TELIDON AND THE SPEECH IMPAIRED

TELIDON ET LES PERSONNES SOUFFRANT DE TROUBLES D'ELOCUTION

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ABSTRACT

One of the goal of the Telidon Program announced on February 6th 1981 is to adapt Telidon technology for the needs of the physically disabled. Under consideration by the Department of Communications is a project which would establish an operational BLISS Telidon Telecommunication System at the Blissymbolics Communication Institute, Toronto, Ontario, for the speech impaired. The system would not only facilitate the teaching of BLISS and the use of BLISS as a means to communicate by the speech impaired, but it would make accessible to them the full range of Telidon services available to the general public. It would include database facilities and a Telidon decoder specially adapted to accept a range of personnalized input switches. If successful, the BCI system could be duplicated across Canada and the U.S.A. creating not only a nationwide but an international Bliss Telidon Network for the speech impaired.

RESUME

Un des objectifs du Programme Télidon, tel qu'annoncé le 6 février 1981, est d'adapter la technologie de Télidon aux besoins des personnes handicapées. Le Ministère des communications étudie présentement un projet qui verrait à la mise en place d'un système de télécommunication Bliss Télidon pour les personnes souffrant de troubles d'élocution à la Blissymbolics Communication Institute, Toronto, Ontario. Ce système pourrait non seulement faciliter l'enseignement et l'utilisation du système BLISS comme moyen de communication par les personnes souffrant de troubles d'élocution, mais il pourrait aussi leur donner l'accès à tout l'évantail des services de Télidon déjà disponibles au public en général. Celui-ci pourrait contenir des entrées de fichiers et un décodeur Télidon conçu spécialement pour accepter un large évantail de modules de saisie personnalisée. Si le projet se révèle un succès, ce système de la BCI pourrait être reproduit a la grandeur du Canada et des Etats-Unis, créant ainsi un réseau BLISS Télidon national et international pour les personnes souffrant de troubles d'élocution.

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A recurring theme of this conference has been a concern that all sectors of society have an equal opportunity of access to information as vidoetex technology becomes more and more widely used. The topic of this paper, the development of Telidon technology for the needs of the speech impaired, is related to this concern. As a subgroup for the disabled community, the speech impaired have special needs and can potentially benefit greatly from developing telecommunications technology. Whether or not the potential is realized will depend on two factors, one short-term, the adaptation of technology for their needs, and one long-term, the ability to afford the costs related to data base content and operation. This paper will outline current federal government R&D activities for the development of a Bliss Telidon communication system and will identify problems of a more long-term nature which will have to be addressed by the disabled community themselves.

Who are the Speech Impaired?

Within the category of those termed "disabled" are many sub-groups. These groups are difficult to categorize because individuals who comprise them have differing characteristics. Within a group individuals may have the same impairment in common, but may individually suffer, in addition, a whole other range of disabilities. Furthermore, the same disability will affect different individuals with varying degrees of severity. Not uncommonly the same disability in a number of individuals will have come about from a variety of causes. Consequently, any attempt at categorization of disabled persons will inevitably lump together persons who have a range of disabilities, of severity of affliction and of pathologies. The speech impaired are a case in point. They are found among the cerebral palsied, the mentally retarded, the aphasic, the deaf, the autistic and the multi-disabled. They span a range of cognitive abilities and age groups. Their identifying characteristic is the lack of ability to communicate verbally and/or by other means. Some of them have the ability to learn to read; some do not. All of them need a quick and easy means by which they can communicate and be taught. Many suffer from a lack of mobility which prevents them from holding jobs. They live in a world of limited horizons, closed off as they are by restricted person to person communication, ability to access information and opportunity for gainful employment.

How many Speech Impaired are there?

Hard statistics about the number of disabled (and their various sub-groupings) are difficult to ascertain since few countries in the world have engaged in systematic research in this area. However, it is known that in the United States there are some 35 million handicapped persons, and of those, 1% or

350,000, are non-functional in speech. It has been estimated that the symbol system for the speech impaired, Blissymbolics, is used by a mere 30,000 persons in the whole of North America. It can be seen that this number represents a small percentage of the total who could potentially benefit from this system.

A breakdown of the total number of disabled into sub-categories reveals that in the mentally retarded group only 10% are at present using Blissymbolics. Of stroke victims a mere 1% of potential users are benefitting from the system. These figures all speak a tragic story, the majority of speech impaired sufferers are not at present able, for one reason or another, to make use of a means to communicate which already exists for them, Blissymbolics.

Where are the Speech Impaired Located?

Since a wide variety of disorders correlate with speech impairment a number of different kinds of institutions administrate to their needs. These include residential schools, in-treatment centres, orthopedic schools, in schools for the retarded and home settings.

What are their needs?

