Research the different software and hardware available to aid students with special/particular needs:

Sensory Impairment:

A person with sensory impairment has reduced ability or lack of ability in using one of three senses: vision, touch and hearing. The effects of sensory impairment can range from slight to complete loss of the sense. It may be mild or have severe impact on their every day lives.

Large monitor computers are relatively cheap in this day and age and can aid people with sensory impairment, by magnifying the screen and bigger fonts enabling them to understand and comprehend better. Talking computers are always useful also for people with sensory impairments, as they cannot see the screen so they listen to the words being read out, this i s an effective way of teaching them and helping them learn. Other devices such as enlarged keyboards are useful for people also with sensory impairment this helps them type easier which therefore can help with the learning and education.

For many blind or partially sighted learners, ICT can enable access to the curriculum by providing alternative methods of reading and recording work. It is likely that pupils with visual impairment may need to use ICT across most of the curriculum and that they will be following the same curriculum as their peers (unless they have other disabilities or learning difficulties). There is a range of different ways in which ICT can provide support for these learners.

- Not long after the introduction of personal computer, software and hardware systems for reading screen text out loud were developed for people with visual impairment.
- As computers and operating systems have become increasingly sophisticated, adapting computers for use by people with sensory impairments has posed increasing challenges.

- Multimedia output that uses audio is not accessible to those people who cannot hear, and cannot on a keyboard type effectively. Fortunately, specialised hardware and software can make computer systems useable by anyone with sensory impairment.
- Nerve damage associated with diabetes may result in Peripheral Neuropathy. This condition is manifested in numbness or a lack of sensitivity in limbs, including fingertips.
- With appropriate computing tools and well defined strategies for their use, the person with a sensory impairment is able to demonstrate and apply their knowledge on computers.
- The most common accommodation with people with visual impairment on the computer is to enlarge the display of the monitor by using screen enlargement software. It enlarges the screen and can invert screen colours of those who are sensitive to colour.
- Displays such as BRAILLEX and Delphi also provide navigation and orientation information to the computer user who is blind.

Blind users will use screen readers, which provide sophisticated tools to aid navigation of the screen document. Speech recognition systems may benefit pupils who can speak to their computer and produce correctly spelt documents, but there are issues with the use of sound in the mainstream classroom. This can be an advantage to disabled people who are at home alone, because there will be less noise to interfere with the speech recognition system. Multilingual speech synthesisers are now available this is an advantage for people who don't speak English as a first language. Calculators, thermometers and electronic dictionaries, all with in-built speech, may also be useful.

In the longer term, it is helpful for pupils with visual impairment to develop keyboard skills. There is a range of software programs available to help learners. Computer operating systems and common word processing applications usually have a range of accessibility options. This will enable the user to modify how the screen looks, make the text larger, change the colour, change how the mouse pointer looks, alter the resolution and reverse the contrast. Using the accessibility options in Windows can magnify text. If this basic magnification is not helpful then specialised screen magnification software can be purchased. This software is generally used in conjunction with a larger monitor for it is much easier for the person to look at.

Many students find it useful to be able to choose a particular font and to avoid fixed space fonts that may be more difficult to read. A plain font, with sans serif letters or certain letter shapes, is often easier to read. It is usually possible to change the shape and size of a mouse pointer, and show mouse trails to make it easier to locate the cursor on screen. Many systems have a range of sounds, which can alert blind users when they maximise a window for example. The choice of technology used will depend on the level of functional vision and the most appropriate input and output method.

Switches or touch screens designed for use by people with a wide range of limited mobility and physical difficulties. If the user is physically or cognitively unable to use any kind of keyboard or pointing device, then a basic starting point is to use switch input. This is simply a button, which, when activated sends a signal to the computer. These signals can then used to start up and load various software packages.

Voice synthesisers to speak words input by a nonspeaker. Speech synthesisers are used to enhance spoken words in a noisy environment, this is practical.

Video conferencing has enabled those with hearing or other difficulties to take part in sign language or lip reading. Also this is to minimise the need to travel, which can be very expensive and difficult especially if the person is physically disabled.

Alternative keyboards – these may be one handed, mini, compact, ergonomic or expanded keyboards.

This keyboard is specially designed for RSI (Repetitive Strain Injuries) sufferers and people with special needs to use computers without strain or injury.

