Information Sheet on

Speech and Language Difficulties and ICT

British Educational Communications and Technology agency

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About this information sheet

This sheet aims to provide you with:

- an introduction to the growing emphasis on the place of information and communications technology (ICT) for pupils with special needs in the area of speech and language
- a list of organisations, both voluntary and commercial, providing information, advice, training, hardware or software relevant to students who have speech and language difficulties
- details of some of the published sources of information and advice on ICT and special needs.

This sheet can be accessed on the Internet:

- in summary at: *http://www.becta.org.uk/technology/infosheets/html/speech.html*
- in full as a pdf file at: *http://www.becta.org.uk/technology/infosheets/pdf/speech.pdf*

Introduction

'Speech and language difficulties' covers a wide range of need, from individuals who find it hard to articulate, through problems with syntax and word order, to those who do not speak at all. For some learners with speech and language difficulties ICT is a lifeline, enabling them to communicate with the world around them. For others it can support their classroom work and therapy.

What types of ICT can help?

There are a number of technologies that are of particular use when working with students with speech and language difficulties. Most notable of these are:

- overlay keyboards and software making use of these
- speech reproduction and synthesis
- switch technology
- word processors including predictive word processors.

Further details of what these technologies are and how they might help those with learning difficulties are given on the general 'Special Needs and ICT' sheet.

How can ICT help?

ICT can offer a great deal to those with speech and language difficulties, provided that someone with expertise in ICT for those with communications difficulties has assessed the student at a regional centre. In addition, it is important that any use of ICT is consistent and regular, and that goals are set and monitored. A classroom helper assisting with ICT can make this achievable, and can also enable children with speech and language difficulties to remain in the general classroom.

Of particular value are the developments, over recent years, in computer-generated speech capabilities, with many computers now having a digitised speech facility. Learners can record messages and incorporate them into their work on the computer. A picture accompanied by a spoken message from the child, or a record of a journey provided through a mixture of text and sound, all provide incentives to work on speech.

Phonology (or spoken language) software can help students to understand target structures (for example, final consonants or consonant clusters) or single sounds. Software that allows students to see their speech patterns or vocalisations represented on the screen can be used in speech therapy to reinforce work on particular sounds. *SpeechViewer III* by Don Johnston, for example, changes spoken words and sounds into graphics, also providing animated rewards and a data collection facility to keep track of progress.

Talking word processors allow text typed onto the screen to be read back to the writer using computer-generated speech. One such program is *Write OutLoud,* by Don Johnston, which also includes a 'talking' spell-checker based on Franklin's Phonetic Spellchecker. Many of these talking word processors give a choice of synthesised voices, allowing the allocation of different voices to different parts of the text and so creating dialogues and mini plays. For some students, this provides an incentive to write whilst also strengthening listening skills. For others, computer-generated speech with its robotic pronunciation and intonation is felt to be a poor model.

Talking books enable pupils to learn and practise different spoken language structures, often providing a chance to work more independently. They can work well with children who are unresponsive and who avoid conversation, as they become involved with the combination of sound effects, spoken text and visual display. Examples of these are *Wellington Square* from SEMERC (based on the reading scheme from Thomas Nelson) and Broderbund's *Living Books* series*, which* has accompanying teaching materials.

Word processors with banks of words and phrases can be used to support structured language activities. Predictive word processors are particularly helpful for students having physical disabilities as well as speech and language difficulties, as the next word or phrase is 'predicted', often saving effort and time. Examples include *Co:Writer, Prophet, Penfriend,* and *WordAid*.

Maths software can give access to the curriculum. For example, *Access Maths*, a maths processor designed for children with physical disabilities but helpful for children with speech and language difficulties as well, gives help with images and concepts.

The above facilities can be of use to both *moderate* and *severe* speech and language difficulties to some degree or another. In addition, it is worth distinguishing particular types of ICT which are of value to a particular level of difficulty:

Moderate speech and language difficulties
For those with only moderate speech and language difficulties, activities to encourage vocabulary development, syntax and sentence structure are necessary to develop written language.

Sequencing activities can be supported by using an overlay keyboard to enable a student to, for example, build up a picture of the inside of a house by telling the computer where to place the furniture and the occupants of the house. Only sentences that are formed correctly will be accepted by the computer, and this encourages students to check their sentence structure as they go. The final picture can be printed out and used as a basis for talking and writing. Examples of products which can be useful include: *Intellitools*, which comes with six overlays. The *Intellitools Activity Exchange* is available at *http://www.intellitools.com/* and gives sample lessons, games and exercises.

Software packages are available to assist in targeting vocabulary, grammatical structures (for example, negation, plural, past tense and syntax), and various comprehension skills. There are, for example, 'drill and practice' spelling programs which are carefully structured, grouping particular sounds and providing reinforcement. Examples are *Starspell, Spellit 3* and *Wordshark.*

Literary assistance software helps with particular styles of writing. An example of this type of software is *Inclusive Writer*, developed by Widgit Software and Inclusive Technology Ltd. The program comes with different literacy activities on the CD – for example story starters, and rhyming words – and also provides images and symbols. Talking books help the acquisition of literacy skills, and the activities provided extend comprehension skills. Another popular example of supportive software is *Clicker 4* with its on-screen grids and multimedia interface.

