

COMPUTER COMMUNICATION, ACCESS AND PROGRAMMING BY SEVERELY HANDICAPPED CHILDREN

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Outline

Computer Communication, Access, and Programming by Severely Handicapped Children is a beacon project conducted at the Yooralla Special School, Glenroy, Melbourne, Australia, with the support of the Australian School's Commission. This project is concerned immediately with the educational communication needs of a group of nine non-vocal cerebral palsy students aged 7 to 16. One of these children can only operate a single key, while the most mechanically capable can effectively use a five key interface.

The project is concerned to provide personal computing facility adapted to the physical handicap of the user which better equip the user to participate in education. Firstly, it has aimed to provide a Conversation program in which the non-vocal communicator can prepare statements for sending but which can be readily guessed by the receiver before completion. In such conversation the sender requires the 100% attention of the receiver. Secondly, it aims to provide written and spoken communication, with statements prepared in advance being readily voiced by a few keystrokes. Thus in an ordinary class room situation the non-vocal sender can prepare answers to questions etc and then voice these at the appropriate instant.

The system incorporates a text to speech phoneme translator so that all words in a prepared statement will be spoken rather than spelt out. Thirdly, the project is concerned to provide programming experiences for these children, particularly those involving the development of geometrical and spatial capabilities.

During 1981 a prototype system, based on a commercial microcomputer was developed. This prototype offered the user capable of using five keys a means of building up statements by "zapping" words and letters from menus. Subsequently the method of scanning menus was drastically revised to im-

prove selection rate while remaining simple to learn to use. During 1982 a single board computer version is being developed which is portable, using a 5 inch TV for video output, and can be run off a chair battery. In order for the word menus offered to be readily altered to meet the needs of the individual much of the program menus and prepared statements is stored in CMOS RAMS, rather than in non-volatile but unalterable ROM. In the portable unit the CAMS memory is battery backed, so that at all times the unit is in stand-by mode holding program, menus, and prepared statements.

Associated with the above project is the OZNAKI educational project. This project is concerned with a family of robotics languages which were conceived to promote the learning of mathematical ideas. Of particular interest is OZ, a simple language for programming an Australian version of the LOGO "Turtle" robot, and WHAM, a simple TV graphics language offering coarse grained but rather effective picture drawing and movie-making capabilities. During early 1982 versions of OZ and WHAM were implemented for both cassette based TRS-80 and disc based Apple II microcomputers. By July 1982 one-key versions of OZ and WHAM for the two school microcomputers mentioned will be available for use by handicapped children. In these one-key versions the immediacy of control is only marginally slower than that offered by use of a full (ASCII) keyboard.

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