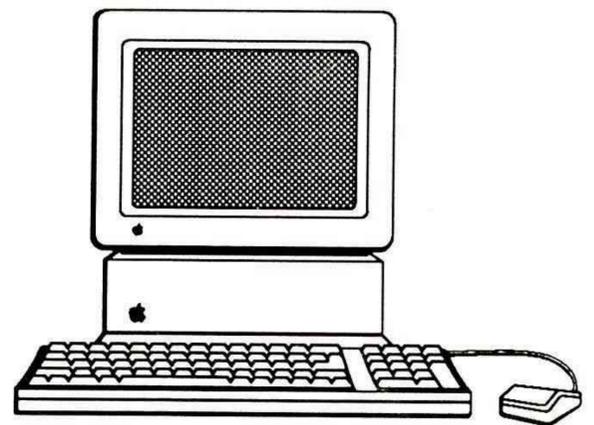
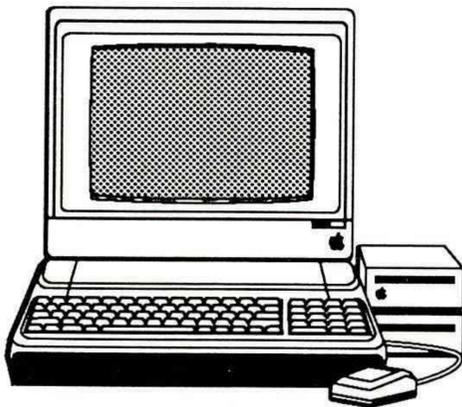
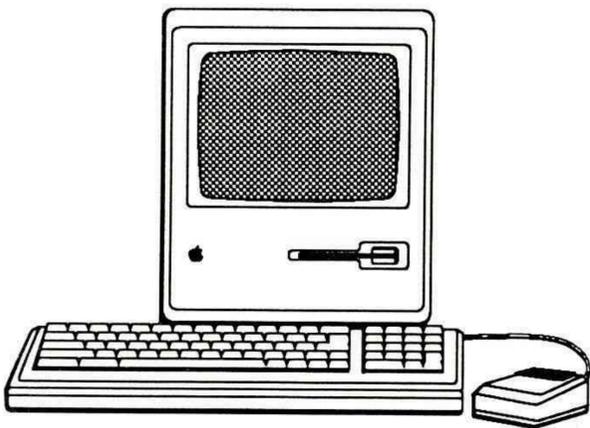




THE
APPLE AUSTRALIA
SPECIAL EDUCATION
RESOURCE DIRECTORY
1988



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1988

Written and compiled by
Doug Piper

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LAYOUT and DESIGN

This edition of the Special Education Resource Directory was prepared for publication by Doug Piper using an Macintosh Plus, Laser Writer and Microsoft Word 3.01 software package.

Special Education Directory



APPLE AUSTRALIA, SPECIAL EDUCATION RESOURCE DIRECTORY

INDEX

Section 1.0 - Introduction, a rationale and overview of why computers should be used with students with special educational needs.

Section 2.0 - Devices for special educational use. Hardware and peripherals - their description, distributors, cost and a general comment

Section 2.1 - A list of hardware and peripheral suppliers

Section 3.0 - Examples of a range of teaching strategies using a range of software packages.

Section 3.1 A list of software suppliers

Section 4.0 - Resource contact lists of professional associations, computer education groups, state education systems contacts, a bibliographical list, a range of available publications, resource materials, videos, annotated bibliographies, special education software catalogues and electronic information systems

1.0 A Rationale and Overview

Who do people see as computer users? Who do the educators, parents and care givers perceive as using computer based technology? While their mental images would show variations of a theme, very rarely would the user be seen as having any kind of disability or handicap. But it is this group of students, who classified as having special educational needs, perhaps benefit most from the impact of computer based technology on their education and lives.

But who are the students in the school and general population to whom I am referring? We need to consider the needs of students with intellectual impairments, those with hearing or visual impairments, those with physical disabilities as well as students with a variety of learning, emotional and/or behaviour problems. The degree to which such students are impaired extends from those in the mild range through to those in the severe and profound range. A percentage of this group is also classified as being multi-handicapped in that they are affected by more than one disability.

The educational placement of these students ranges from those placed in mainstream classes, students who are partially or wholly integrated, students enrolled in special education classes attached to mainstream schools, to those students placed in schools for specific purposes. With an active integration policy being implemented in most States, a greater number and a wider range of more severely impaired students will be found in mainstream classes and schools than previously. The aim of this policy is to place students who have special educational needs into what is considered to be the most advantageous educational environment for them. As a result of the implementation of this policy, there has been an upward movement of students with a range of disabilities into "mainstream" educational situations. Thus, more and more students who would be classified as having a handicap and/or disability, are to be found in classrooms of the "normal" schools. The general educational needs of these students and how computer technology can be used to lessen the impact of their particular disability(ies) has also to be considered.

In simplistic terms what are some of the problems faced by students handicapped by specific disabilities? As stated above, it must be remembered that in each of the types of disabilities, there is a wide range in the degree of impairment. In some cases individuals are classified as being multi-handicapped because of their having two or more disabling conditions. The impact of the degree of impairment and/or number of disabilities is critical to the individual and varies from person to person because of individual differences.

Hearing impaired students, because of the lack of auditory stimulation and input, have great difficulty in acquiring intelligible speech as well as developing accurate natural language patterns. Their ability to communicate with those around them can also be greatly impaired as is the rate at which they develop reading and language based skills. The area in which blind and visually impaired persons handicap is most obvious is in their being print handicapped. They are unable to access the huge amount of print materials which the majority of sighted people take for granted. Those among this population who are braille readers have the added disadvantage in the short supply of readily accessible up to date brailled text. Students who are intellectually impaired have in the main, limited attention and concentration spans, slow concept acquisition and retention, slower rates of development and poor motivation. Their skill levels in the basic academic areas are usually low. Many students who are physically handicapped lead passive life styles because of their limitations in mobility. Some may be non-verbal, and as such have major communication difficulties as well as having limited control over elements in their environment. Other students who have learning, emotional and/or behaviour problems usually are reluctant learners and their self esteem, self confidence and self image can be found to be poor. These elements are

1.0 A Rationale and Overview

common to many individuals in these groups and are reflected in their attitude to school and to learning in general.

With such a heterogeneous collection of students, a diversity of general and specific needs to be approached, a wide range of types and degrees of disabilities and an as equally wide range of educational placements, why is computer technology proving to be such a valuable tool?

The reason computers are proving to be a valuable teaching and learning aid is due to a number of factors.

- * Perhaps one of the greatest reasons for using computers with these students is the intrinsic motivation that students already have for the technology. The interest is already there. They are already very keen. Teachers and parents don't have to work hard to get their charges to come to grips with the technology.

- * Teachers through the use of selected quality educational software packages can develop individual educational programs (IEP's) for single students or small groups of students. The aims of such programs would be to meet specific student needs, to develop specific concepts and/or skills in selected subject areas or in a across the curriculum approach. This is possible irrespective of the students education placement.

- * Quality software packages can provide a depth of evaluation that allows the teacher to analyse the student's results and to use them as the basis for remedial or extension programs.

- * Many students because of their disabilities, experience difficulty in understanding concepts as well as developing and retaining specific skills. As such they need a higher level of repetition to achieve and maintain mastery than do their more able peers. Computer based "drill and practice" using multi-sensory feedback increases student's motivation, their attention and concentration spans.

Quality educational software has multi-sensory feedback components written into them consisting of sound, colour, graphics and movement. Many of such software packages also have the facility for the user to personalize the program with their name. Both of these elements provide high levels of motivation and appeal.

- * Many students with special educational needs have a history of restricted success and in lots of cases are both reluctant in reading and in writing. This is in addition to the way they feel about and see themselves. Some students because of their particular disabilities that maybe displayed in poor fine/gross motor or co-ordination skills, find hand

writing to be difficult, frustrating and aesthetically unrewarding. A situation where a group of students use a word processor to create and edit a story in conference writing improves not only the quality and quantity of the produced material but also acts as the catalyst for the development of language and social based skills and concepts.

To such students the readily available range of word processors, interactive stories and packages that contain language prompts in graphic form may provide the answer to their particular problem. These packages provide the motivation, the means to achieve success, enjoyment, ease of composition and editing as well as providing the vehicle for a wide range of learning experiences.

* Students can improve their problem solving skills with specific software packages. The purpose of such packages is to provide a problematic scenario which the student can attempt to solve with a series of practical solutions. The aim is to develop thinking and cognitive skills that can then be transferred to real life situations.

It is fine for the teachers, parents and the care givers to readily discuss the pros and cons of the hows, whys, ifs and buts of these students using computer technology, but what of the students themselves? What is in it for them? What do they get out of using computers? Why should they in fact use the technology? Obviously many of the factors as outlined above come into the discussion but there are also many other supportive reasons that need to be considered.

* Many students because of their disabilities cannot or are perceived by others as not being capable of doing things for themselves. As a result they lead a passive kind of existence. By being in front of a computer they have the opportunity of being in control, of being able to work in a dynamic learning situation and environment. They can drive the technology.

* The use of a computer provides the teacher with an opportunity to allow independent work by a student. This puts the student in control of the hardware in a non-competitive situation. It allows the student to work on prescribed software packages or elements within them, as a form of extension or remediation. In such a situation the student doesn't have to compete with their peers and so receives the system's undivided "attention".

* Students with intellectual impairments or with physical disabilities cannot respond and/or react at the same rate as their more able peers. Some commercial software packages are available that have a facility to allow the speed of cognitive and/or physical reaction and response times to be adjusted to meet the needs of individual students. The *Adaptive Firmware Card* (refer to pages 9 & 16) also has a mode which allows this. This facility allows such students to

1.0 A Rationale and Overview

work at their own pace, unhurried and without the added pressure of working against the clock.

* Pressure from the other students around them and the pressure to succeed where perhaps they have had a history of "failure" can sometimes result in an intimidating atmosphere being created. The non-threatening and non-judgement aspects of computer aided instruction assists the development of a positive situation and environment in which the students can work. It can alter the students attitude in a positive way. Often because of the one-to-one situation or small groups used with the computer and with the positive feedback elements found in quality software, these students will respond to learning more readily than before.

While the use of computers has had a major impact in the education of students with special educational needs, it has a far greater added potential for many of these students. It can affect to a very large degree their every day lives, if and how they can communicate with those around them, keeps them informed as to what is happening in the wider world, provide the means for social and recreational activities and can provide opportunity for employment and self advancement that may not have existed before.

* The use of computer based games can provide the opportunity for social interaction, recreation and communication with their peers.

* The use of computer based communicators can provide the means of creating a voice for the non-vocal and a far easier means of communicating with those around them. The use of text readers and braille embossers can aid those who are print handicapped.

*The use of Electronic Information Systems (EIS) with the appropriate hardware and software elements by persons with disabilities has the potential for bringing about wide ranging changes in their lives.

People with severe physical or sensory handicaps can now have access to electronic shopping, banking and libraries, communications and as well, they can make travel and entertainment arrangements by using one of the information services that are available today. Students who have severe reading and/or language handicaps can be given purpose in reading and writing. The hearing impaired in particular would benefit through their working with visible language and communications.

The use of EIS can also be extended by users into accessing remote information databases that are becoming such a part of the information explosion in today's society.

Some of the systems that are accessible in Australia are Viatel, Keylink and Bulletin. A further range of similar systems can be accessed in other countries. The use of

electronic mail can also provide an additional mode of communication.

* We are continually told by a host of sources that we are living in the "information age". The available technology can open the doors for the disabled to the information that so many of us take for granted. It can provide an equality of educational opportunity that may not have been realistic previously.

* A number of specific databases exist which attempt to meet the needs of disabled individuals. Computer Assisted Management of Curriculum Objectives (CAMOCO) is a Victorian sited remote database established as a means of providing a range of educational orientated task analyses that are contained in the curriculum areas of attention, self care, motor, cognition, socialization, communication and/or work skills. DISCOM and HEAR are two other systems that are being used as means of disseminating information as well as providing a communication system for disabled persons. Refer to page 44 for more details of these systems.

* Many new employment opportunities now exist, generated in part by the new computer based technology, the "paperless" office situation as well as the many support and development services that help to maintain them.

Teachers who are using the technology with such students are finding that it is a valuable teaching aid. The use of appropriate hardware and software improves the chances of a disabled or impaired student learning successfully. It promotes greater independence and autonomy, as well as providing an opportunity for the individual to enjoy creative and social activities that perhaps were not able to be taken up previously. Use of such technology also allows the teacher to develop and put into practice individual educational programmes (IEP's) to meet the needs of their students. The technology can provide the means by which the students can learn more effectively, maximize their strengths and skills and thus endeavour to lessen the impact of their particular disability. The use of such technology can improve their quality of life.

Many of these students using computers in school environments have no restriction using the standard keyboard to access a computer system. But what we also need to consider are those other students, who because of physical, sensory or learning disabilities, or because of fine and/or gross motor problems cannot access and input to the computer in a standard manner. How are they going to be able to open and use the powerful elements available to them through computer technology? One of the critical problems is to correctly identify the most suitable input, output and interface devices for these students. This will allow them ready access to the wide range of educational, recreational and vocational orientated software packages to be found in the market place. Refer to the hardware and peripheral section of this resource directory for details of the distributors of the various pieces and their cost.