Severe speech and language difficulties
In the case of severe speech and language difficulties, ICT can assist by either providing equipment to encourage speech or, where speech is not possible at all, by providing communication aids.

Speech encouragement
Learners can be encouraged to vocalise, using a sound-activated switch to send messages to the computer. Using suitable software and blowing or speaking into the microphone, they can change the picture on the screen or create patterns in response to their voices. In the same vein, more sophisticated computer systems can be used in speech therapy to work on particular sounds and speech patterns (for example, *SpeechViewer III*).

Communication aids
Students who are unable to communicate effectively by speech may need additional equipment to make themselves understood. The term 'communication aids' covers a wide range of devices ranging from 'low tech' aids such as symbol charts and books to 'high tech' electronic aids such as the specialist devices that speak out messages at the press of a key. Each level of sophistication will have advantages and disadvantages, and usually a child's total communication system will include a combination of both 'high tech' and 'low tech'.

For most learners who require additional or augmentative communication, the starting point must be the use of 'low tech' aids to develop early communication skills. The basis of communication lies in three things: the desire to communicate, something to say, and a means to say it. If an individual is not aware of his ability to control events (press the key and something happens), or if he is not able to demonstrate choice by demonstrating yes and no in a consistent fashion, it will be difficult to assess the best method of extending his communication skills.

A student who can read and spell may be helped by a communication aid that speaks out messages as he/she types them. Students who use symbol systems (for example, *Makaton*, *Rebus*, *PCS* or *Bliss*) will associate symbols with recorded messages. At its simplest, each key on a typical communication aid can represent a whole phrase or sentence while, at its most complex, a wide range of grammatical sentences can be built up by a series of sequential key presses. Aids which can link together symbols can be used to set up classification systems that will allow sequences of symbols to have different meanings.

As the choice and organisation of messages is designed on behalf of the child by the adults working with him/her, important decisions have to be made about the most appropriate communication system for that child. The choice of symbols, the arrangement on the display and the selection of messages to accompany the symbols will all dictate the style of communication that is available for the child. A balance has to be struck between providing instant access and limiting possibilities for widening the conversation.

Some students can select symbols, words or letters directly by pointing with a finger or by eye pointing. Others may use an optical headpointer. Those who cannot point accurately or reliably enough may use a switch scanning system.

Additional considerations for learners with severe speech and language difficulties

Assessment
For LEAs without a specialist support service, the recommended course of action will be an assessment at a regional centre with expertise in ICT for communication difficulties. It is important that all those involved with the student are invited to attend the assessment. Speech and language disorders affect the whole life of the student, both at home and at school. Without involving everybody working with the individual, including parents, it will be extremely difficult to find a solution that fully meets the learner's needs. The purpose of the assessment is to ascertain the communication needs of the student and recommend an appropriate programme for developing communication skills. The choice of aids will depend on the linguistic, physical and sensory strengths of the learner.

The choice of a communication aid is governed by the particular circumstances of the individual. Physical skills such as the ability to control a key press, and sensory skills such as hearing and interpreting a spoken message, will affect any recommendations as to a suitable piece of equipment. It is important that any assessment process is interdisciplinary, involving professionals with wide-ranging expertise, and that the assessment procedure is sensitive to the needs of the individual.

Be aware that assessment is not a one-off activity. There may be changes in the learner's needs or the environment in which he is operating, and there are constant changes to the technology which is available. All these factors can affect the appropriateness of an ICT solution. The important thing is to be aware that a pupil's requirements may change and that a particular system may not suit his needs for the whole of his school career. It is important that the need to review and the possibility of change is accepted by all involved with the student.

Specialist support

Most learners with communication difficulties will have been identified before starting school and will be known to speech and language therapists and associated health professionals. Where there are additional physical difficulties, the student may also be under the care of occupational therapists and physiotherapists. If a referral is being made to fund an ICT solution to an individual's communication needs, it is essential that the recommendations show evidence of an interdisciplinary approach to assessment and provision.

The provision of a suitable aid in itself is not enough. Case studies indicate that for aided communication to be effective there must be a high level of commitment, both from the user and also from those working with him. Unless additional support time is built into the recommendation, the task of selecting vocabulary, programming the communication aid and encouraging the user to extend his range of language will not be possible. There are new skills in turn-taking and timing to be practised by both user and listener. If the aid is to be successful in more informal situations (for example, at home or in the playground) as well as in the more structured environment of the classroom, the range of vocabulary available must reflect the variety of contexts.

Training for staff

Training is invariably an issue. The ACE Centre in Oxford is involved in a research project which looks at providing remote support to staff. The project focuses on a small number of pupils and, via datalink, a telephone, an electronic whiteboard and sometimes video conferencing, they are able to get remote access to someone's computer or communication aid to show them how to use particular functions of their system. This may, in time, prove a cost-effective solution to providing basic or on-going support within the context of a pupil's home or school environments.

