

Research and Development Projects 1999 – 2000

A number of projects have been formally completed during the course of the year. New projects have also been undertaken.

Word Prediction for Windows CE

Pupils with poor spelling and language skills, or who are slow typists can benefit from word prediction programs, but these are not available in the low cost portable word processors and computers that are most suitable for use in primary and secondary schools. Word predictor software will operate on Windows and Macintosh notebook computers, but these machines are often too expensive, too heavy and are not robust enough for school use. As a result, pupils who need effective word prediction are limited to writing with these tools on desktop computers at specific times.

This project is funded by the Scottish Executive Education Department, and is developing a word prediction program to run on Windows CE computers. Windows CE machines are available in a range of sizes and shapes, from different manufacturers. The program is being developed first for the DreamWriter IT computers from NTS, but we hope it will also work on other Windows CE machines, such as the RM Handheld. The program is based upon *Penfriend*, one of the most effective word predictors, and is being adapted for Windows CE, to CALL's specification, by a team from the Department of Applied Computer Science at the University of Dundee.

The project is due to be completed in Autumn 2000, and a commercial version of the program should be available at the beginning of 2001.

Special Educational Needs Resources on the CALL World Wide Web Site

When the CALL Centre web site was originally launched in 1995 it was one of the world's first sites devoted to the areas of augmentative communication and special educational needs. Over time new sites were developed in these areas,



offering new and different resources: major projects such as the National Grid for Learning and the Scottish Virtual Teachers' Centre were set up to provide curriculum-based material for teachers.

This project provided an opportunity to restructure and update the material on the web site and to provide resources that can be downloaded for use in educational settings. The structure of the site is now more closely related to the Scottish 5 – 14 Curriculum. The 700+ files on the previous site have all been updated, or replaced with new material so that the new web site now has in excess of 1800 files of information. A number of CALL resources, including the *Supportive Writing Technology*, *Special Access Technology*, *Augmentative Communication in Practice: An Introduction* and *Perspectives on Augmentative Communication with Adults* books have been made available for people to download and use.

The project was formally completed in December 1999, but further material is added to the web site on an ongoing basis as part of CALL's core Information and Training services.

Introducing Speech Recognition in Schools

There is growing awareness in schools of the potential of Speech Recognition (SR) to increase access to the curriculum for pupils with SEN. However, approaches and success with SR vary widely. Some schools can show pupils using SR routinely as their main means of writing and recording work, whereas others have found SR difficult to implement with any success at all. This project aims to investigate how introduction and use of SR by pupils with SEN can be made to work. The project is funded by the SEN Innovation Grants Programme and is running from February 2000 until July 2001.

Outcomes

The first main outcome of the project will be a resource pack entitled *Guidelines on Choosing and Introducing Speech Recognition Systems in Schools* which will be distributed free to all secondary schools in Scotland at the end of the project. The pack will include:

- guidance on identifying pupils who might benefit from SR;
- technical hints and tips on installing and operating the systems;
- a set of Lesson Plans, with exercises, for introducing SR to pupils;
- advice on management of SR systems in schools.

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The second outcome will be information on whether and how the speech recognition programs have helped pupils with SEN record their work in school.

Evaluation

The Resource Pack will be evaluated by Learning Support Departments in between 15 and 20 secondary schools, starting in Autumn 2000. CALL will provide training and support for staff and pupils throughout the project. We also aim to make the pack available to other schools in Scotland: if you are interested in evaluating it, please contact Allan Wilson at CALL.

CALLtalk Vocabulary for Dynamic Screen Communication Aid Applications

This project, also funded by SEED, began in January 1999 and officially finished in December 1999. Dynamic Screen voice output communication aid software is increasingly used in schools, but it is too difficult and time consuming (many hundreds of hours) for families and working teacher or therapists to develop a vocabulary from scratch. A pre-stored vocabulary saves time and lets children get started immediately with the communication aid, and lets teachers get on with teaching. A pre-stored vocabulary now named 'CALLtalk' was designed for use by non-speaking children who are:

- Primary school pupils with reasonable educational potential (inclusive or special settings) following the 5-14 curriculum (differentiated/adapted as required)
- Cognitively able
- Language able (potentially able to 'talk' and write in sentences)
- Expected to become literate

It may be found useful for older users who are working more slowly towards similar goals.

CALLtalk has been developed in the course of the year and successfully piloted in use with CALL assessment and support clients. CALLtalk features include:

- Extensive (c.2000) word based vocabulary (as opposed to message based);
- High degree of consistency for ease of learning and remembering;
- Layout – 30 cells per page, regular shapes, to allow for keyguard use, colour coding to support navigation;
- A structure which includes sentence building popups available from every page;

- Syntactic and semantic access (can build sentences along a grammar line, only dipping into the topic based dictionary occasionally, as required, saving keypresses);
- Access to the alphabet with word prediction from within the symbol/topic-based pages;
- Access to other school software (other applications such as word processor, maths program can be launched from within the CALLtalk vocabulary).

The CALLtalk vocabulary has so far been developed in two versions:

- With PCS symbols, with Speaking Dynamically Pro software, for Apple Mac (Freestyle, PowerBook, iBook etc.);
- With Dynasyms, with DynaVox 3100 software, for DynaVox (DynaMyte).

There are plans to extend this further to include a Windows PC version, using Winspeak and Symbols for Windows software.

Although the project is no longer funded as a separate piece of research & development, work continues within CALL core services on the CALLtalk vocabulary, in order to prepare the vocabulary for transfer to production and wider dissemination. The CALLtalk vocabulary should become available from communication aid suppliers / distributors before the end of 2000.



Smart Wheelchair Development

Development work on the Smart Wheelchair continues, in partnership with Smile Rehab Ltd. (now manufacturers and distributors of the chair, as signalled in last year's Annual Report). In 1999 CALL and Smile Rehab Ltd. started work on a new version of the CALL Smart Wheelchair. The Smart Wheelchair electronics were re-designed to ensure that the chair met new European standards. This collaboration has been very successful, and the new system is also now much more attractive, easier to use, and less expensive to manufacture. (It is now in a custom-built box which sits neatly under the driver's seat, without all the trailing wires and cables of the previous version.)



The Smart chair was originally conceived for use in schools, as a learning and training tool, and we have continued to develop training materials to support teachers, therapists and others using the chair. The handbook was revised and two new booklets were created: a Smart Wheelchair Tutorial, which is used to train staff to operate the system; and Smart Moves, which gives lots of ideas for classroom activities.

The system is always being developed and improved, and the latest Smart Wheelchair Tool is a 'Sonar Bumper' - an ultrasonic sensor which detects obstacles

and stops the chair before it hits them. We think staff with bruised shins will welcome this one! The Sonar Bumper will be tested in the coming year and we hope it will be available on Smart Wheelchairs in 2001.

There continues to be lots of interest in the chair.

By March 2000, Smile Rehab had delivered nine chairs; some for individual children, and some for shared use in schools. There are now over 40 Smart Wheelchairs in use throughout the UK (and two in Eire and Australia!). Several of the chairs were funded by the charity Whizz Kidz, others have been bought by the Variety Club, and others from private and other charitable sources. CALL provides assessment, demonstration and support for Smart Wheelchair users in Scotland, and Smile Rehab covers England and Wales.

More information on the Smart Wheelchair is on the CALL web site.