*There are a number of commercial input devices readily available that can provide the means of access to the hardware. Some students can use the standard QWERTY keyboard while others may need to utilize such aids as headpointers, handprods or mouth sticks to achieve a similar access. The use of a simply made keyboard guard which is placed over the standard computer keyboard, can

provide easier access for some students. For these and other students with co-ordination or spasm problems, using the key guard reduces the problem of multiple key strike with a corresponding increase in accuracy and fluency. In most cases the wiring of the key board only needs a slight modification to stop a letter or number being repeated constantly while the key is depressed. Two locking levers can also be put on the guard to allow the user to use two key input, for example using the <SHIFT> and <CONTROL> functions.

* There is a range of readily available commercial input devices which can be utilized by students who need an alternative means of accessing the computer. Some of the more standard input devices are joy sticks, paddles and the "mouse". Anecdotal evidence suggests that with the "mouse" some students, particularly those who are developmentally delayed, may not be able to cope with the 90 degree change in perspective between the movement of the "mouse" and the resulting on-screen movement. The three dimensional spatial movement which is possible with the "mouse" is only restricted by the length of the connecting cable. This range of possible movement and resulting cursor movement appears to cause major difficulty for students. The use of the "mouse" requires good fine motor skills on the part of the users and can be used to develop this aspect.

* The Turboball for the Macintosh is made up of a large ball set on bearings and placed into a plastic mounting. The user only has to rotate the ball to generate cursor or indicator arrow movement on the screen. They perform similar functions to the "mouse" and both have the same software and user perception restrictions as does the "mouse". From observation the Turbo ball appears to be easier for students to use because the body of the device remains stationary.

* The Koala Pad is a touch sensitive pad, consisting of a flat surface about 10 cms square. It is light weight and because of the length of the connecting cable can be used some distance from the computer. In the main, its graphic capabilities could be used to extend the artistic skills of students and perhaps used to establish an alternative written mode of communication. The use of the Koala pad requires a co-ordinated two handed operation which negates its use for some students.

The Power Pad, larger but very similar to the Koala Pad, while not presently being manufactured, can still be found in large number in schools. It is anticipated that it will reappear on the market in the near future.

The Concept Key Board is another touch sensitive pad, that can be easily interfaced with the Apple IIe and IIGS computers and comes in three different sizes that correspond to the A2, A3 and A4 sized sheets of paper. At the present time there is only one software package available but the distributors have indicated that more are expected in the near

future. On the original system, each of the many available packages has a number of overlays which are placed on the board to support the individual program.

Another type of touch pad is the Muppet Learning Keys. The board is set out in a colourful manner which makes it very attractive to young children. It has an alphabetic keyboard, a number line, areas for each maths operation and areas put aside for some common command functions. All of these are based around Sesame Street characters. It is supported by a growing number of software packages.

* Two other input devices are the "button box" and the "touch screen" which bypass the keyboard. The button box is a large box with big knobs operating three micro-switches. The mere size of it makes it attractive to students with fine motor or co-ordination problems. The touch screen is placed over the monitor screen using suction caps and uses a series of micro-switches together with a number of perspex plates. The plates can be pressed to meet the needs of the particular software programs. These two specific peripherals support the Micromate range of software which is designed to be used by very young students, by young intellectually impaired and/or language delayed students. It has a suite of 12 programs to assist in the development of early cognition and language skills. The two peripherals are easy to interchange and connect to the games In/Out port via a cable adaptor.

* The Touch Window is another touch sensitive screen that can be used as a touch screen, a graphics tablet or in conjunction with an interactive book that comes with it. It plugs into the games port at the back of the Apple IIe. It supports the Laureate Learning and Sunburst ranges of software as well as an expanding range of problem solving and graphic packages that have been commended in teacher evaluations. The Laureate range of software packages involves language intervention and assessment, teaching and using basic concepts, as well as augmentative communication aids.

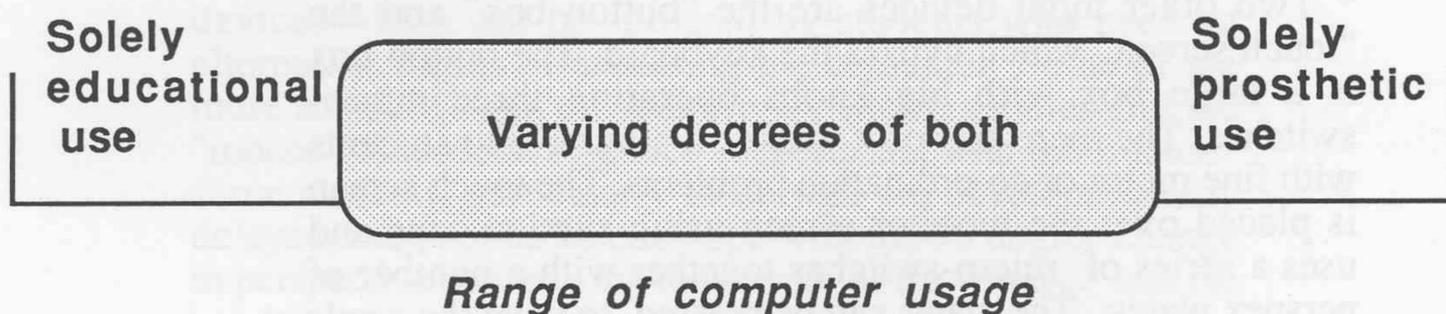
* The Prefax 100 was designed to supplement the computer keyboard. It is 37 cms square and is a touch sensitive tablet. It can be used as a alternative input device to bypass the keyboard or as a touch pad. The keypad has one piece of supporting software, and has the ability to be programmed by the user.

* Light pens use photo-electric elements that promote a response by a interaction between the software and the user's onscreen actions. They are mostly used with graphic production, music generation or to write on the screen as a form of communication.

The peripherals which have been outlined so far are directed towards the more physically able students. For those students whose degree of disability is greater, the keyboard or those devices mentioned may be too difficult for them to operate.

1.0 A Rationale and Overview

What are required are devices which go beyond being simply alternative input devices and can be used as prosthetic tools as well. Such devices extend the use of the computer beyond that of education, into such areas as communication, environmental control and to enable the performance of functions that the individual's body may not have been capable of previously. While the two totally separate areas of computer use are important, there exists between them an equally important and large area, where the two types of use blur together. Each has varying degree of content but needs the support of the other for the individual to succeed.



For the more severely impaired individuals, a range of specialized switching devices may need to be used to access the available computer technology. For such individuals a large range of single and multiple switching devices is available commercially. They can be manufactured by such support agencies as Technical Aid for the Disabled or can be constructed from readily available parts.

* The range of switches which is available commercially includes a variety of pressure switches, heat switches, electromyographic (muscle activated) switches and others that require the movement of a specific body part. At their simplest, the switches have only two positions, on and off. The majority of these switches only require a single overt movement on the part of the user to complete the circuit. The area of extreme importance with such switches, is in the evaluation of the student's strengths, weaknesses and needs so that the most suitable switching device can be recommended. Only a small selection of the available switches will be described so that some of the elements involved are explained.

The "rocker switch" is a pressure switch that requires a small rocking movement or pressing action to complete the circuit. This switch is very adaptable in that it can be activated by many parts of the body e.g. the arm, leg, elbow, chin, head, etc depending on the strengths and needs of the person involved. Many variations of this one switch are to be found in use. The H.A.L.O.W. (Head, Arm, Leg or Whatever) is a mercury filled tilt activated switch, which as its name indicates can be used in a variety of positions. The light beam switch is activated when the beam is broken. The means of breaking the beam would depend on the strengths of the individual student. Other switches include chin switches, suck and puff switches, an eye brow switch, as well as a range of tilt switches.

For some students the restriction is not in their accessing the computer but rather in getting a usable output from it.

* Some students who because of fine motor, co-ordination or physical problems may not be able to write legibly using traditional materials but can use a keyboard. For them the answer may simply lie in their using a word processor and printer.

* For students with a visual impairment there are a number of problems in regard to their acquiring suitable output. For them to be able to use computer technology in a worthwhile sense they require a feedback from the computer which they can interpret. This may be in the form of large sized screen content or auditory output from the computer. The large screen content may only require a large magnifying screen to be placed in front of the monitor or the use of a software package such as Magic Slate word processor, which has a large print option of 20 characters per line.

* Auditory output can be realized through the use of quality voice synthesizers. Two word processing software packages which are available are the "Talking Software" and the "Talking Text Writer". They each consist of a word processing package and utilizes a "Echo+" voice synthesizer. The user can set up the parameters within the software to feedback single letter, whole word or complete sentences via the speaker which comes with the package. Both packages output to a printer, producing hard copy for the user.

* For braille readers, the restriction in many cases lies in the shortage of brailled embossed material available to schools or the long time delay needed to acquire it. This can be overcome by interfacing the standard micro-computer to a braille embosser and using a suitable software package such as Braille-Edit. (refer to page 18) The end result is that a person with normal keyboarding skills can produce Grades 1 or 2 braille in either 6 or 8 point styles. A number of text readers utilizing speech generation are also on the market but their price makes them prohibitive to schools.

* The View Scan camera is a portable device that uses a small hand held camera to magnify text for the user on a portable screen. The View Scan Text System which includes the camera and screen also provides large print reproduction as well as word processing facilities where the letters and words from work files are enlarged on the screen. They can also be captured to tape, down loaded to disc or interfaced to other external computers, typewriters, printers or communication systems. Use of such hardware can go beyond that of day to day educational needs.

1.0 A Rationale and Overview

* Non-vocal students are faced with a restriction that can isolate them, and stop them from interacting within their environment. The Touch Talker and Light Talker are two examples of an available range of electronic communication boards. The user can select a sequence of squares from the grid presented to communicate with those around them. The squares are fully programmable so the contents can be personalized to meet the needs of individual users. The onboard voice synthesizer then reproduces the message produced by the user. The boards also have a crystal display unit and a small onboard printer. Pictures or icons can be placed on each square for non-readers. The board may be used by direct selection or with a range of input devices outlined earlier utilizing row column scanning.

* The physically impaired, immobile student may need another form of output to meet their needs. By using such peripherals as the Floor Turtle, Big Trak, floor robots or some of the Fischertechnik or Lego Technic material interfaced to computers and used with any of the forms of Logo available, such students can achieve a "form" of mobility. They can explore the environment about them learning about spatial relationships, of distance, direction, angles, cause and effect as well as the meanings of such concepts as in front of, behind, around, near etc. all in an open ended discovery based learning environment.

The means to connect the available range of switching devices to the computer hardware is made possible through the availability of a number of interface devices.

* The Adaptive Firmware Card for the Apple, allows the user to run commercial software packages using any of 16 possible alternative input devices. These devices include those for single and two switch users, expanded keyboard for direct selectors and assisting features for persons using a head wands etc. The card is easy to install and comes with a interface box, supporting software and documentation. The interface box has the capabilities to connect two input devices at a time using phone jacks.

* The Adaptive Device Interface is a small box providing seven phone jack connectors, so that any switch controlled program can be controlled by plugging in the device. Two other devices are the Nu-Apple Interface System (NAIS) and the Apple Switch Interface. All of these connect to the computer via the games I/O port.

2.0 Devices for Special Education

The development of the microcomputer has made a great impact in education with potential as a many faceted teaching tool. The impact has been equally dramatic in the education of students with special educational needs. The use of appropriate hardware and software provides an opportunity for disabled students to learn successfully, to develop greater autonomy as well as providing them with the chance of experiencing creative and social activities they may not have been able to experience before. The availability of a range of alternative input and output devices interfaced with computers gives many of these students equality of opportunity that was not available to them previously.

As has already been stated such students include those with hearing and visual impairments, the intellectually impaired, the physically and the learning disabled. The degree of disability to which individual students are affected covers a wide range. The educational placement of these students also covers a wide range extending from those with learning difficulties in mainstream classes, to students who are partially or fully integrated, to special purpose classes attached to primary and secondary schools, to students enrolled in Schools for Specific Purposes (SSP). While many students may have no problem accessing the computer system through the keyboard, what of those students who do have difficulties? Some students may experience problems simply accessing the system because of physical, sensory, or learning difficulties or because of fine/gross motor problems. These student's needs may be met by readily available peripherals or may require specialized input and interface devices. Other students because of their particular disability may require alternate output other than the monitor through such as synthesized speech or embossed braille. For some individuals computer based technology can provide for them a means to communicate with those about them, to explore, to participate and control, in an active sense, the environment about them.

See Section 5.0 "Resources for Special Education" in this directory for details of print, video and other materials that will be useful when considering the issue of computer based technology and its use in Special Education.

The prices quoted are sales tax free and were current at the time of compilation but should be checked when considering purchase. Variations will be found especially with imported items due to fluctuations in the value of the Australian dollar.

2.0 Devices for Special Education

ALTERNATIVE INPUT DEVICES

Paddles

A device held in the hand and by turning a dial you can control the on- screen movement of the cursor.

Joysticks

A lever mounted on a ball joint within a box so that it can freely move. With it you can control the on- screen movement of the cursor.

Both devices are available from Apple Resellers.

Price range \$50.00 - \$80.00

Mouse

Consists of a ball mounted into the base of a small hand held control box. The speed and direction as you roll it across the tabletop controls the on-screen movement of the cursor. It has a command button for selecting items from on screen menus. The price includes software. It comes as standard with the Macintosh and the IIGS. Available from Apple Resellers.

Price	Apple IIe	\$140.00
	Apple IIc	\$ 98.00

Keyboard guards

These can be placed over the computer keyboard and held in place with pieces of velcro. The keyboard guards aids students in that it helps prevent multiple key strikes. It can help increase keyboard accuracy and speed on the part of the student. Toggles switches can be added so the control and shift keys can also be utilized.

Available from

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451-9022.