Opportunities need to be created for all those who work with the student to become comfortable with the use of the communication aid, since the child's level of use will be dependent on the knowledge and confidence of his teachers and carers. If they are ignorant about how to turn the machine on and off, or what to do in times of trouble, then the child's use may also be constrained. In addition, there needs to be an opportunity to discuss the communication objectives for the student – specifically: how the aid is to be used initially; why the choices of symbols and messages have been made; what the arrangements are for practising the vocabulary in the aid; and what the plans are for extending, over time, the range of vocabulary.

Also, there needs to be training in working with the student: learning to listen and respond rather than directing the conversation, providing opportunities for the student to enter the conversation (especially in group situations), and providing positive feedback, are all essential if the implementation is to be successful. The introduction of new vocabulary needs to be planned. In particular, it is important that appropriate vocabulary is available for the variety of circumstances which the learner will meet. For example, if an individual is not equipped with symbols for self-advocacy, he will not have the opportunity to contribute to his own Transition Plan and thereby to make positive decisions about his future.

Warranties

Many suppliers offer extended warranties for communication aids. With some firms, as well as covering parts and labour this entitles the user to a free loan machine on overnight delivery if the machine has to be returned for repair. It can be easier to incorporate the cost of extending the warranty in the initial capital cost than to find an annual sum for maintenance.

Publications

Children's speech and literacy difficulties
by Joy Stackhouse and Bill Wells (Editor)
Whurr Publishers, September 2000 ISBN: 1861561318

Special Needs and ICT information sheet
Becta. June 2000, *Free*
http://www.becta.org.uk/technology/infosheets/html/senict.html
Details generic special needs and ICT information, in particular different types of software and hardware which can help, and lists of other sources of information such as organisations, publications and software.

Speech and language difficulties in the classroom
by Deirdre Martin and Carol Miller
David Fulton Publishers, 1996 ISBN: 1863463027
This book introduces children's language development and language difficulties in the context of the classroom. The authors discuss the interrelationships of medical, linguistic and psycho linguistic perspectives on language.

Teaching children with speech and language difficulties
by Deirdre Martin
David Fulton Publishers, April 2000 ISBN: 1853465852
This book is aimed at newly qualified or student teachers, and covers how to recognise speech and language difficulties. It gives practical advice on supporting pupils' learning in the mainstream classroom, and working with therapists and parents.

In addition, too numerous to list here but significant in coverage are the following:

A wide range of videos, information sheets, books, story/symbol packs and software applications from Communication Aids for Language and Learning Centre (CALL) within the University of Edinburgh *http://callcentre.education.ed.ac.uk/*

A range of journal articles, book chapters and conference proceedings
from the University of Dundee *http://www.computing.dundee.ac.uk/research/pdf/publications.pdf*

Organisations

General

Please note that, for brevity and ease of maintaining these sheets, the details of these organisations, central to the whole field of Special Needs, are given only in brief on this sheet with the full details held on the main special needs information sheet entitled 'Special Needs and ICT'.

ACE (Aiding Communication in Education) Centre Advisory Trust
ACE (Aiding Communication in Education) Centre North
The Advisory Unit: Computers in Education
The Communication Aids for Language and Learning Centre (CALL) - University of Edinburgh
Centre for Micro-Assisted Communication (CENMAC)
The Chatback Trust
The Communication Aids for Language and Learning Centre
Hereward College
Symbol Users Advisory Group
University of Dundee
University of Westminster
The CALL Centre, University of Edinburgh
University of Stirling

Specific to speech and language difficulties

AFASIC
69-85 Old Street, LONDON EC1V 9HX
Tel: 020 7841 8900 Fax: 020 7841 8901
Helpline: 0845 3 55 55 77 E-mail: info@afasic.org.uk
http://www.afasic.org.uk/
AFASIC represents children and young adults who have difficulty in using speech or language, working for their inclusion in society and supporting their parents and carers. It provides advice, information and support, with publications, courses and local groups.

Helen Arkell Dyslexia Centre
Contact: Mrs C Walker
Frensham
FARNHAM
Surrey GU10 3BW
Tel: 01252 792400 Fax: 01252 795669
http://members.aol.com/realsher/private/hadc/index2.htm
Offers assessments, specialist tuition, speech and language therapy, conferences and publications.

I-CAN
4 Dyers Building, Holborn, LONDON EC1N 2QP
Tel: 0870 010 4066 Fax: 0870 010 4067
A charity specialising in the education of speech and language impaired children. It produces an extensive range of teaching materials.

Internet

There are many Internet sources which may be of help, and the URLs are cited alongside the organisation, publication or other source to which the site pertains. This section is limited to sources believed to be available only via the Internet, or foreign sites where access will be greatly eased by making use of the Internet.

For brevity and ease of maintaining these sheets, the details of Internet sources central to the whole field of Special Needs are given on the 'Special Needs and ICT' sheet rather than repeating them on each specific sheet. Some of those general sources may also be able to provide you with assistance.

The Multimedia Enabling Technologies Group (MET)
http://met.open.ac.uk/