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Novel adaptation for special students

Lord Mayor Treloar College in Alton, Hampshire, has made very special use of the Archimedes computer in teaching its young pupils.

The largest non-maintained special boarding school in Britain, Lord Mayor Treloar College caters for students aged 9-18 with physical disabilities. The College has used Archimedes computers since they were first introduced and has more than forty which are used both for teaching and administration. The Archimedes has played a prominent part in helping students with a wide range of handicaps to cope with academic work and to develop useful vocational skills.

What makes the Lord Mayor Treloar College particularly special is that the staff have developed a range of adaptations to their Archimedes and BBC A3000 computers to make them easy to use for students with a wide range of difficulties.



Helen uses a trackerball and keyguard



Using Draw to design a document

They soon discovered that the mouse and keyboard could present problems to some of their students, and set about designing modifications. The college has a technical aids department which produces special equipment tailored to the needs of individual students, and the staff of this department have come up with some innovative solutions.

They quickly developed a miniature tracker-ball for students without sufficient arm movement to use a mouse. This has a locking Select button to make it easier to use.

For students with cerebral palsy who found both mouse and trackerball impossible to use, a large, robust joystick can be used instead. The joystick resists the muscle spasms that make the mouse and trackerball impossible to control properly.

A more difficult problem was presented by the size of the standard keyboard, which is too wide and deep for many students with muscular dystrophy to reach across. Turning their attention to the BBC A3000, which has a simpler keyboard construction than

the Archimedes, the staff developed a miniature keyboard. This has mini keys, spaced so that they cover as little area as possible. The numeric keypad was dropped, reducing the width to a manageable size.

Other adaptations to the keyboard tackled the difficulty some students encountered with holding down two keys at once. The miniature keyboard has special keys to combine Shift+Break and Control+Break, and has a Shift Lock key.

These variations to the standard interface all help one-handed students to use the computer, and have

also allowed students with a pointer attached to their head to work effectively on a wide range of software packages.

Students using the specially adapted equipment work in the college to create designs with !Draw and Artisan, practise word-processing with 1st Word Plus, and use spreadsheets and databases, irrespective of their physical disabilities.

The Archimedes and BBC A3000 computers now form the nucleus of an effective teaching system which allows students to follow the National Curriculum according to their abilities. The Lord Mayor Treloar School is particularly satisfied with the range of software available for their Acorn computers. They can find something to suit all levels of ability, and can easily adapt packages to suit individual needs. The development of new packages such as !ASP and !SpkBd (see page 3) which use the power or RISC OS effectively, gives even better access to computer-based teaching for students with severe disabilities.



The Lord Mayor Treloar mini keyboard in action

SPECIAL INPUT AND OUTPUT DEVICES

An increasing number of special input aids and output devices is coming on to the market to help users with disabilities to get the most from their computers. Here are a few of the options for the BBC series and Archimedes computers. For further details, contact the suppliers directly.

The most commonly-used peripheral in special needs is the Concept Keyboard. This is an alternative to the standard QWERTY keyboard. A membrane pad of 128 or 256 keys, each individually programmable, is overlaid with a guide sheet which can show text, pictures, numbers and formulae corresponding to the functions of the keys. The user presses on an icon to call up the appropriate function. The Concept Keyboard is available for BBC series and Archimedes computers from The Concept Keyboard Company (0962 843322). You can create your own Concept Keyboard overlays using Stylus from Northern Micromedia; see page 4).

An alternative for the BBC Master is the Expanded Keyboard from Special Access Systems (0203 711861). Intended for use with a single finger or toe, or a headpointer, the expanded keyboard has locks on the Shift and Control keys so that these keys are electronically held down until another key is pressed. The steel construction and wipe-clean surface withstand heavy use, and an adjustable tremor delay prevents unintentional multiple keypresses. Special Access

Systems also produce keyguards for BBC series and Archimedes computers.

For users who can't operate a mouse, a trackerball and separate mouse switches may be useful. CJ Computing produce a flexible 'goose-neck' switch box to attach to a wheelchair and operate by pressing with the chin, elbow, or any other body part. Used in conjunction with a trackerball or joystick, the switch box is custom-designed for each user to suit his or her abilities and needs. An alternative is a foot-operated mouse, again tailor-made with switch size and arrangement matched to the individual's needs. Both are available from CJ Computing (0454 615905).