Price For the Apple II, IIe, and IIc \$177.00

Technical Aids for the Disabled in the various states also make customized guards on request. Check the list of suppliers in section 2.1, page 22 for your State contact.

Price on application

Turbo Touch Ball

Consists of a large ball mounted into the top of a control box. The rotational speed and direction of the ball, within the mounting, controls the on-screen movement of the cursor. It has a command button for selecting items from on screen menus. Suitable for the Apple IIc, Apple IIe, the Macintosh SE and the Macintosh Plus.

Available from Apple Resellers.

Price \$260.00

Koala Pad

This is a 10 x 10 cm square touch sensitive pad. The cursor is controlled by the movement of the stylus on the touch tablet. It is mainly used with games, graphics and some educational programs. It has two command buttons and requires a co-ordinated two handed approach.

Available from Apple Resellers.

Price \$225.00

2.0 Devices for Special Education

Presfax 100 Keypad

Suitable for the Apple computers and connects through the games in/out port. Can be used as an alternative input device.

Available from:

Dataflow Computer Services
134 Barcom Av.
RUSHCUTTERS BAY, NSW, 2011
Telephone (02) 331-6153

Price \$200.00

Concept Keyboards

These are touch sensitive pads, designed as an alternative input device that can be used by students with fine or gross motor problems to bypass the keyboard. At the moment there is only a single software package available. The distributors indicate that a range of software packages will become available.

Available from

W.J. Moncrieff P/L
76 Wittenoom St.,
EAST PERTH, W.A., 6000.
Telephone (09) 325 - 5722.
(008) 99 - 9254

East West Computers Pty. Ltd
172 Main St.,
RIDDLES CREEK, VIC, 3431
Telephone (054) 28-6314

The LOGIC SHOP
7-9 West St.,
NORTH SYDNEY, NSW, 2065
Telephone (02) 957 4314

Prices -	A3 size	\$385.00
	A4 size	\$325.00

The interface connection is available at \$150.00 from Moncrieff's.

Unicorn Expanded Keyboard

This expanded keyboard is 35 x 55 cm square touch sensitive input device. It is interfaced with the Apple IIe via the *Adaptive Firmware Card* and can also utilize the *Echo + Speech Card*. It can be used to access most software packages and has a slow down mode. Using its accompanying software it is fully programmable with each "key" holding up to 40 characters. While it has 128 touch sensitive squares, they can be programmed together to form a larger area. The different programs created, can then be stored on data disks. The keyboard can also be used with a number of overlays to go with each program.

Available from

Micropower Pty. Ltd and
66 Upper Heidelberg Rd
IVANHOE, VIC, 3079.
Telephone (03) 497-3855.

Hex Industries
61 Leaura St
NEDLANDS, WA, 6009.
Telephone (09) 381-1735

Price \$570.00

The Gibson Light Pen

This is an optical device available for the Apple IIe that while resembling a biro can detect light. It can be used to draw graphics directly onto the monitor screen. Available for the Apple IIe.

Available from Apple Resellers.

2.0 Devices for Special Education

Price \$195.00

The Touch Window This 30 x 30 cm device fits over the monitor screen or can be used situated in the lap of the user. It can be used as a graphics tablet, as a alternative input device or with the interactive book that comes with the supplied software. It supports a wide range of readily available software, particularly the range of packages produced by Sunburst.

Price \$300.00

Muppet Learning Keys An alternate keyboard which has a range of specific early education software packages to support it. It has a alphabetic key board, a number line as well as colour, direction and command buttons. It is made of and set in a strong plastic frame and is illustrated with characters from Sesame St.

Price \$185.00

Both the Muppet Learning Keys and the Touch Window are available from

EDSOFT
14 Telopea St
HOMEBUSH WEST NSW, 2140
Telephone (008) 33-8873
(02) 76-6881

EDSOFT
P.O. BOX 31
BLACKBURN, VIC, 3130
Telephone (008) 33-8873
(03) 878-4899

Touch Sensitive Screen and Three Button Box

These are two alternative input devices that can be used to access the Micromate range of software and allows the user to by pass the keyboard. The two are interchangeable and are connected to the Apple system via a interface box connected to the games port.

Available from

Relpar Pty. Ltd
48-52 Sydenham Rd
MARRICKVILLE, NSW, 2204.
Telephone (02) 519-2943

Relpar Pty Ltd
2057 Princes Highway
CLAYTON, VIC, 3168
Telephone (03) 543-7083

Price	Three Button box	\$125.00
	Touch Sensitive Screen	\$295.70
	Apple Interface	\$ 95.70

CA Button Box

The box attaches to the keyboard port and runs parallel with the keyboard. The boxes are made to order and are hardwired to provide the number of buttons needed for a particular piece of software in the layout required. Once the connecting cable is installed the button boxes may be readily exchanged without the need to open the computer. Each box can be individualized.

Available from Computer Access
27 Hutchinson Cres.
KAMBAH, ACT, 2902.
Telephone (062) 31-6417

Price	One button	\$12.00
	Two buttons	\$16.00
	Seven buttons	\$40.00
	Connecting cable	\$30.00

2.0 Devices for Special Education

Head Master

This is a light weight headset that translates subtle head movements into on screen cursor movement. A two button pad that can be situated below the space bar, activates the headset and controls 'clicking' and 'dragging' items from the on-screen pull down menus. A 'puff' switch replaces the mouse button.

Suitable for the Macintosh.

Available from

"Inde-Go"
Independence through Computers
55 Hillcrest Av
MONA VALE, NSW, 2103
Telephone (02) 997-7495

Micropower Pty Ltd
66 Upper Heidelberg Rd
IVANHOE, VIC, 3079
Telephone (03) 497-3855

Price

\$1,450.00

Switching Devices

These switches and devices are designed to allow students with physical disabilities or with fine or gross motor problems to access the computer while bypassing the keyboard. Some examples are computer keyboard guards, suck/puff switches, paddle controls, plate switches, head pointers, scanning devices, pressure pads, wobble sticks, etc. Many of the switches can be interfaced to the computer by using the **Adaptive Firmware Card** or the **Apple Switch Interface** (see sections below). The prices vary according to the supplier and the complexity of the switching device.

Available from

Many customized switching devices are obtainable through the various state **Technical Aid for the Disabled** state branches. If you wish to contact any of the TAD branches refer to the individual state contact addresses as outlined in Section 2.1, page 22.

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451-9022.

Technical Solutions
9 Seymour St
BELGRAVE, VIC, 3160
Telephone (03) 754-4368

Relpar Pty. Ltd
48-52 Sydenham Rd
MARRACKVILLE, NSW, 2204.
Telephone (02) 519-2943

Relpar Pty Ltd
2057 Princes Highway
CLAYTON, VIC, 3168
Telephone (03) 543-7083

Alto Computers
58 O'Connell Pde
WELLINGTON, QLD, 4160
Telephone (07) 207-5170

FSE Scientific
40 Hilly St
MORTLAKE POINT, NSW, 2137
Telephone (02) 736-2088

Switch On Project
Rocky Bay Village
60 McCabe St
MOSMAN PARK, WA, 6012
Telephone (09) 384-1855

South East Industries
9 - 11 Parsons St
CLAYTON, VIC, 3168
Telephone (03) 543-7666

Commonwealth Industrial Gases
Medishield Division
Unit 1/149 Arthur St
HOMEBUSH, NSW, 2140
Telephone (02) 748 - 9222

2.0 Devices for Special Education

SWITCHING ASSESSMENT

One of the problems for a disabled computer user is the selection of the most suitable alternative input device. This selection of appropriate switching devices is critical in terms of not putting any part of the user under unnecessary stress that may increase the degree of disability or put the user at risk. Two means of assessing switches with individuals are:

Switching Assessment and Fixtures Kit

The Switching Kit

It contains 9 switches which span a range of activation modes and 2 battery operated devices (a light and a small radio). The switches can be interfaced with the computer via the Adaptive Firmware Card or the Apple Switch Interface connected to the games in/out port.

Price **\$500.00**

The Switch Fixtures Assessment Kit

It contains a variety of interconnecting components e.g. goosenecks, rods, clamps, joints and switch mounting plates. They can be combined in any assembly in attempting to meet the needs of individuals.

Price **\$400.00**

Both kits are contained in a small metal suitcase for ease of transportation. They were designed by and are available from

Micro Applications Centre
P.O. Box 88
Thistlewaite St
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 698-5290

Skill Evaluator and Trainer

This device presents a stimulus and then records the speed and accuracy of responses of the user utilizing any of a wide range of plug in switches and interfaces. It allows for a controlled approach to testing. Records involving the use of different input devices can be compared and progress monitored. The device is available from

Newtronics Marketing Pty Ltd
89-103 Gladstone St
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 690-7588

Price **\$3,200.00**

INTERFACE DEVICES

Adaptive Firmware Card

This interface card allows readily available commercial software packages to be run on the Apple IIe and IIGS using any of 16 special input methods. These methods include scanning for single switch users, morse code for two switch users, expanded keyboard capabilities for direct users and assisting features for people using the standard keyboard with a finger or head wand. The card also has a slow down mode that allows the user to access programs with one or two switches.

Available from

Micropower Pty. Ltd
66 Upper Heidelberg Rd
IVANHOE, VIC, 3079.
Telephone (03) 497-3855.

and Hex Industries
61 Leaura St
NEDLANDS, WA, 6009.
Telephone (09) 381-1735

Price **\$580.00 - \$660.00**

2.0 Devices for Special Education

Apple Interface Box

This box plugs into the games In/Out port and allows switch users to access the hardware. The individual switching devices are then plugged into the interface box.

Price **\$60.00**

Computer Entry Terminal (C.E.T.)

This is an alternate entry device for people who do not have the physical capability to access a computer through the keyboard. The CET duplicates the function of the keyboard and access can be provided by interfacing it with a wide range of switching devices. Selection technique ranges from direct selection, to row column or directed scanning.

Price **\$3,200.00**

These two items are available from

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451- 9022.

Control Interface (C.I.F.)

This allows the physically handicapped student to operate the computer. It can be adjusted for sensitivity, timing control and sustain control. The CIF attaches to the computer via the joystick port. A variety of switches and devices can be used with this card.

Available from

Ausdane Impex
20 Merrilyn St.
CHAPEL HILL, Q'LD, 4069.
Telephone (07) 378-2390

Price **\$560.00**

SPEECH SYNTHESISERS

Speech synthesizers are devices that can convert a coded message written into some software packages into recognizable speech that is played through the inbuilt speakers. A variety of speech synthesizers are available on the market with a price range of \$60.00 - \$350.00. The cards can vary greatly in the quality of voice produced.

The "Echo +" speech card.

This particular speech synthesizer works with a range of software packages. These include the *Lauerate Learning* series, the *Talking Software Package* from Quantum and the *Talking Text Writer* software packages. Check the **Software Section** of this directory for further details of these packages. It is suitable for Apple II, II+, IIe and IIGs computers.

Available from

Quantum Engineering
97 Anzac Ave,
WEST RYDE, NSW, 2114.
Telephone (02) 809 - 6255.

and

Ashton Scholastic
P.O. Box 579
GOSFORD, NSW, 2250
Telephone (043) 28 - 3555

Price **\$225.00 - \$325.00**

2.0 Devices for Special Education

Lis'ner 1000 This is a speaker independent voice recognition board. Software is available to support 64 words in eight groups. This device has provisions for an optional phonetic speech synthesizer chip to allow unlimited speech with a text-to-speech option.

Available from AT National
4/1 Ashley St.
HORNSBY, NSW, 2114
Telephone (02) 477-6233

Price \$375.00

VISUAL AIDS

The following devices are designed to try and attempt to meet the needs of visually impaired students.

Viewscan Text System A portable electronic reading and word processing aid for the partially sighted. Has word processing capabilities and allows files to be down load to disk or to a printer.

Price \$8,500.00 with camera

Viewscan Camera A portable electronic reading aid for the partially sighted that can be interfaced with the Viewscan Text System.

Price \$3,200.00

Optacon A text reading device which converts the text form into a vibrating tactile braille form that the user can then read.

Price \$7,200.00

Kurzweil Reading Machine This converts printed material into direct speech.

Price \$47,000.00

Available from Wormald International Sensory Aids,
22a Hunter St,
PARRAMATTA, NSW, 2150.
Telephone (02) 633-4222.

BRAILLE EMOSSERS

Embosser A braille embosser can be interfaced to the Apple IIe with a suitable cable to a super serial card. Such a embosser with suitable software would be able to meet the immediate needs of braille reading students.

Available from Optek Systems
6 Joseph St.
RYDALMERE, NSW, 2116
Telephone (02) 638 - 1713

Price \$4800.00

and Wormald International Sensory Aids,
22a Hunter St,
PARRAMATTA, NSW, 2150.
Telephone (02) 633 - 4222.

Price \$6,000.00

Software The embossers require special software which is available from

Raised Dot Computing, Inc
48 S. Baldwin St.
MADISON, WI 53703, USA

Price \$US400.00

PORTABLE COMMUNICATORS

There is a range of these devices available on the market which can be used by non-verbal students. The suppliers mentioned below carry a range of devices. Most are free standing units, but can be interfaced with Apple Ii's and Ii's for information storage or so as to obtain hard copy. Their prices are available on application.

PHM Australia Pty Ltd
Manly National Building
22 Central Ave
MANLY, NSW, 2095
Telephone (02) 977- 6600

Canon Australia Pty. Ltd.
37 Waterloo Rd,
NORTH RYDE, NSW, 2113.
Telephone (02) 887 - 0166

Robotron Pty Ltd
4/25 Brougham St
BOX HILL, VIC, 3128
Telephone (03) 890- 8610

Spastic Society of Victoria
High Point Industries
14 - 16 Williamson St
MARIBYRONG, VIC, 3032
Telephone (03) 318- 6366

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451 - 9022.

