

Votrax[®] Talking Points

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PROJECT VOCAB

A new development in computer technology, a "talking computer", is being used to tutor the blind and visually handicapped in vocational class work. Called Project VOCAB, the program is aimed at helping the blind attain the high level job skills in accounting and data processing necessary for better employment opportunities. The technological achievement that makes the project possible is the VOTRAX[®] Voice Synthesizer, which enables the computer to actually talk and frees the blind person from his dependence on a reader.

Project VOCAB is being developed jointly by the Office of Research and Extension Services of the School of Education at North Carolina State University at Raleigh and the State of North Carolina Department of Human Resources, Division of Services for the Blind.

Studies show that many blind persons are unemployed, and, of those working, many are underemployed. While possessing the aptitude and ability to perform highly skilled jobs, they lack the necessary training. This is due in part to traditional instruction methods, which are based primarily on visual input and feedback. Only through one-to-one tutoring by a reader can the visually impaired person learn at the level of the sighted.

Project VOCAB intersects the training process where tutorial and practice sessions are required, by offering self-tutoring and practice procedures for the blind pupil using computer assisted instruction with voice response (CAI/VR). These tutorial and drill-and-practice programs are designed to be used in conjunction with regular classroom instruction.

The blind pupil communicates with the specially designed instructional programs by means of a typewriter-like keyboard and receives messages from the computer-assisted program by synthesized voice response. Essentially, the pupil types messages to the computer-tutor and the computer-tutor talks back.

Initially, four cassette tapes teach the student to use the keyboard and develop the typing skills necessary to communicate with the CAI/VR programs.

The pupil calls the computer over the telephone, identifies himself and the lesson he needs. By means of the VOTRAX Voice Synthesizer, the computer "reads" a section of the lesson. Then the student is asked a multiple choice question about what he has just learned. He types in the number of his choice. The computer then transmits new information based upon the student's response. At once the student knows whether or not his response is correct. This immediate knowledge of results is a most important factor.

For correct responses, additional information is given to support the answer, and the learner proceeds to the next section in the lesson. If the answer is wrong, additional information is presented and the question is repeated. If after three attempts at a given question, the learner still gives an incorrect answer, the entire section is presented again.

The student's progress is continually monitored by the CAI/VR program. If a learner is having difficulty, the program will repeat earlier sections of the lesson where performance was better and review the material; go to another lesson for additional information as background to the current lesson; suggest that certain other materials be reviewed before continuing the lesson; or refer the learner to his proctor for help.

Because the instructional material is presented in a one-to-one tutorial fashion in which the learner can work in private, he can proceed systematically at his own speed through the material until each step of the lesson is learned.

The program can serve over 50 universities, community colleges, technical institutes, private institutions and secondary schools within North Carolina.

The VOTRAX Voice Synthesizer was developed by Vocal Interface, a division of Federal Screw Works. Headquartered in Troy, Michigan, Vocal Interface is a leading manufacturer of electronic voice systems which interface with data communications equipment. VOTRAX produces high quality, electronically synthesized speech with unlimited vocabulary. It is designed to convert the output of a computer or other digital device into electronically synthesized human speech. This conversion from digital information is accomplished through a unique, patented electronic design which produces words and phrases using phonemes as building blocks. Phonemes are the basic sounds which make up spoken language. The system produces the phonemes and integrates them together with inflection to produce smooth, intelligible speech.

This new voice response technology offers operational simplicity and low data requirements to provide the ultimate in flexibility and cost effectiveness. A complete range of interface types and options make VOTRAX compatible with most conventional computer and communications equipment. It can be used over a paging system, as well as telephone lines.

PROJECTS WITH INDUSTRY

The following is a response from Mr. D.C. MacFarland, Director, Office for the Blind and Visually Handicapped, to an article which appeared in the Braille Monitor, September 1976, a publication of the National Federation of the Blind.

The State/Federal vocational rehabilitation program serving the blind was responsible for the rehabilitation of 9,153 blind persons and 18,259 visually impaired in 1975. Data for the fiscal year ending June 30, 1976 are not yet available; however, we feel confident the number of blind and visually handicapped rehabilitants will increase.

The gradual growth each year of blind persons rehabilitated in this country is especially gratifying. To illustrate special rehabilitation efforts during FY 1976, there have been five training courses for service expediting jobs with Federal agencies. These were with Social Security, Internal Revenue, Civil Service and the Veterans Administration. There were more than seventy blind persons completing the training and entering employment.

A Projects with Industry program involving Arkansas Enterprises for the Blind and the Federal Civil Service Commission has been responsible for the training and employment of blind persons as information specialists in CSC's job information centers across the country. A special part of that program has been the development of a six-month testing and demonstrative effort involving the use of the VOTRAX as an audio computer terminal.

This device, manufactured by the Vocal Interface Division, Federal Screw Works, is the same unit used for the output or synthetic voice of the Kurzweil Reading Machine. The demonstration involved a collaborative approach with Michigan State University, Arkansas Enterprises for the Blind, the Central offices of RSA and CSC, the CS job information center in Philadelphia and that agency's new computer center at Macon, Georgia. Both sighted and blind information specialists used the computer terminal with output coming through the VOTRAX in order to retrieve stored information from the center in Georgia. This effort has been highly successful and has demonstrated that blind information specialists already on the job will be able to continue their employment when the CSC eventually computerizes all their job information. It will also open a variety of other jobs of a computer-related nature both within the Civil Service Commission and other Federal departments and agencies.

In conjunction with the Projects with Industry program and the Arkansas Enterprises for the Blind, a new occupational field for blind persons as long-line operators in the Bell System is being opened through an intensive job engineering and training effort. Arrangements have been completed teaming together the Harvard-M.I.T. Rehabilitation Engineering Center, Southwest Bell, Inc., Arkansas Enterprises, Rehabilitation Services Administration for building special equipment and its installation at Southwest Bell facilities. Candidates for training have been selected and the training has begun. From all indications there should be more than two hundred new positions for blind persons in this relatively new field.

Three special training courses for rehabilitation counselors having responsibility for selective placement of blind persons in competitive employment were conducted at Southern Illinois University during the year. This is a program which has been going on for a long time, but there continues to be an unusually high demand for this type of training. A number of guidelines for training rehabilitation teachers and for the utilization of rehabilitation centers were completed, published, and distributed. The manual on rehabilitation teaching was tested in Region VII with a week long training program for rehabilitation teachers and teacher-aides for Missouri and Kansas, and other training programs are planned in other regions.

The following paper is available upon request:

"An On-Line Minicomputer - Based System for Reading Printed Text Aloud", by Robert Kooi and Wen C. Lin, Case Western Reserve University. (Abstract: "An On-Line System for Reading Aloud from Newsweek Magazine was developed using a low cost Vidicon camera and a VOTRAX Synthesizer . . .")

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