Two programs for users who have difficulty with the mouse and/or keyboard come from Bristol SEMERC (0272 733141). !SpKbd can be used with multi-tasking and non-multi-tasking programs. It offers an extraordinarily versatile mouse emulator on the numeric keypad, programmable input acceptance time and post acceptance delays, and 'sticky' Shift and Control keys so that combination key presses can be achieved by successive key presses. !ASP, for multi-tasking programs, offers full keyboard and mouse emulation using a system of scanning boards which can be set up for individual users and applications. Scanning boards can include sprites and special fonts as well as standard text icons. !ASP supports single- and double-switch users, and a combination of pointer moving device and single-switch.

The Access 3 switch interface box from QED (Quest Education Designs Ltd, 0705 581179) makes the analogue and user

ports of the BBC series of computers accessible and extends their facilities. The switchbox provides 1/4" jack and 7-pin DIN socket inputs to both ports. Using QED switches, it is then possible to plug in concept keyboards, trackerballs, joysticks and so on without needing to reach behind the machine. The interface box also allows a switch user and mouse user to operate the computer together.

A useful output aid for users with visual impairment or epilepsy is the Epson Portable Colour Video Projector with an interface for Archimedes, BBC and Master series computers from Solitaire (0480 495608). Capable of projecting the screen image to 366 x 366 cm (12' x 12'), the LCD display eliminates screen flicker, making it ideal for users with epilepsy.

Non-visual output is also available. DTTALK from Atomwide (0689 38852) 'reads' a text file aloud using a voice synthesiser. It can be used from the desktop or command line, and a SWI interface is provided. A second version of DTTALK is planned for early 1991 with improved phonetics.

FUTURE EVENTS

30-31 January: The Applications of Microtechnology for Students with Special Needs, Jordanhill College of Education, Glasgow

25-28 February: European Independent Living Awards, Brighton Conference Centre

WORD-PROCESSING WITH RISC OS

There is now a number of word-processors for RISC OS computers, and some are especially suitable for special needs users.

Most word-processors offer the standard facilities of cutting, pasting and copying text, swapping case, search and replace, and various formatting and text styling options, but some offer something extra.

EasiWord is a fully-featured word-processor from Minerva (0392 437756; £20 special price for education, £39 RRP) with the special advantage that text can be displayed in any colour and in large characters to help users with visual difficulties. Multiple documents can be used, and, using DTOBase files in Desktop Officer, mailmerge is possible. EasiWord uses many of the commands familiar from the most popular word-processors on the BBC series of computers.

Archimedes PenDown from Longman Logotron (0223 323656; £39) comes in both primary and secondary versions. The difference between the two is in the level of complexity

of the manuals and of the definitions included in the dictionaries. Features can easily be switched off to adapt the program to the abilities and needs of the user. Several fonts and text sizes are available.

Phases from North Western SEMERC (£14 + £2 p&p) has just been updated; version 2 will be on show at the BETT show. Phases offers some imaginative and interesting fonts. Draw and Paint files can be used to add graphics to a document, and sprites can be used with masks so that pictures can be layered. The keyboard repeat facility can be turned off, which is particularly helpful for users with incomplete control of their hands.

Desktop Folio from ESM (0223 65445; £90, £250 for primary site licence, £375 for secondary licence) is a RISC OS version of the popular BBC Folio. Available at two levels, Simple Screen Folio and Desktop Folio, the program caters for users of all abilities. At both levels, pictures and different fonts can be used. The higher level, Desktop Folio, introduces desktop publishing techniques.

Stylus from Northern Micromedia is a simple writing tool developed from the version for the BBC computer. Using the mouse to select icons and place text, Stylus is particularly useful for creating concept keyboard overlays. A second version is being developed, which offers more fonts, a dictionary, and improved printout.

For further details of any of these products, contact the supplier directly, or your local Acorn dealer.

AWARD WINNER

The Joseph Rowntree Foundation Awards were presented in London last November at the launch of the Read Easy directory of printed and audio-visual material for learners with mental handicap learning difficulties.

Winner of the award for audio-visual production was Brilliant Computing for their outstanding materials for adults with learning difficulties; Their products include **Switch On**, originally written for use with BBC and Master series computers but now rewritten for the Archimedes and BBC A3000.

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THIRD ISSUE: January 1991:



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