Price **Depends on the type and complexity of individual pieces**

The Light Talker and Touch Talker

These devices are designed for non-vocal individuals who are also physically disabled. They can store information of the users choice which can be recalled at will. Words, phrases or messages can be stored by means of words and/or pictures and recalled when that area is activated by touch, light sensor or control switch. The message is then translated into synthesized speech. The contents of the stored elements can be individualized to meet the needs of the user.

The devices can be operated by using the 'board' with fingers , a mouth stick or head pointer. The "Light Talker" can be accessed by using a light sensor to activate the keyboard. Both devices can be accessed via any of the large range of switching devices available via row - column scanning.

Available from
Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451-9022.

Price **\$5,748**

2.0 Devices for Special Education

ENVIRONMENTAL CONTROLS

The range of devices that are available provide appropriate electronic assistive devices and support to the severely physically handicapped. Such devices allows the individual to control electrical devices in the home, hospital, school or work environment. The objective behind the use of such devices is to promote in the individual greater independence and to improve the quality of life.

Available from

Technical Aid for the Disabled Independent Living Centres in each State, are locally based resource centres. Check the Resource Section in section 2.1, page 22 for the contact addresses.

Other distributors are:

Commonwealth Industrial Gases
Unit 1/149 Arthur St
HOMEBUSH, NSW, 2140
Telephone (02) 748 - 9222

The Independent Living Centre N.S.W.,
P.O. Box 351,
RYDE, NSW, 2112.
Telephone (02) 808-2022.

CPL Services Pty Ltd
11 - 15 Wellington St
WINDSOR, NSW, 2181
Telephone (02) 51- 8626

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451-2058.

FSE Scientific
40 Hilly St
MORTLAKE POINT, NSW, 2137
Telephone (02) 736-2088

Cost

Depends on the type and complexity of individual pieces

HARDWARE AND PERIPHERAL SUPPLIERS

Adaptive Aids for the Disabled
Box 184,
BROOKVALE, NSW, 2100.
Telephone (02) 451 - 9022.

Alto Computers
58 O'Connell Pde
WELLINGTON, QLD, 4160
Telephone (07) 207 - 5170

Ashton Scholastic
P.O. Box 579
GOSFORD, NSW, 2250
Telephone (043) 28 - 3555

AT National
4/1 Ashley St.
HORNSBY, NSW, 2114
Telephone (02) 477 - 6233

Ausdane Impex
20 Merrilyn St.
CHAPEL HILL, Q'LD, 4069.
Telephone (07) 378 - 2390

Canon Australia Pty. Ltd.
37 Waterloo Rd
NORTH RYDE, NSW, 2113
Telephone (02) 887 - 0166

Computer Access
27 Hutchinson Cres.
KAMBAH, ACT, 2902.
Telephone (062) 31 - 6417

Commonwealth Industrial Gases
Medishield Division
Unit 1/149 Arthur St
HOMEBUSH, NSW, 2140
Telephone (02) 748 - 9222

CPL Services Pty Ltd
11 - 15 Wellington St
WINDSOR, NSW, 2181
Telephone (02) 51 - 8626

Dataflow Computer Services
134 Barcom Av.
RUSHCUTTERS BAY, NSW, 2011
Telephone (02) 331- 6153

East West Computers Pty. Ltd
172 Main St.,
RIDDLES CREEK, VIC, 3065
Telephone (054) 28 - 6314

Edsoft
P.O. Box 16
PENRITH, NSW, 2750
Telephone (02) 76 - 6881
(008) 33 - 8873

Edsoft
P.O. BOX 314
BLACKBURN, VIC, 3130
Telephone (03) 33 - 4899
(008) 33 - 8873

FSE Scientific
40 Hilly St
MORTLAKE POINT, NSW, 2137
Telephone (02) 736 - 2088

Hex Industries
61 Leaura St
NEDLANDS, WA, 6009.
Telephone (09) 381-1735

"Inde-Go"
Independence through Computers
55 Hillcrest Av
MONA VALE, NSW, 2103
Telephone (02) 997 - 7495

JPR Software
Suite 6, CDS House
36 - 38 Cowper st
Harris Park NSW 2150
Telephone (02) 891 - 3688

The LOGIC SHOP
7-9 West St.,
NORTH SYDNEY, NSW, 2065
Telephone (02) 957 - 4314

Micro Applications Centre
P.O. Box 88
Thistlewaite St
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 698 - 5290

Microbytes Ltd.,
382 South St.,
RICHMOND, S.A., 5033.
Telephone (008) 352 - 5455.

Micropower Pty. Ltd
66 Upper Heidelberg Rd
IVANHOE, VIC, 3079
Telephone (03) 497 - 3855.

W.J. Moncrieff P/L.
76 Wittenoom St.,
EAST PERTH, W.A., 6000.
Telephone (09) 325 - 5722.
(008) 99 - 9254

Newtronics Marketing Pty Ltd
89-103 Gladstone St
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 690 - 7588

Optek Systems
6 Joseph St.
RYDALMERE, NSW, 2116
Telephone (02) 638 - 1713

2.1 Distributers of Special Education Peripherals

PHM Australia Pty Ltd
Manly National Building
22 Central Ave
MANLY, NSW, 2095
Telephone (02) 977 - 6600

Quantum Engineering
97 Anzac Ave,
WEST RYDE, NSW, 2114.
Telephone (02) 809 - 6255.

Relpar Pty. Ltd
48-52 Sydenham Rd
MARRACKVILLE, NSW, 2204.
Telephone (02) 519 - 2943

Relpar Pty Ltd
2057 Princes Highway
CLAYTON, VIC, 3168
Telephone (03) 543 - 7083

Robotron Pty Ltd
4/25 Brougham St
BOX HILL, VIC, 3128
Telephone (03) 890 - 8610

South East Industries
9-11 Parsons St
CLAYTON, VIC, 3168
Telephone (03) 543 - 7666

Spastic Society of Victoria
High Point Industries
14-16 Williamson St
MARIBYONG, VIC, 3032
Telephone (03) 318 - 6366

Switch On Project
Rocky Bay Village
60 McCabe St
MOSMAN PARK, WA, 6012
Telephone (09) 384 - 1855

Wormald International Sensory Aids,
22a Hunter St,
PARRAMATTA, NSW, 2150.
Telephone (02) 633 - 4222.

Technical Aid for the Disabled State contacts

TAD - N.S.W.
PO Box 108
RYDE, NSW, 2112.
Telephone (02) 808 - 2022

TAD - Queensland
P.O. Box 137
ANNERLEY, QLD, 4103
Telephone (07) 397 - 8987

TAD - Northern Territory
P.O. Box 37351
WILLELLIE, NT, 5789
Telephone (089) 98 - 9364

TAD - Tasmania
41 Derwentwater Av
SANDY BAY, TAS, 7005
Telephone (002) 25 - 1561

TAD - Victoria
P.O. Box 88
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 698 - 5222
(03) 698 - 5346

TAD - S.A.
6 Talbot St.
ELIZABETH EAST, TAS, 5112
Telephone (08) 255 - 3612

TAD - W.A.
10 Collier St
MORLEY, WA, 6062
Telephone (09) 275 - 4799

3.0 Teaching Ideas for Special Education

Perhaps the question most often asked by teachers who work with students with special educational needs is "what software should I use with my students"? It is indeed a perplexing one. The best possible answer to such a question is "it all depends". The teachers must consider the needs of the student(s), what their general and specific aims and objectives are, and what in fact they want to accomplish. Having determined this, the teacher then has a firm foundation, criteria and guide on which to base their software selection.

One only has to look at the software catalogues from any of the major software distributors to see the large number of software packages that are commercially available. The available software covers a wide range of general and specific areas of learning as well as a range of software types. In addition to the "normal" screening procedures and criteria that teachers need to exercise when selecting software, other elements must be considered as well. These include posing the following questions - "Is the particular software package age and gender appropriate? Are the language, reading and interest levels appropriate? Can the student access and use the package easily? Do the program outcomes meet the needs of the particular student(s)?"

Teachers of students with special educational needs usually have two major concerns. Firstly, for the majority of them, what good mainstream software can be readily used with different groups of students. It is the manner in which a particular package is used, the creative, divergent teaching activities and the practises that are developed around it, that set it apart. In using the same software packages in an imaginative variety of ways, teachers can advance their students education and reduce the impact of their particular disabilities and handicaps. Thus many "mainstream" software packages can also be considered as being "special education" software because of the wide ranging teaching strategies that are possible with them.

The second element is to identify quality special education specific software that is available and suitable. There are very large numbers of "mainstream" software packages available. In comparison there are only a few software packages that have been specifically designed and coded for specific disability groups. The vast majority of these specific programmes originate in the United States and as such may present problems in regard to teaching approaches, the structure and use of language as well as cultural differences. In some case these problems may make the software unacceptable for use in Australian schools. The price of much of this specific software may also put it out of the range of most schools.

The general rule then is if the software is appropriate and meets your students needs, then use it. Ensure that you review its appropriateness each time you review your student's needs.

The list which follows contains examples of a range of software programs and teaching ideas. While specific programs and strategies are outlined, they are only suggestions that are designed to sow the seeds of creative thought. While a package or teaching idea may not work in your specific situation, a simple variation or modification of it could provide a solution. For a more complete list of software and suppliers consult the **1987 Australian Apple Educational Software Directory** compiled by Gary Ferguson-Smith. This document is published every two years and is available from Apple Educational Resellers.

***Note:** Both commercial retailers and suppliers have been listed with the suggested lists of software programs. Many of these programs should be available from Apple Education Resellers and/or specific software distributors. Refer to the disclaimer as outlined in the opening pages.*

There is a wide range of word processors available on the commercial market. They vary greatly in type (i.e. for very young users to full professional programs) and in style (from using the keyboard to pull down menus, to mouse driven etc.) Some are purely word processors, while others are more integrated programs aimed at language development or the generation of creative and expressive writing. Many students who have special educational needs, may also be for a variety of reasons writing and/or reading reluctant. For many of these students the use of the computer and a word processor to create, record and edit creative written material is physically easier than the use of the traditional methods. Word processing programs in the variety of styles available can be used to allow such students to become actively involved in **expressive writing activities** and so to lessen the effect of their reluctance and main disability. These effects can be achieved in the main through the range of editing facilities and enhancements that are inherent in good word processing programs. Many students, because of poor eye/hand co-ordination and/or poor physical writing skills, may find writing using traditional materials very difficult and thus uninteresting. The use of a word processor with its inherent ease of use in composing and editing, coupled with a printer could provide the answer. The printed outcomes from such exercises can overcome the reluctance of some students to share and/or exhibit their work because of their poor handwriting skills. As one student with such a history answered the question as to why she liked using the word processor "... it looks like it came out of a book". The end result, an increase in self esteem and self confidence and a student who is intrinsically motivated to read and write.

Process writing activities in which a number of students take part have an added advantage apart from the planned aims of increased competence in language, reading and expressive writing. The bonus is that the word processor and the computer provide the catalyst for a group of students to work together and develop a range of skills and concepts such as co-operation, communication (both receptive and expressive), critical thinking (by discussing ideas, theirs and those of others), socialization and negotiation. Some of the more popular word processors available are Milliken, Magic Slate, Bank St Writer, Word Smith, Homeword, Mac-Apple, Mac Write, Microsoft Word, AussieFred Writer and Talking Text Writer. Of these some deserve special mention.

Magic Slate can be displayed as 20, 40 or 80 characters per line. This makes it of special interest to teachers of students with sight problems or for students who are reluctant writers. By putting the word processor in the 20 characters per line format, you get large sized characters produced on screen and in printed form. This increases its physical readability and for students who have low levels of work production, it appears as if they have produced more work than they actually have.

Talking Text Writer interfaces with an Echo+ speech synthesizer card. This allows for the input text to be "read" back to the student in their desired format i.e. a letter, a word or a sentence at a time. As the designated element is read back, it is highlighted on the screen. This makes it very good for teacher generated cloze reading and vocabulary exercises, auditory discrimination and/or reinforcement of concepts and skills contained within presented material. The teacher can set the parameters of pronunciation so as to overcome some of the oddities of the English language. The Australian distributors indicate that a spelling checker, thesaurus and a number of library disks containing popular stories will be available soon.

The **Bank St Writer III** uses the mouse and pull down menus. It also has a number of integrated elements in a file management program, a mail list and letter writer facility and a spelling checker. The program also has a tutorial segment for the user with no knowledge of word processing. **Homeword** is another package which uses graphics to help students identify different functions within it.

AussieFrEd Writer is a public domain word processor that is in relatively wide use in schools and has a school based interest support group called Keyboard Connections. This is a network of schools using AussieFrEd Writer who share their students work in disk and printed form. This gives the students a powerful reason to write and read. The Keyboard Connections network has also spread to some overseas schools. **Spud** and **Beyond Merlin and His Magic Staff** are public domain disks of language and writing activities using Aussie FrEd.

Mac-Apple for the Apple IIe is more than just a word processor in that it allows the user access via a switching input device or the keyboard. It also allows the students to write or draw. It is especially appropriate for those students who can not use the keyboard. The software has a scanning facility that can also be used as a writing aid or as a communicator. For students who need to use switching input devices to access the computer, a range of switches can be used, it has an adjustable scanning rate and two lists of commonly used words or short phrases can also be stored for use. Other packages include **Sentences**, **Sentence Scan** and **Message Maker** which are similar in that they can be used as single switch controlled word processors.

