th	Business and Computing	Fibromyalgia	Yes	No
TF	27	Female	2 years	Daily	2nd	History, American Studies, IT	Arthritis affecting hands, neck, knees, ankles	Yes	No

Table 1. Participant Details

when the weather makes travel difficult for her.

RC: (Useful? 3/5 to 4/5) Reported finding the system fairly easy to use. He was positive about the potential benefits of having such a system and enjoyed the experience. He thought that having such a system at home would be especially good for winters when the weather is poor so he would not miss classes. (Winter 1995-96 RC missed a week of classes due to winter weather combined with the remote location of his home)

VT: (Useful? 4/5) reported that she enjoyed the experience and felt that the system was a good idea. She thought that occasionally it would be useful to be able to attend a lecture from home or an alternative venue on campus because of the fatigue and other symptoms that accompany her condition.

TF: (Useful? 5/5, very useful) Reported that she felt self-conscious and found it difficult to talk loudly enough for audio transmission because of this. She liked the possibility of reviewing lecture notes at a later time and did not find listening to the lecture any more difficult than attending a lecture. She thought that the system could be helpful if her arthritic condition and level of mobility deteriorates.

CONCLUSION

In conclusion, this study has demonstrated the use of the specified LEARN-ED system with students with a variety of motor and speech impairments to participate in the live events of a Higher Education establishment. The event used was a short lecture about the project. Four participants used the system at individual sessions and gave positive subjective feedback on the usefulness and usability of the system. In general, the participants thought that using the system to take part in live events such as lectures and tutorials could be useful to them in circumstances where physically attending classes was difficult.

REFERENCES

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