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Autism and Computing

What is autism?

Autism Spectrum Disorder (ASD) is a lifelong developmental disability that affects the way a person communicates and relates to people around them. People with autism can often have accompanying learning disabilities.

Asperger's syndrome is a condition at the higher functioning end of the autistic spectrum. People with Asperger's syndrome do not usually have the accompanying learning disabilities associated with autism.

How can a computer help

While the Autistic Spectrum is very broad continuum, presenting a wide range of difficulties and needs, the computer can be helpful in a number of areas. Anecdotally, those supporting individuals with Autism often report the positive affect it can have on motivation, concentration and interaction. So, why might a computer help? Colin Hardy, in his book ICT for All (2000) discussed some ideas;

- Individuals on the autistic spectrum are often unable or unwilling to participate in situations which rely upon social or verbal interaction. The computer may offer an attractive alternative. Specific software resources can help with an understanding of body language and to teach social skills, one example of this, "Mind Reading" is detailed at the end of this factsheet.
- The computer monitor offers a less threatening focus for attention when working with others. Often, individuals with ASD or Aspergers are seen as rude, because they will talk at people, rather than with them. Those with ASD often find they are able to converse with a computer or another person by e-mail more easily than with another person.
- Graphics and simple drawing programs offer a good starting point, offering immediate feedback and the opportunity to "undo" errors. Word processing applications offer a similar opportunity to undo mistakes and to experiment with the way things are laid out.
- Word processors offer a safe and controllable environment in which the person on the autistic spectrum can play, experiment, explore, be creative and make mistakes.
- Games programs offer a good opportunity for the individual to excel alongside others, offering the potential to build relationships with others. The computer can therefore be a useful tool in encouraging co-operative working and dialogue through a common interest that can extend beyond games play.

- Users with ASD may find it difficult to cope with various and changing demands of the environment around them. The computer can offer the opportunity, through the internet and through multimedia applications and programs to experience the world around them within clear boundaries. Certain commercially available software packages, such as The Out and About series (SEMERC), may reinforces appropriate social behaviour patterns in a safe computer based environment.

Adapting the Computer

A number of changes can be made to the standard computer system that would make it easier to use. Examples of the changes that can be made can be found on the “My Computer My Way” part of the AbilityNet website. Additionally, skill sheets can be found on the AbilityNet website that explain how to make changes to the mouse, keyboard and display options . For some users who have motor control difficulties, a wide range of alternative keyboards and mice can be used. Consider a range of mice, trackballs large and smaller keyboards with and without guards. More information about these devices can be found elsewhere on the AbilityNet website.

Writing and recording

Some individuals with ASD will find word processing on the computer easier than recording by hand. Some individuals with ASD or Aspergers seem to struggle with handwriting, although why this may be is unclear. For some, the keyboard is easier to use than a pen. For a user who is not generally keen to converse, the computer may provide a more motivating medium in which to communicate. Word processors offer a safe environment to experiment in, as a computer does not react in the same way as another person and will always offer a “logical” reaction.

The computer will automate many tasks, helping individuals to complete certain tasks quickly and easily; the production of a graph for instance. This can be useful where individuals have poor motor skills, may be poorly organised or are obsessed by attention to detail. Words may not be enough for some users with ASD, and the additional support of symbols and images may be useful in encouraging writing.

Providing a writing frame can be useful for some users with ASD. Individuals often have difficulty with organising their thoughts and the writing process itself and there are a number of software titles which may support this. For example, mind-mapping software can help to quickly get a number of ideas down quickly without worrying about structure or order.

Giving an individual a starting point can be useful to help overcome the 'blank page'- this could easily be a list of words with key areas or phrases. Equally, for some users, a sequence of pictures or symbols alongside text can be helpful. Programs such as Clicker, Writing with Symbols, Wordbar, Textease and Granada Smart- Bank all offer wordbank support which may support the user as a planning and organisational aid.

Motivation

A neat printed copy can be more satisfying than poor handwriting. Mistakes can be more easily corrected. For those with difficulties with reading or spelling, speech feedback can help with motivation and the self checking of work. A number of free and commercially available text readers and talking word processors can help in this area.

In some cases, the computer can be very helpful in motivating and channelling a user's interaction with the computer, particularly for younger users. Content can then be added or adapted which will particularly motivate the user.

Cognitive difficulties

Some users with greater needs may find some simple software useful in developing an understanding of cause and effect. These simple programs can encourage interaction with a simple input device such as a switch or touch screen. Interaction is rewarded by something happening on the computer. The best examples of this sort of software will allow the development of more complex interaction and of different types of reward to suit the user. Care needs to be taken, to avoid such software developing repetitive behaviours with the computer.

Many examples of ready made software packages are available from special needs software suppliers. Look out for switch accessible packages. Most software can be used with a touch screen, but ensure that objects on the screen are large enough to be touched easily with a finger. Programs such as Clicker will allow you to develop very simple cause and effect activities yourself, that can be activated by switch, touch screen mouse pointer or keyboard. At the same time it will provide scope to allow the users to move onto more complex tasks, including word processing.

Some users with ASD may struggle with the concept of what a keyboard or mouse is for. A user may be an incredibly agile and fast mouse user for example, but has no interest or desire to use a keyboard. In this case a number of hardware or software solutions may help to overcome these difficulties. A concept keyboard, such as the Intellikeys Overlay keyboard can be used to reduce the number of keys normally found on the standard keyboard. If a user has particular strengths with the mouse, but is reluctant to use the keyboard, consider using an on-screen keyboard to support writing.

A touch monitor can in some cases be cognitively easier for a user with ASD to use than a keyboard or on-screen keyboard.

Other users may find word prediction helpful in supporting spelling or speeding up the input rate. Most word prediction programs are supported by speech and the ability to customise the nature of how and which words are predicted.

Useful Contacts

The National Autistic Society

393 City Road, London, EC1V 1NE

Tel: 0845 070 4004

Web: www.nas.org.uk

The National Handwriting Association

www.nha-handwriting.org.uk

Useful References

Hardy et al Autism and ICT (2002) David Fulton Publishers

Hardy ICT for All (2000) David Fulton Publishers

www.autismandcomputing.org.uk

The comprehensive website of Dinah Taylor and Mike Lesser

Mind reading

Jessica Kingsley Publishers 116 Pentonville Road, London N1 9JB.

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