The second type of software program integrates graphic images from a stored library and text generation. The pictures created by the student provide the motivation for them to write. The final printed form of the graphic and text is a strong motivational tool. The programs are aimed at language development, the generation of creative and expressive writing and the encouragement of young and/or

reluctant readers and writers. Some of the more popular packages are **Kidwriter, Fact and Fiction Tool Kit, Story Tree, Story Machine, and Fantasy Isle**. A number of programmes such as **Take a Holiday** and some in the **Microzine Series** are interactive in nature. The presented text and questions asked by the software, prompts and encourages the students to read and write.

For younger or less able students a number of **creative writing tool** programs are available to motivate students to write text to accompany graphics that they themselves create. Such programs are **Kidwriter** and **Fact and Fiction Tool Kit**.

Create with Garfield, the recently released **Deluxe** version, and **Teddy Bear-rels of Fun** are all highly motivational. They can be used to prompt expressive language, used for the students to sequence events as outlined in the "cartoon" or be created as the result of the receptive language activities such as drawing to instructions. The conversational bubbles found in all three software packages can be used to generate both questions and answers. Cartoons can be used to raise topical news items or discuss coming events. Following oral discussion and written work a series of pictures can be created. The pictures can then be used in sequencing exercises or for further discussion. A series of packages in the **Explore-A-Story series** works along similar lines with the teacher and/or student being able to manipulate and move both text and graphics on the screen. A simple word processor incorporated in the package can also be used. Generated text can also be introduced into the graphic collection supplied on the data disks. The program also has a simple animation facility that gives the characters on the screen the appearance of movement.

Another package, **Certificate Maker** can also be used by students to select a graphic from the supplied data disk and then compose an appropriate insert to go with it. By putting the results through the printer, students can produce or have produced for presentation to them, any of a wide range of personalized certificates.

Any of the available word processing packages can be used by teachers to generate **cloze reading exercises** with varying degrees of difficulty in the content. A number of other programs can be used specifically to promote writing and reading skills through the presentation of such cloze exercises. Those most supported by teachers are **Missing Links, Close the Gap, Sherlock, Cloze Master English, Teacher's Notebook, Mystery Sentences, Zap Reader and Gap Maker....Gap Taker**. In addition, any of the writing processors previously mentioned can be used to generate cloze passages that relate to the specific language, reading level or areas of interest of individual students.

The **Rix Reader** software program can be used to access the reading age level of a book or the on-screen presentation and content of a particular software package. It does this by analysing 100 words of that text put into the software by the teacher.

In many if not all of the writing activities, the final formats can be enhanced by using packages such as **Multiscribe** and **Printrix**. Both of these programs allow the user to introduce a range of fonts and to vary the format of the printed outcome thus making it more attractive. Graphic elements from **Print Shop**, the commercial disks and/or the public domain material that is available, can be used. These can be used in a physical cut and paste exercise to make the printed material more attractive. Collections of material can be compiled in books that are specific to such subject areas such as jokes, riddles, tongue twisters, funny stories, poetry, plays, conversations, instructions on how to do ..., what do you want to know about?, instructions for games, recipes, real, local or "crazy" news items etc.

General packages or more specific ones such as **Print Shop, Print Master** and **Newsroom** can be used to display students work either as posters or in articles that are written by a student or a group of students. Graphic packages such as **Mousepaint, Blazing Paddles, Dazzle Draw** and **MacPaint** can be used by students in a range of activities as well as being used to generate specific illustrations of their own to accompany their text. Elements from these packages can be incorporated into written material to make it make attractive. Such activities can give students a real purpose for writing and the opportunity to write in a number of styles. These styles could include those found in feature articles, news reports or in advertisements. Local papers could be studied as models of good and bad styles. This in itself would encourage purposeful reading and a transference of skills. Computer software can be used to create class and/or school "newspapers" in pre- and post- excursion or event activities. Activities such as these give the students a higher positive profile in the school environment, and as such increase their self confidence and self esteem.

Combining some of the software packages can provide teachers and students with a easily accessible **publishing tool**. Integration of text and/graphics can be achieved either on disk or physically through the use of "cutting and pasting" the two together and then photocopying the end result. This can result in the production of a wide range of publishable documents. Examples of published materials are class or school newspapers, individual and/or group stories, a range of posters, advertising "fliers" or invitations.

Printshop can be used to generate **Art/Craft activities** in making posters/banners themselves, using such items as objects to be coloured in or painted, using the posters as the basis for screen printing activities, for tee-shirt or jumper decorations or knitted items such as the front of jumpers, pot holders etc. The program can be used as a **teacher utility** by staff to create class posters to illustrate such concepts as size, colour, number, the alphabet and pre-reading and pre-number activities.

Another technique is the **"mystery"** story. Each student writes a part and then passes it on to the next student. Each must add to the story, keeping the theme going without the material losing sequence. Variations could be introduced where the students are only given, say, pages one and three. The students (either on an individual or a group basis) then have to try and construct the events on the missing page while maintaining the story line and sequence of events. Results could then be swapped, the content compared and discussed. A variety and range of literature styles could be used, ie plain stories (fact or fiction), narratives, poems, fairy tales etc. The choice would depend on the ability and interest levels of the students as well as their needs. The students involved would develop the skill of creating a "flow chart" of the direction taken by the story to date. It can be used also to develop skills in such areas as syntax, vocabulary, reading and writing for a purpose as well as proof reading. Similar activities could be undertaken with programs such as **Story Tree, Story Machine, Story Maker, Decide Your Destiny, Fact and Fiction Toolkit** and some of the **Microzine Series** programs such as 'Haunted House', 'The Mystery at Pinecrest Manor' or 'Pirates of the Soft Seas'.

Other programs can provide "prompts" for the student to use as the basis and motivation for activities leading to active discussion and writing. **Fantasy Isle, Take a Holiday** and **That's My Story** are examples of such programs. The degree of difficulty can be increased by omitting different sections of the story. The students can generate lists of known and unknown words, of synonyms and antonyms, as well as to develop dictionary skills such as alphabetical order, word meanings, reading for understanding and use of a thesaurus. Concepts of synonyms and antonyms can also be explored and the results used to built up variation in the stories. The tense can also be altered so as to write a story only in the past or present tense. This could be extended to changing a story from one tense to another, or from the first to the second person. Such activities would be especially useful to students with severe language impairment, such as students with hearing impairments, those with severe reading and language disabilities and students who are learning English as a second language.

There is a range of crossword generators readily available on the market which generate crossword puzzles from words entered by students or the teacher. Programs such as **Cross Word Magic** and **Crossword Challenge** can be used across a wide range of subjects, interests and ability levels and can be easily set up to meet the particular needs of a child in a specific situation. As the teacher can input both the questions and answers, they have a great deal of control over the level and format of the final product. The questions could be based on such concepts as number, size, directions, change of tenses, singular or plural noun forms, as part of a cloze reading exercise, etc. Such a program can be easily integrated in across the curriculum activities with the use of concrete materials such as pictures, group activities, developing dictionary research skills etc.

Some suggested programs

Apple Resellers: *AussieFrEd Writer*
Brittanica: *Milliken Word processor*
Prologic: *Take a Holiday, Fantasy Island, Bangotcha Junction*
Ashtron: *Bank St Writer III, Fact & Fiction Tool Kit, Story Maker, Story Tree, Talking TextWriter, Cross Word Magic*
Imagineering: *Kidwriter, Print Shop series*
Edusoft: *Homeward,*
Edsoft: *Magic Slate*
Jacaranda: *Word Smith*
Dataflow: *Create with Garfield, Teddy Bear-rels of Fun, Certificate Maker, Printmaster, Explore A Story series, Thats My Story, Decide Your Destiny, Transportation Transformation, Monsters and Make Believe*

SOME POPULAR SOFTWARE PROGRAMS FOR BASIC SKILLS:

Many students because of their disabilities, experience difficulty in understanding concepts as well as developing and retaining specific skills. As such they need a higher level of repetition to achieve and maintain mastery than do their more able peers. Quality educational software through the multi-sensory feedback components written into them (consisting of sound, colour, graphics and movement) and the facility for the user to personalize the program with their name, provide high levels of motivation and appeal. Computer based "drill and practice" using multi-sensory feedback increases students

motivation, their attention and concentration spans. Such packages cover the spectrum of basic subject areas. As there are a great number of "drill and practice" software packages on the market, teachers need to exercise a great deal of caution to ensure that the package they select meets the specific and general needs of their students. As student needs both individually and in relation to specific areas of learning are wide and varied, teachers need to look very critically at the mass of "drill and practice" programs that are available. For a more complete list and description of software packages that are available consult the **1987 Australian Apple Educational Software Directory**. This document is published every two years and is available from your local Apple Educational Reseller.

Some of these software packages have an "authoring" facility written into them that makes them even more appropriate to teachers and their students. The "authoring" facility allows the teacher to input content that is appropriate to specific students in particular areas of learning. Such a facility can be found in such packages as **Wizard of Words, Wiz Works, Alien Action, Meteor Mission** and **Idea Invasion**.

Facemaker and **Mask Parade** can be used in a wide range of activities. The packages can be used to create faces or masks similar to known and/or famous people, or of characters from stories in which students are interested in. Fictional faces can be created as a result of directions dictated by fellow students, to describe various emotions and feelings. The end results can be then compared and discussed. Perhaps one of its greatest uses is in expressive language activities. Many students feel embarrassed in expressing themselves in front of an audience, but with props produced by the software, they can be assisted in overcoming their shyness.

The **Micromate series** of software is suitable for very young students or for those students with severe and profound intellectual disabilities. All five disks of programs can be interfaced with the 3 button switch box or the touch sensitive screen peripherals as outlined in **Section 2.0** of this directory. The software has programs that relate to eye hand co-ordination, visual discrimination, memory, sequencing, matching, directions, early number and literacy. It also has programs for the teaching of the initial skills for using switching devices, as well as concepts of size, colour and number.

The **Laureate Learning System series** of software is also specifically designed packages for the same group of students. The Laureate packages involve the use of graphic, text and speech. The latter is produced by a *Echo+* speech synthesizer that provides auditory feedback to aid learning and reinforcement. The packages concentrate on language skills ranging from receptive vocabulary through to grammatical constructions and categorization presented in multiple levels of instruction. They also cover cognitive development, eye - hand co-ordination, tracking skills and comprehension. It also aimed at improving student concentration and attention spans by extending the time duration students attend on a range of tasks. The programs have a good evaluation facility that gives the teacher feedback on the number of attempts and the number correct on specific elements within the program. Both the Micromate and Laureate series have low level conceptual content covering in the main the areas of pre-literacy and pre-numeracy. The software also allows the user to individualize the rate of scanning, the criteria for success and reaction time.

The **Muppet Learning Keys** software packages are designed to be used with a touch pad of the same name. The software can be used to assist students in activities centred on basic and early numeracy, literacy, colour recognition and the relationship between objects. In some of the programs the teacher has control over the elements that will be presented to the student as well as the order and style of that presentation of that content.

Programs such as **Fish Scales, Comparison Kitchen, Number Farm, Shape and Colour Rodeo, Sticky Bear ABC, Sticky Bear Maths** and others in the same series can all be used in the area of early literacy and numeracy. They can be used in conjunction with a variety of off-screen activities and/or with concrete materials to teach and reinforce a wide range of concepts.

Some suggested programs

Edusoft: *Early Games for Young Children, Facemaker, Getting Ready to Read and Add, Letters and First Words, Maths Blaster, Word Attack*

Ashtrons: *Word Spinner, Wizard of Words, Reader Rabbit, Magic Spells, Bumble Games, Bumble Plot, Logic Builders*

Edsoft: *The Stickybear Series e.g Stickybear Reading, Stickybear Opposites, Stickybear ABC etc*

Dataflow: *Wiz Works, the DLM series - Fish Scales, Comparison Kitchen, Number Farm, Shape, Colour Rodeo etc*

Relpar: *The Micromate series*

DEVELOPMENT OF COGNITIVE SKILLS WITH LOGO

LOGO can be utilized in many ways. It is particularly suitable for students with special educational needs in that a wide variety of off-screen and concrete activities can be undertaken. Versions of Logo are available from a wide range of suppliers, and a wide range of support material both in print and video form are also available.

Logo is concerned with discovery based learning with a strong emphasis on the process rather than the final product. It is a very powerful learning tool for students with special educational needs. One of Logo's greatest strengths lies in the broad range of off-screen concrete activities that can be utilized and incorporated into the individual's/classes program by the teacher. Such activities can be individualized to meet the specific needs of particular students as well as providing an alternate mode of teaching and learning. The individualization can be designed to meet the developmental level and intellectual ability of the student(s) through the use of specially adapted versions of Logo, such as Kinder Logo. Further forms of individualization can involve various means of input or access with alternative input devices such as button boxes, five way switches or via the range of commercial switching devices that are available. Output can also be individualized through such devices as floor turtles or with the various forms of robots that are on the market. In all activities, the immediate feedback that is inherent in Logo activities is another strong supporting feature. Such activities may hopefully result in the students initiating and generating activities and projects of their own.

Logo activities could be used with a wide range of disability groups right across the curriculum. There are many books available on the market with wide ranging ideas on different ways to use Logo and a as equally wide range of activities that can be used with students. The activities could also be extended to activities involving the higher order thinking skills as the students experiment, discover, build, modify, combine, explain, analyse, generalize and create within a Logo environment.