As was mentioned above, the speech impaired are in most desperate need to have a means to communicate with each other, with relatives and friends and with teachers. If they are to participate in society they must have equal opportunities of education and of employment. As well, they should have equal access to the information and services enjoyed by the rest of the public. In order for these goals to be reached a number of requirements must be met:

- the creation of a visual code which would allow the users to create messages by choosing symbols
- a means for transmitting the code
- a means by which the disabled themselves can operate the communication device
- an infrastructure of support staff trained in the skills of teaching with, and about, that code

The code exists. It is called Blissymbolics. It was developed in the late 40's by Charles Bliss and is now used in some 26 countries worldwide. It is a visual symbol system which initially comprised a small number of symbols and which today has been expanded to a repertoire of some 1500 standardized symbols by the Blissymbolic Communication Institute of Toronto, Ontario.

There has been a start made towards developing the infrastructure needed to teach with and about Blissymbolics and to create educational materials for users. The Blissymbolic Communication Institute has been the chief instrument for

standardizing, expanding and developing applications of the Bliss code. It operates a service which handles referrals, runs assessments and trains the large numbers of persons necessary to interact with Blissymbol users. It develops instructional materials for use within the service and it evaluates symbols for inclusion within its standardized vocabulary. It also develops teaching techniques for training new teachers. Its students come from as far away as Mexico, although the majority reside in Ontario. A comparison of the total number of speech impaired in Canada and the number being reached by the Blissymbolic Communication staff makes it obvious that many more trained personnel are needed and that material for their educational use must be developed.

The means for communicating the Bliss code has taken several forms to date. The most primitive, technologically, are the sturdy display boards which present an array of coloured symbols and which fit on the user's wheelchair or at his workstation. These are still being used, in conjunction with computer displays. The next stage of sophistication emerged with the application of image communications technology. Herb Brown and Bill Sawchuk working with interactive graphics on the Space Program at the Communications Research Centre of the federal government developed a terminal which generates Blissymbol displays. It uses a Picture Description Instruction protocol which is the heart of the Telidon system today. The terminal has a two page vocabulary from which the user can select a sequence of seven symbols to create a message. He does so by means of a light pen pointed at the screen which causes the symbol to move to the bottom of the screen. The message can be saved, corrected, or erased, as desired.

The next terminal to be developed was a joint effort of the NRC Medical Engineering Division and Norpak. NRC's Medical Engineering Division addressed itself to making the terminal useable by a wider range of disabled by providing custom input devices to activate it. Peter Nelson of NRC has been, and is currently engaged in developing more rugged and useful custom input switches to activate Telidon terminals home monitoring systems, etc. The Blissterm, as the NRC terminal is dubbed, has an expanded vocabulary of 517 symbols and these symbols are selected by means of a moving cursor to create a message. The improvements over the first terminal lie in the expanded vocabulary, user control over the scanning rate of the cursor and an expanded set of custom input devices. However, an evaluation carried out by Ron Levy of the Universite de Montreal revealed that a number of features were still unsatisfactory. The terminal limits its range of potential users by accepting only a narrow range of input devices and by presenting a limited vocabulary. It is not sufficiently rugged and it is prone to frequent breakdown.

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At present, the Department of Communications is considering a project which would further develop Telidon videotex technology to build on previous experiments and to expand the capability of telecommunication technology to meet the needs of the speech impaired. The project's goal is the establishment of an operational Bliss Telidon system at the Blissymbolic Communication Institute in Toronto, Ontario. The system components would include telidon videotex terminals with the capability of generating text, graphic and Blissymbol displays, a data base with Blissymbolic educational and pedagogic content and information provider terminals. The user terminals would be able to communicate with other user terminals as well as to access data on public and private data bases. Such a system would allow the speech impaired to communicate with each other, with teachers and with their relatives. It would provide teachers, therapists and families with a means of teaching with and about Blissymbolics. The data base material could potentially be accessed by users and professionals across the country, establishing a special new network, a Blissnet. This would have the effect of opening up the world of information and services to the speech impaired. If successful, the system at the Blissymbolic Communication Institute in Toronto would serve as a model for other centres across Canada and around the world.

That is the potential. What chance does it have of being realized? Here I must refer back to my initial remarks where I mentioned short-term factors and long-term factors. Short-term factors are those which relate to research and to the design of prototypic models. The Department of Communications under the Augmented Telidon Program has dedicated some $8 million to R&D Telidon videotex technology. Part of that will fund applications for the disabled-closed captioning and a Bliss Telidon system in this International Year of Disabled Persons. But long-term, information willl have to be gathered and placed in data banks. At the moment, very little resource material exists for use by the disabled. Data base storage and accessing costs will have to be met. If disabled persons are to have equal access of information and to share in the benefits that Telidon videotex technology offers, these issues will have to be addressed. Long-term it may very well depend on what J.L. Campbell from Bell Canada identified earlier today, "the political acumen of volunteer and non-commercial organizations". The disabled depend on technology more than any other group in society. In human terms they have more at stake in the resolution of the problem of equal opportunity of access to information.