Students who because of a physical disability may not have been able to explore the environment about them in the same way as their able bodied peers, can explore through the spatial component of Logo. Using the Logo commands via such elements as floor turtles, by acting as commanders of "human robots", floor robots or through the use of wheelchairs allows them to become active within the space around them. In support of these types of activities Behrmann made the comment in his book *"Handbook of Microcomputers in Special Education"* that "learning takes place as (the) children interact within their environment". The students who because of their disability may normally lead a passive lifestyle can now be in charge and work in a dynamic mode. They are in control.

For students with a range of intellectual and/or learning disabilities, Logo can be a powerful learning and motivational tool. As Seymour Papert said in *"Mindstorms"*, "Logo gives concrete form to abstract ideas." Some of the ways the concrete forms can be presented are in having the students physically move objects or themselves around model-town like structures, having command of human or mechanical "robots", using water from old paint bottles to draw command driven designs on the asphalt, using string lines, drawing designs in a sand tray or game activities. Students can then integrate and progress onto exercises using maps or mazes on paper, and then onto overhead projection sheets. The transition from off-screen concrete activities to monitor based activities needs to be done slowly and carefully so that the students can "handle" the change in media and more importantly the 90 degree change in perspective. The students also has to come to terms with the change from "first and second person" activities where they are involved in concrete activities, to exercises that now appear to be in the third person on the monitor screen. This can be done by using slope tables, overhead projection activities, and by repeating earlier mapping, maze and symmetry activities but this time with the overhead transparency sheets sticky taped to the monitor screen. During all these types of activities, the students will be developing spatial concepts (distance, angles, near, behind, in front etc), directional concepts (forward, back, right, left etc), as well as actively using previously unexpressed mathematical concepts such as "what constitutes a square", "a triangle" etc.

For many students Logo provides the catalyst for the development of expressive and receptive language skills as well as socialization, communication, and co-operative elements that are bought to the fore in group activities. For many teachers these are perhaps some of the most meaningful reasons to use the technology with students such as these. With many students with special educational needs, all of these elements as well as the students own self esteem, self confidence and self image can be increased by Logo activities. Anecdotal evidence suggests that these increases are passed on to other subject areas and can be seen in the students overall behaviour pattern. Such activities provide a multi-sensory approach to learning, involving visual, motor, tactile and kinesthetic inputs to the student. They learn by doing.

Some suggested programs

Apple Resellers: *Apple Logo, Apple Logo II, Apple Logo Tool Kit, Kinder Logo, Utilities Disk*
 Edusoft: *Know Logo*
 Dataflow: *Getting Started with Logo*
 Edsoft: *Exploring Logo*

PROBLEM SOLVING and COGNITIVE DEVELOPMENT

The **Sunburst** set of programs consist of **Discrimination, Attributes and Rules** and **Memory, A First Step**. Both consist of a set of sequenced lessons and classroom strategies, including computer activities, to develop a specific range of cognitive and perceptual skills. All of these packages have large amounts of teacher support materials. **Iggy's Gnees, Gnee or Not Gnee, Teddy's Playground** are concerned with the development of memory, sequencing, shapes, colours and grouping according to a common element.

Another set of programs called **Moptown Hotel, Moptown Parade** and **Jugglers Rainbow** have the same objectives in the development of visual discrimination and cognitive skills. All of the programs involve a range of problem solving activities containing a range of ability levels with activities centred around differences in colour size and physical attributes. All of the exercises can be used for a range of expressive and receptive language activities.

In small group situations all of the above packages can aid the development of co-operative learning and discussion, reading, receptive and expressive language development, as well as developing specific areas of directions, estimation, predicting and classifying. The packages can be used in across the curriculum activities in art, craft and drama.

Some suggested programs

Edusoft: *Early Games for Young Children*
 Dataflow: *Puzzle Master*
 Edsoft: *The Pond, The Super Factory, Colour Keys, Discrimination Attributes & Rules, Memory A First Step*
 Ashtron Software : *Moptown Hotel, Moptown Parade, Juggles Rainbow*

ACTIVITIES USING DATABASES:

This type of software package can be used in a variety of ways depending on the ability level and age of the students concerned. The more the student(s) can input to the package in data or question form the more appropriate it is to their needs. With open databases such as **AppleWorks** or **FredBase** the students can collect and input information on material that is important to them. **HyperCard** on the Apple Macintosh systems can also be similarly used. For example topics could include a range of physical attributes in height, eye and/or hair colouring, weight, the number of brothers and/or sisters etc. Other topics could include favourite foods, sporting teams, TV shows, books, entertainers, bands etc or topics that relate to specific subject areas. The mere action of collecting, collating and researching the information, as they construct the database means that they are unconsciously learning about and utilizing elements of computing such as files, fields, records and data.

With closed databases such as the **First Fleet, Bushrangers, Dream Machine** and others, the students are able to develop questioning and interpretive skills as they extract and understand specific information from the database. This is in addition to learning about specific topic areas.

In both these examples, the database can provide the stimulus for expressive and receptive language activities, art/craft activities or for a range of student writing. Such databases can be used in a range of across the curriculum activities. Both types of databases could be used for lower or higher order skills depending on the ability level and needs of the students.

Some suggested programs

Apple Resellers: *HyperCard*
Active Learning Systems: *Australia :A Profile,One World, Countries Database*
Tasmanian Media System: *First Fleet Database*
Knowware: *The Explorers Database,Bushrangers Database*
Information Technology : *Birds of Antarctica*
Prologic: *Hounds in History ,What's in a Name, The Dream Machine , Hometown , A Local Area Study, Crime in Society*
Ashtron: *Scholastic's PFS: Datafiles*
Gemini Software: *Information Management Package*

SIMULATIONS and ADVENTURE PROGRAMS

While these are in fact different types of programmes, they have many similar elements which actively develop specific skills and concepts. Simulation programs allow the student to interact in lifelike or fantasy scenarios outside of the physical environment that may be familiar to them. Certain problems are presented to them which they are challenged to solve. This software usually emulates situations that would be too slow, too dangerous, too difficult, too expensive and/or too unrealistic to undertake in reality. For many activities using the computer is the only practical way the students could undertake a specific activity. Examples include surviving on a desert island or cross fertilizing different seeds or animal breeds. Some programs that are strictly simulations are **Dream House, The Ear, Millionaire and Trains.**

Gold Dust Island, Sheep Dog Trial, Cunning Running, Adventure Island and Raft Away River are other examples of these programs. These programs which are a combination of simulations and adventure games aim to develop specific skills such as reading a compass, critical thinking and decision making. Depending on how the problem is presented either in text and/or graphics, reading and language skills are also developed. The specific aims of each package vary but the general aims of the packages are the same. The aim is the development of problem solving skills that then can be transferred and used by students in their own real life situations. In small group situations the packages aid the development of co-operative learning and discussion, reading, receptive and expressive language development, as well as developing specific areas of direction, estimation, predicting and classifying. The packages can be used in across the curriculum activities in art, craft and drama.

Some suggested programs

Jacaranda Wiley: *Gold Dust Island, Sheep Dog Trials, Cunning Running, Adventure Island, Raft Away River, Dinosaur Discovery, Bush Rescue*
Prologic: *Pie Shop , Designing an Energy Efficient House*
Ashtron: *Treasure Island , Adventure Island, Tonk in the Land of Buddy Bots*
Edusoft: *Dream House, The Ear, The Heart Simulator*
Dataflow: *Explore Australia*

Adventure games also have strong problem solving and simulation elements within them, and can be used in a wide variety of activities across the curriculum. This type of software allows teachers to create a fantasy world within the classroom. It allows the students to interact with this environment in an active way. They can provide the students with a variety of learning experiences. They can be used to generate receptive and expressive language activities- listening and talking, to stimulate reading and writing, investigating, information location and retrieval, self expression using a range of media and methods such as drama, art/craft, music, and various forms of written expression.

Some suggested programs

Imagineering: *Dragon's Keep, In Search of the Most Amazing Thing, Troll's Tales*
Prologic: *Fantasy Isle*
Softime: *Flowers of Crystal , Dread Dragon Droom, Dragon World*
Edusoft: *The Hobbit, The Wizard of Oz*
Edsoft: *Odd One Out, Where in the World is Carmen San Diego , The Factory, Super Factory*

GRAPHIC SOFTWARE

Many students because of very poor fine and/or gross motor skills find that they can not achieve the same level of artistic expression and success as their more able peers. Some students can not access the computer through the keyboard. Both groups of students can be provided with an artistic outlet and a means of self expression and communication through the use of graphic software packages. These packages allow the user to create, to alter, to experiment, edit and store illustrations, drawings, patterns etc. While students can get printed copy of their work, it can also be saved to disk for later use. Access can be provided through the use of such alternate input devices such as the Koala Pad, the Touch Window or through the use of the mouse or joystick. The use of graphic packages can be extended across the curriculum and used with a wide range of software that is in common use. The use of graphics by students as stand alone packages and/or integrated with other software can be highly motivational and rewarding for them. These packages allow the students to develop new skills and techniques, to refine and develop concepts of space, line, composition and colour.

Graphic packages that use a "mouse", Koala or Powerpads can also be used to develop **fine motor and tracking skills**. A series of designs can be draw and stored on disk. These could consist of straight and/or zig zag lines which the students has to draw over, going from left to right. The exercise could then be duplicated but this time using straight or zig zag lanes, which the student has to follow from left to right but as well attempting to keep within the lanes. The width of the lanes could be varied depending on the needs and skills of the students. This idea could be extended further using circular designs of varying difficulties. Another element could also be introduced with those packages that have a "zoom" facility. This magnifies all of the design but the user can only see a small section of it at a time. This restricts the students view of what is and will happen to a minimum, as they progress around the "track" attempting to keep within a lane or on a line.

Logo can also used as a means of artistic expression by many students. Refer to the earlier section on Logo. **HyperCard** on the Apple Macintosh systems can also be used to generate graphics and animate them.

Some suggested programs

Apple Resellers: *Mousepaint, MacPaint, MacDraw, MacDraft, HyperCard*
 Dataflow: *Create with Garfield, Create with Garfield Delux, Teddy Bear-rels of Fun, Explore-A-Story series*
 Imagineering: *Printshop and a range of supporting packages, Fantavision, Dazzle Draw, Koala Graphics Exhibitor*

MUSIC SOFTWARE PROGRAMS

Many of the music software packages that are available allow the user with little or no musical background to compose, play and enjoy music. All of this can be achieved without the student first mastering an instrument. It can provide the foundation of musical knowledge and perhaps the motivation for the later taking up of an instrument. It allows them to experiment with music.

Many of the wide range of software that is available can be used in activities that extend from auditory discrimination exercises to music composition. In auditory discrimination exercises, students can be asked to indicate if a note was played, if presented notes are the same or different, which note is high or low, long or the short, loud or soft, what note it was. Sequential exercises could be set up for students to predict what the next or missing note should be. This could be the basis for expressive language exercises as the students explain the reasons behind their selections in the above examples.

In composing work, the students can experiment with many elements of music. Using variations in tempo, keys and rhythm, all with immediate feedback, they can edit and experiment with the work until they are satisfied. They can use computer generated music as a mode of self expression and as a mental exercise. As the students don't need a broad range of musical knowledge they can compose "tunes" to go with other work. This may have been motivated by class activities based on an adventure program such as "Flowers of Crystal" or "Where in the World is Carmen San Diego". The use of music packages allows the students to develop new skills and appreciations.

Some suggested programs

Edsoft: *Deluxe Music Construction Kit Set, Sticky Bear Music, Sticky Bear Music Library 1*
 Ashtron: *The Music Studios, Melody Maker and Bank Street Music Writer*
 Imagineering: *Songwriter*
 Dataflow: *Stickybear Music, Music Maestro, Music Studio*

ADDITIONAL NOTES

Graphic packages that use a mouse, Keats or PowerBoard, and the LaserWriter motor and tracking skills. A series of designs can be drawn and stored on disk. These could be used as a series of designs for students to copy and paste. The designs could be used as a series of designs for students to copy and paste. The designs could be used as a series of designs for students to copy and paste.

Logo can also be used as a means of artistic expression by many students. Logo is a simple language that can be used to create designs. Logo is a simple language that can be used to create designs. Logo is a simple language that can be used to create designs.

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MUSIC SOFTWARE PROGRAMS

Many of the music software packages that are available allow the user with little or no musical background to compose. The user can create a melody and hear it. The user can create a melody and hear it. The user can create a melody and hear it.

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AUSTRALIAN SOFTWARE SUPPLIERS

Active Learning Systems
59 Kitchener Rd
Kedron QLD 4031
Telephone (07) 350 - 1477

Addison Wesley Publishing
6 Byfield St
Nth Ryde NSW 2113
Telephone (02) 888 - 2733

Alto Computers
58 O'Connell Pd.
Wellington QLD 4160
Telephone (07) 207 - 5170

Angle Park Computing Centre
Cowan St
Angle Park SA 5010
Telephone (08) 243 - 5555

Ashton Scholastic
PO Box 579
Gosford NSW 2250
Telephone (043) 283 - 555

Britannica Education Services
14 Telopea Av
Homebush West NSW 2140
Telephone (02) 76 - 8863

Caresoft
Deniston East Public School
Lovell Rd
Eastwood NSW 2122
Telephone (02) 852 - 495

CEG (NSW)
Mitchell CAE
Bathurst NSW 2795
Telephone (063) 31 - 1022

Computer Lighthouse
91 Phillip St
PARRAMATTA NSW 2150
Telephone (02) 633 - 2373

Computerized Tutorial Systems
Shop 5/191 Victoria Rd
Gladesville NSW 2111

Control Data Aust P/L
493 St. Kilda Rd
Melbourne VIC 3004
Telephone (03) 268 - 9684

Dataflow
134 Barcom Ave
Rushcutters Bay NSW 2011
Telephone (02) 331 - 6153

Dominie Books
8 Cross St
Brookvale NSW 2100
Telephone (02) 93 - 0201

Edsoft
PO Box 314
Blackburn VIC 3130
Telephone (03) 878 - 4899
(008) 33 - 8873

Edusoft
PO Box 252
Forestville NSW 2087
Telephone (02) 451 - 0955

Fishertechnic
PO Box 608
Brookvale NSW 2100
Telephone (02) 939 - 2264

Gemini Software
PO Box 107
Launceston Tas 7250
Telephone (003) 44 - 4455

Heinemans
85 Abinger St
Richmond VIC 3121
Telephone (03) 429 - 3622

Holt Saunders
9 Waltham St
Artarmon NSW 2064
Telephone (02) 439 - 3633

Jacaranda Wiley
65 Park Road
Milton
QLD 4064
Telephone (07) 369-9755

JPR Software
Suite 6, CDS House
36 - 38 Cowper st
Harris Park NSW 2150
Telephone (02) 891 - 3688

Knowware
25 Tunnel Rd
Helensburg NSW 2508
Telephone (042) 94 - 1829

3.1 Software Suppliers

Knowware
25 Tunnel Rd
Helensburg NSW 2508
Telephone (042) 94 - 1829

Lego
2 Lincoln St
Lane Cove NSW 2066
Telephone (02) 428 - 9666

Logic Shop
330 Pacific H'wy
Crows Nest NSW 2065
Telephone (02) 957 - 4314

Lothlorien Software
42 Cook St
Randwick NSW 2031
Telephone (02) 398 - 4122

McGraw Hill Publishing
4 Barcoo St
East Roseville NSW 2069
Telephone (02) 406 - 4288

Micro Nationwide
PO Box 411
Narrabeen NSW 2101
Telephone (02) 913 - 7088

Microsoft
Unit 2/1 Skyline Place
Frenchs Forest NSW 2086
Telephone (02) 452 - 0288

Northern Districts Education Centre
Crn Beecroft & The Promenade
Beecroft NSW 2119
Telephone (02) 868 - 1533

Pitman Publishing
41 Albion St
Surry Hills NSW 2010
Telephone (02) 211 - 3844

Prentice-Hall
7 Grosvenor Pl
Brookvale NSW 2100
Telephone (02) 939 - 1333

Prologic
19 Cato St
Hawthorn East VIC 3123
Telephone (03) 209 - 0222

Quantum Engineering Design Pty Ltd
97 Anzac Ave
West Ryde NSW 2114
Telephone (02) 809 - 6255

Relpar Pty Ltd
48-52 Sydneham Rd
Marrickville NSW 2204
Telephone (02) 519 - 2943

Relpar Pty Ltd
PO Box 600
Clayton VIC 3168
Telephone (03) 543 - 7083

Seasen Software
PO Box 186
Geelong North VIC 3125

Softime
19 Cato St
HAWTHORN VIC 3123
Telephone (03) 209 - 0255

Software Source
PO Box 311
Bondi Junction NSW 2027
Telephone (02) 389 - 6388

Spinifex Software
20 Binda St
Keiraville NSW 2500
Telephone (042) 27 - 3300

SRA
84 Waterloo Rd
North Ryde NSW 2113
Telephone (02) 888 - 7833

The Computer Cellar
78 Parramatta Rd
Annandale NSW 2038
Telephone (02) 517 - 2999

Zenith Education Systems
PO Box 505
Bankstown NSW 2200
Telephone (02) 708 - 3140

4.0 Resources for Special Education

Students who are seen to have special educational needs include those with hearing and visual impairments, the intellectually impaired, the physically and the learning disabled. The degree of disability to which individual students are affected covers a wide range. The educational placement of these students also covers a wide range, extending from those with learning difficulties in mainstream classes, to students who are partially or fully integrated, to special purpose classes attached to primary and secondary schools, to students enrolled in Schools for Specific Purposes (SSP).

While the development of the microcomputer has made a great impact on the education scene in general with its potential a many faceted teaching and learning tool its impact has been an even more dramatic in the education of such students with special educational needs.

The availability of a range of alternative input and output devices interfaced with computers gives many of these students equality of opportunity and access that was not available to them previously. See **Section 2.0 "Devices for Special Education"** in this directory for details of the available range of peripheral devices that can be useful to such students.

The following information relates to resources in personnel, in print and in video media that would be useful to teachers and schools in the development of programs for students with special educational needs and generally surveying technology and its potential to such students.

4.0 Resources for Special Education

PROFESSIONAL ASSOCIATIONS

1) Australian Association of Special Education (AASE)

The Australian Association of Special Education has within it an affiliated special interest group **Computers in Special Education** was formed in late 1985. The group is involved in activities aimed at the sharing and dissemination of information, to provide a focus and advocacy role in the use of computer based technology with students with special educational needs. The SIG members contribute articles on a regular basis to the associations national journal. These articles include software and hardware reviews, teaching suggestions for using computer technology and other items of interest to special education computer users. Educators interested in this group, their aims and activities should contact their local state chapter of the association. The addresses for the state chapters are:

N.S.W. Chapter
PO Box 282
STRATHFIELD, NSW, 2135

VICTORIAN Chapter
PO Box 11
CLIFTON GARDEN, VIC, 3068

S.A. Chapter
c/- SERU
262 Cross St
KING'S PARK, SA, 5024

W.A. Chapter
PO Box 325
SUBIACO, WA, 6008

A.C.T. Chapter
PO Box 466
CANBERRA, ACT, 2601

QUEENSLAND Chapter
GPO Box 2070
BRISBANE, QLD, 4001

N.T. Chapter
PO Box 40528
CASUARINA, NT, 5792

TASMANIAN Chapter
PO Box 1214
LAUNCESTON, TAS, 7260

2) Computer Education Groups (CEG)

Computer Education Groups are associations of educators, teachers, community members and organizations who are interested in the general area of computer education. Most of the state associations have regular newsletters or magazines and regional conferences to disseminate information to its members. Contact should be made with your local association in regard to resources in material and personnel who have an active interest in the use of computers in the area of students with special educational needs.

CEG - NSW
Northern Districts Education Centre
Crn Beecroft Rd. & The Promenade
CHELTENHAM, NSW, 2119
Telephone (02) 868 1533

CEG - Queensland
GPO Box 1669
BRISBANE, QLD, 4001

CEG - ACT
O'Connell Education Centre
P.O. Box 44
BARKER CENTRE, ACT, 2603
Telephone (062) 954 356

CEG - Victoria
PO Box 88
BALACLAVA, VIC, 3138
Telephone (03) 529 7311

CEG - South Australia
Duncan Av
PARK HOLME, SA, 5043
Telephone (08) 277 0411

CEA - Northern Territory
P.O. Box 41805
CASUARINA, NT, 5792

4.0 Resources for Special Education

CEG contacts continued

CEG - Tasmania
c/- Norfolk High School
NEW NORFOLK, TAS, 7140

ECA - Western Australia
P.O. Box 18
MT LAWEY, WA, 6050

3) State Education System Contacts

In all states, the State Education Departments have personnel who can be contacted about the use of computer based technology with students with special educational needs. They may be able to supply information on the appropriateness and local supply of hardware, software and peripheral items for particular students and/or situations. Most of the centres regularly publish newsletters containing a wide range of information on topics including hardware and software evaluations, new items on the market, teaching ideas, resource material, information on conferences and courses as well as new and ongoing projects.

NEW SOUTH WALES
Computer Education Unit
PO Box 16
ERSKINEVILLE, NSW, 2043

QUEENSLAND
Special Education Technology
Resource Centre
72 Cornwall St
ANNERLEY, QLD, 4103

VICTORIA
State Computer Education Centre
Genoa St
MOORABBIN, VIC, 3189

TASMANIA
Elizabeth Computer Centre
252 Argyle St
HOBART, TAS, 7000

SOUTH AUSTRALIA
Special Education Technology Service
262 Cross St,
KINGS PARK, SA, 5034

WESTERN AUSTRALIA
Education Support Branch
151 Royal St
EAST PERTH, WA, 6000

NORTHERN TERRITORY
NT Education Support Services
PO Box 4821
DARWIN, NT, 5794

AUST. CAPITAL TERRITORY
O'Connell Education Centre
PO Box 44, Barker Centre
GRIFFITH, ACT, 2603

4.0 Resources for Special Education

SUPPORT GROUPS

There are many support groups that can be found in all states and at the national level. These groups are made up of a cross section of teachers, parents, a range of professional and interested people who have a particular concern in aiding a specific disability group. Some of these have computer technology orientated special interest groups within them. These groups can be contacted through local associations whose telephone numbers are usually available in local telephone books. Contact should be made with such groups who may be able to provide local specialized information.

One such group that operates on a state and regional basis is

"Technical Aid for the Disabled" (T.A.D.)

This group and its branches are non-profit organizations of volunteers who design, construct and install "one of items" that are not available commercially, in attempting to meet the needs of people with disabilities. The only cost incurred are for materials as no charge is made for labour. The organization also provides technical, general advice and information as well as having small lending libraries. A regular newsletter is published. Branches of TAD exist in most states.

TAD - New South Wales
P.O. Box 108
RYDE, NSW, 2112.
Telephone (02) 808 - 2022

TAD - Victoria
P.O. Box 88
SOUTH MELBOURNE, VIC, 3205
Telephone (03) 698 - 5222
(03) 698 - 5346

TAD - Queensland
P.O. Box 137
ANNERLEY, QLD, 4103
Telephone (07) 397 - 8987

TAD - South Australia
6 Talbot St.
ELIZABETH EAST, TAS, 5112
Telephone (08) 255 - 3612

TAD - Northern Territory
P.O. Box 37351
WILLELLIE, NT, 5789
Telephone (089) 98 - 9364

TAD - Western Australia
10 Collier St
MORLEY, WA, 6062
Telephone (09) 275 - 4799

TAD - Tasmania
41 Derwentwater Av
SANDY BAY, TAS, 7005
Telephone (002) 25 - 1561

RESOURCE BOOKS ON COMPUTERS IN SPECIAL EDUCATION

The following publications have been found to be useful references to people involved or interested in using computer technology with students who have special educational needs. While they are in the main American based, they still contain information that will be of assistance to teachers and parents. While they are available from the sources indicated, local bookshops may be able to get them in on order.

COMPUTERS, EDUCATION AND SPECIAL NEEDS.

by E. Paul Goldenberg, Susan Jo Russell, Cynthia J. Carter
Addison-Wesley Publishing Company, Sydney, 1984.

This book looks at the general areas of education, students with special needs in particular and the possible role of computers within them. It offers suggestions for getting started a computer assisted school program started. Specific areas include communication, language arts and mathematics. The book has a substantial resource section dealing with support organizations and associations, training and resource centres, "light house" sites of promising activities, publications reports and articles. All of these are U.S. based.

4.0 Resources for Special Education

TEACHING, LEARNING AND TECHNOLOGY IN SPECIAL NEEDS CLASSROOM, A National Information Statement.

A Project of National Significance

by Peter Pryce-Davies

Commonwealth Schools Commission, Canberra, 1987.

This national statement contains a foreword written by a number of students with a range of special education needs and relates to their successful use of computer based technology. The document also looks at learning, motivation and teacher applications. Future directions in the development of technology, overseas trends, problems and needs as well as a range of recommendations are also raised. The collection of an extensive range of related resources was also a part of the project.

CULTIVATING MINDS AND LOGO CASE STUDY BOOK

by Sylvia Weir,

Harper and Row, New York, 1986.

The philosophy of Logo and its implications for a range of students with special educational needs are explained. Logo as a programming language is explained as is its suitability as a tool for learning. A number of case studies are used as models as how Logo can be used in general and with specific types of disabilities. A book well worth reading for those interested in Logo and the development of problem learning skills.

HANDBOOK OF MICROCOMPUTERS IN SPECIAL EDUCATION

by Michael Behrmann, Ed. D.

College- Hill Press, Inc., 4284 41st Street

San Diego California 92105, U.S.A., 1984.

People who are novice users of computers will appreciate this book and the way in which it is presented. The contents include sections on the elements that constitute a computer system, how they can be used in mainstream and more particularly in special education. A number of specific areas of disability are defined, the implications of each discussed and possible applications of the technology to them outlined.

Available in Australia from:

Standish Prideaux and Pye, 212 Berkeley St., Carlton, Victoria Phone: (03) 347-7699

MICROCOMPUTER RESOURCE BOOK FOR SPECIAL EDUCATION.

by Dolores Hagen

Reston Publishing Company, Inc, Reston, Virginia, U.S.A., 1984.

A very worthwhile book to have in any library. It contains material on the use of computer based technology in general and in regard to specific disability groups. Sections cover the selection of appropriate hardware and software, on Logo, ideas on implementing the use of the technology, the use of electronic communication systems and thoughts on possible future technical developments. While the extensive appendices are all U.S. based there is a wealth of information on software/hardware distributors, on online information services, on Logo and print resources.

Available in Australia from Prentice-Hall, 7 Grosvenor Place,

Brookvale, N.S.W. 2100 Phone: (02) 939-1333.

MICROTECHNOLOGY IN SPECIAL EDUCATION

by Andrew Rostron and David Savell

Croom Helm, London, 1984.

This British publication discusses the potential of microelectronics and how it relates to the needs of a range of disability groups. Some of the topics covered in the various chapters include communication, interaction and reading; the development of an interactive learning programs; the use of the technology with the physically, mentally, sensorially and motor handicapped.

Available in Australia from:

Croom Helm, P. O. Box 5097, G.P.O. Sydney 2001 Phone: (02) 212-6575.

4.0 Resources for Special Education

NEW INFORMATION TECHNOLOGY IN THE EDUCATION OF DISABLED CHILDREN AND ADULTS

by Hawkrigde, Vince and Hales
Croom Helm, London, 1985.

The authors raise for consideration the learning problems faced by students with a range of specific disabilities. Similarly the implications of the technologies on learning problems faced by such students are also raised. The implications are illustrated and practical information includes models for learning; examples of devices and systems as well as input, output and peripheral devices are included. A range of issues are also raised.

Available in Australia from: Croom Helm, as previously.

SPECIAL TECHNOLOGY FOR SPECIAL CHILDREN

Computers to Serve Communication and Autonomy in the Education of Handicapped Children
by P. Goldenberg
University Park Press, 233 E. Redwood St.,
Baltimore, Maryland 21202, U.S.A., 1979.

The book contains information which can be used to analyse the needs of the students in the light of how computer technology maybe able to assist them. It contains a range of material and case studies that relate to specific areas of disability and the use of the technology.

Available in Australia from:
Pro Ed, P.O. Box 18, Manuka, A.C.T. 2603 Phone: (062) 951-319.

CONFERENCE PROCEEDINGS

The proceedings from two TAD sponsored seminars are publications well worth reading for the novice or experienced user. The proceedings are available from the state branches of TAD whose addresses are listed on page 38. The two conferences were centred on:

Computer Interface Seminar, 31st July, 1982. The seminar brought together a number of input designers with their devices, representatives of commercial suppliers and the potential users of these devices.

Australian Seminar on Devices for Expressive Communication and Environmental Control, 21/22 September, 1985. The proceedings contain papers from users, computer specialists, doctors, engineering, occupational therapists, speech therapists, suppliers and teachers.

PUBLICATIONS ON TECHNOLOGY AND DISABILITIES

There are a number of general publications which are readily available that relate to the use of computers in a wide range of applications. The following publications have been found to be especially relevant to students or individuals with special educational needs. They are in the main obtainable through subscription.

CLOSING THE GAP

P.O. Box 68
Henderson, MN 56044, USA
Published by Budd and Dolores Hagen

This is a regular newspaper that is published 6 times a year which deals with the use of computer based technology with and for people with disabilities. It usually contains articles of a general nature, information on software & hardware reviews, others articles relating to the applications of particular items as well as information on new products coming onto the market. Their 1987 Resource Directory is a very worthwhile document containing information on a wide range of hardware, software and peripherals. While all the material is United States based, it is valuable background material.

COMMUNICATION OUTLOOK

Artificial Language Laboratory
Michigan state University
East Lansing, MI 48824, USA.

This is a quarterly newspaper directed towards individuals who are interested in technological applications related to communication disorders.

4.0 Resources for Special Education

LEARNING TO COPE

Priory Court
30-32 Farringdon Lane,
London, EC1R 3AU, ENGLAND.

This British publication is very educationally orientated. The contents range from software evaluations, to discussions on particular software packages, teaching ideas, reviews and evaluations of hardware and peripherals, as well as general information dissemination on a range of topics.

RAISED DOT COMPUTING Inc

408S Baldwin St
Madison, WI53703, USA

This is a regular news letter for people who work with or who are print handicapped themselves. It relates specifically to persons who are Braille readers and in particular users of the Braille Edit software package. The contents include articles of a general and specific technical information.

OTHER RESOURCE MATERIAL

POTENTIAL UNLIMITED - The Video and Booklet plus other material

The video *Potential Unlimited* is a half-hour program filmed in 1986 in a number of NSW Department of Education schools. It shows computers being used for remediation in the basic subjects, to develop problem solving skills, to overcome writing difficulties, for artistic and musical expression and as a social and recreational outlet. It also shows non-vocal students as well as blind and visually impaired students using computer-based aids to overcome communication, reading and writing difficulties.

The booklet *Potential Unlimited* presents an overview of the major uses of the computer to date in education, specifically how the technology can be used to improve and broaden the educational opportunities of students with learning difficulties, disabilities and special talents. It includes information about hardware, peripherals and software useful for students with specific learning difficulties, disabilities and talents.

The NSW Computer Education Unit have also published an initial collection of 50 classroom based software evaluations titled *Software Update Number 5*. All the evaluations are of software packages that are special education specific or "mainstream" packages evaluated from the perspective of a range of disability groups. The CEU has also published a very good document called *An Evaluators Guide to Educational Software and Related Material* which raises a range of points to consider and the process involved when evaluating software.

All of these resources may be purchased from the

NSW Education Department
Teachers Resources Centre,
Railway Parade,
BURWOOD, NSW, 2134

Price	Video	\$15.00
	Booklet	\$ 5.00
	Software Evaluations	\$ 2.50
	An Evaluators Guide	\$ 5.00

OTHER VIDEO RESOURCES

(Access by Apple Computer Aust. Pty. Ltd)

Making the Most of the Micro.

The first of this British made series is of particular interest. The initial section of this video concerns the impact of computer based technology on the life style of a severely impaired cerebral palsy adult. It shows how an Apple II computer has given him control over his environment, how it aided him in his achieving success in employment and at University and how it has helped him lead a full and rich life.

4.0 Resources for Special Education

Talking Turtle (LOGO)

While the entire video would be of interest, a particular section of it relates to the teaching and use of Logo with students who have a range of disabilities. It shows some of the activities undertaken in a research study at the Cotting School in Boston.

View Scan Text System (from Wormald International Sensory Aids)

This video show how the various facilities within the View Scan Text system can be used by persons who are visually impaired. Some of the uses include visual scanning of a range of texts and the use of the inbuilt word processing facilities. Its use is illustrated in everyday and vocational activities.

PRINT MATERIAL

Ed. Dowling and Dixon, *Computing and Special Education*, COM-3 The Australian Journal of Special Education, Vol 12 No. 4 1986, Computer Education Group (Victoria).

This publication contains a range of Australian based articles that relate to a wide and varied educational use of computer technology with a range of disabilities.

Moursund (ed), *Computers and Special Needs*, The Computing Teacher, Feb 1983, Vol 10 No. 6, University of Oregon.

The contents are all American based articles relating to the use of the technology in this area of education across a wide range of disability groups and illustrates a diversity of uses.

ANNOTATED BIBLIOGRAPHIES

These publications provide resource guides of annotated bibliographies that relate to the use of computer technology with specific disability groups. Each of the publications contain the usual bibliographical details of the range of articles that are available and includes an overview of the contents of individual publications.

Veitch, Pryce and Read (editors), *Microcomputers in Special Education*, Special Education Resource Unit, S.A. Education Department, 1984.

This publication contains a wide range of information on overviews on the use of the technology with students with special educational needs, articles relating to specific disability groups, case studies and articles relating to software and hardware evaluation and selection.

Available from the

Special Education Technology Service
262 Cross St,
KINGS PARK, SA, 5034

Nave, Browning, Carter, *Computer Technology for the Handicapped in Special Education and Rehabilitation: A Resource Guide. Volume I and II*. International Council for Computers in Education, University of Oregon, Volume I - 1983, Volume II - 1985. Cost US \$7.00 each.

These publications contain more than 180 annotated citations from some 39 journals published since 1980 and relates to computer assisted and managed instruction.

They are available from

International Council for Computers in Education
135 Education
University of Oregon
Eugene, Oregon 97403
USA

SPECIAL EDUCATION SOFTWARE CATALOGS

Vasnderheiden and Walstead, *Trace Centre International Software/Hardware Registry*, Madison, University of Wisconsin, Trace Centre, 1982.

This registry provides a cross reference listing of programs that have been written or used by individuals with physical disabilities. Each entry gives a brief description of the program, the memory requirements, what systems there are versions available for and the details of any additional peripherals and/or hardware that may be required. A costing is provided in dollars U.S. While many of the more popular software packages are normally readily available locally, the addresses of the American software suppliers are included, may provide the contact point for users in obtaining those less accessible packages. The contact address is

TRACE Research and Development Centre
314 Waisman
1500 Highland Av
Madison, WI 53706
USA

The 1987 Closing The Gap "Resource Directory". A Guide to the selection of microcomputer technology for special education and rehabilitation.

An excellent publication covering a extensive range of software, hardware and peripherals. The directory has indepth comments on each entry covering price, source, any special skill or academic requirements, disability areas for which it may be suitable, skill levels, and hardware and/or peripheral needs. An overview is given via a matrix that covers a large number of fields. While the sources are in the main all based in the United States it is a very worth while publication.

The contact address is

Closing the Gap
P.O. Box 68
Henderson, MN 56044
USA

The Council for Exceptional Children, *National Winner of the Council Search for Exceptional Children Software*, John Hopkins University, 1981.

A publication that was the result of a national search conducted in 1980 for applications of personal computers to aid the disabled. The winners of different sections which relate to specific disability groups are listed with information regarding the computer system on which they run and information on the distributors of the programs.

The contact address is

The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
USA

Swift's Educational Software Directory, Sterling Swift Publishing Co.

Similar to the Australian Apple software catalogue, this publication is is an extensive publication but its contents are wholly American based. The directory includes a section on software for students with special educational needs. The directory provides a brief overview of each program, information on the distributors, system and memory requirements, if support materials are provided, a costing (in dollars U.S.) and details on what if any additional hardware is required. While many of the more popular software packages are available locally, the addresses of the American software suppliers that are included, may provide the contact point for users in obtaining the less accessible packages.

The directory is available from

Sterling Swift Publishing Company
7901 South 1-35
Austin, Texas, 78744
USA

4.0 Resources for Special Education

Slosson Educational Publications Catalogue.

An American catalogue which contains details of a wide range of software programs that relate to such areas as formal assessment of students, report generation, screening tests and tests on language development.

Available from

Slosson Educational Publications
P.O. Box 280
East Aurora, NY14052
USA

TASH Catalogue, Technical Aids and Systems for the Handicapped Inc.

This extensive Canadian based catalogue contains costings of and information on a wide range of single, dual and multiple switches, switching devices, environmental controls, communication and educational aids, computer aids as well as mobility and living aids.

The catalogue is available from

TASH
Technical Aids & Systems for the Disabled Inc
70 Gibson Drive, Unit 1
Markham, Ontario L3R 2Z3

ELECTRONIC INFORMATION SYSTEM RESOURCES

The use of **Electronic Information Systems (EIS)** with the appropriate hardware and software elements by persons with disabilities has the potential for bringing about wide ranging changes in their lives. People with physical or sensorial handicaps can now have access to electronic shopping, banking and communication. As well they can make travel and entertainment arrangements from home by using one of the information services that are available today. The use of EIS can also be extended by users accessing remote information databases that are becoming such a part of the information explosion. Some of the systems that are accessible in Australia are Viatel, Keylink, Minerva and Bulletin. A number of specific data bases exist which attempt to meet the needs of disabled individuals.

Computer Assisted Management of Curriculum Objectives (CAMOCO)

This is a Victorian sited remote database established as a means of providing a range of some 10,000 educational orientated task analyses that are contained in the curriculum areas of attention, self care, motor, cognition, socialization, communication and/or work skills. It also has a electronic mail facility with it. There is a annual subscription cost of \$120.00 CAMOCO can be accessed through the mail, by using Telecom's STD or Austrpac telephone systems. The project officer can be contacted at

The CAMOCO Project Inc
PO Box 304
SUNBURY, VIC, 3429
Telephone (03) 744 - 6088

DISCOM is another system that is being developed as a means of disseminating information as well as providing a communication system for disabled persons. The system is aimed at providing material on aid devices, special software, conferences as well as other specific and general information. There are no subscription costs. The system at the present can only be accessed via STD although it is intended that Austrpac will be used as a means of connection. Registration can be made by connecting

Prahan College of TAFE
Youth Programs
142 High St
PRAHAN, VIC, 3181
Telephone (03) 529 - 7788 ext 215

4.0 Resources for Special Education

HEAR Service provides information for hearing impaired persons on a wide range of commercial devices that are currently available for this group. The devices are sorted into four main groups being telephone aids, TV and radio aids, alarms and general communication devices. The database contains material of a descriptive nature as well as technical and commercial information. Further information can be obtained from

Victorian Deaf Society
HEAR Service
101 Wellington Parade South
EAST MELBOURNE, VIC, 3002
Telephone (03) 63 - 3981

While there are a number of information databases located overseas, one that particularly stands out is **SpecialNet**. This is a network used by a range of special education and rehabilitation personnel. It provides a communication network across the United States as well as access to some 40 bulletin boards including an APPLE board. Up to date information is provided on hardware, peripheral devices, software and computer applications. Costs include an annual subscription of \$US200.00 plus online costs. Further information contact

SpecialNet
National Association of State Directors of Special Education
Suite 315,
2021 K Street, NW
Washington, DC 20006
U.S.A.

The author and compiler of this document, Doug Piper, completed his initial primary teacher training in N.S.W. at Armidale C.A.E. in 1970. He then taught in one teacher and small city schools. He completed a Diploma in Deaf Education at Sydney C.A.E. in 1974 and has since completed a degree in education. He has been involved in teaching students with special educational needs since 1975, and is currently seconded to the Computer Education Unit, N.S.W. Department of Education.

ADDITIONAL NOTES



Apple Computer Australia Pty. Ltd.
(Incorporated in NSW)
16 Rodborough Road
Frenchs Forest, NSW 2086
Tel: (02) 452-8000
Tlx: AA73914 (Apple)
FAX: (02) 452-8160

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