The special sculptured keyboard is:

- Designed to fit hands
- Compatible with most computers
- 1st keyboard to achieve RSI recovery
- Totally ergonomic

With all the advantages of this keyboard, there are some disadvantages for example if the keyboard or gets damaged, it costs much more than a standard keyboard to get it repaired.

This is a simplified keyboard. This has big keys and is very useful for people with sensory impairment and language difficulties, because it only has the keys, which are relevant to learning to write. It also has a reassuring click so the user knows that they've pressed the keys hard enough for one letter.

Hearing aid wearers often find listening at meeting or in public places very difficult due to the amplificati on of environmental sounds, especially where there are a lot of people or 'metallic' noises. Most hearing aids have a 'T' position on the on/off switch, which cuts out the integral microphone, but enables the wearer to hear a speaker via a microphone and l oop system.

An induction loop is a wire or cable, which encircles the audience area. The cable is fed from a loop amplifier. This, in turn, gets its signal from a microphone placed in front of the person speaking. The resulting electric current in the loo p produces an induction signal (magnetic field) corresponding to the speaker's voice. The induction signal is then picked up by anyone with a hearing aid switched to the 'T' position.

A growing number of public buildings are installing loop systems, such as theatres, reception areas, etc. This is because it is an increasing important technology, which assists many people. Depending on the size of the room, the pricing can range from approximately £200 - £1000's.

Software tools include devices designed to m ake text-based materials and programs more accessible to individuals with learning difficulties. Options may include scanning, reformatting, navigating, or audible text. When used in conjunction with cooperative learning strategies, these technologies can be a powerful tool to promote the inclusion of all learners.

Physical Disabilities:

Some people will have physical disabilities that mean they are unable to undertake the same range of physical activities as other people. This includes people with mobility disabilities, that are people who have difficulty, walking, people who have difficulty using their hands or arms, or people with restricted growth.

Software for people with Physical Difficulties:

Discover Screen is the software-only solution that puts a customisable keyboard on the computer screen. Discov er Screen is ideal for people who physically cannot move their head down to look at a keyboard and then back up to the computer screen. Some affordable software can range from £100 however more sophisticated software can be £350+.

Physical disability: Peo ple with physical difficulties, all have access to software and programs on the computer that help overcome their problems and allow them to learn naturally.

Visual impairment can take many forms and each eye condition will be quite specific. Therefore, the impact that visual impairment has on learning will be unique to the individual. The vast majority of people with a visual impairment have some useful sight, although the degree of sight can vary greatly. For the many learners with a visual impairmen t, reading and writing presents barriers to learning, often creating difficulties with literacy and numeracy. This can inevitably result in difficulties in accessing and engaging in the curriculum.

There are a number of technologies that are of particular use when working with learners with visual impairment.

For learners inputting in Braille, Braille translation software can produce a text version of the learner's work for their teacher to read. It can be very beneficial for some students to print out in Braille or softbraille using an embosser. Written text can be converted to Braille using a scanner and a Braille printer . Braille keyboard computers are available with synthesised speech or moving Braille output.

An overlay keyboard can provide visually impaired pupils with a combination of sensory stimuli. It is possible to create tactile overlays, which can enhance access when used with speech feedback or visual representation.

Text can be scanned in to a computer. It can then be enlarged on screen, converted to Braille or 'read' aloud by a speech synthesiser attached to the computer.

Limited Mobility:

Limited mobility in people can often cause an effect on their education as can any disability. ICT can provide and help people, who writing for them can be hard, and can assist them by typing, in addition to this it is much easier to ty pe than to write when you are finding it hard to concentrate, controlling the pen. This has many advantages such as the person is not constantly moving and is only using their fingers. However when just generally using the computer there is not a problem for people in wheelchairs. The Internet is a great resource for finding information and helping with people with similar disabilities, for example in London, many people travel on the underground, which do not have their own vehicles; the underground lacks facilities for people in wheelchairs. This would not be suitable then for those people; the Internet can find alterative routes, which minimizes the use of staircases or escalators.

Sometimes when being disabled, it may mean not getting out of the house much, the computer and Internet can be used for entertainment and leisure purposes, just surfing the net, researching upon a favourite topic can be something to do, finding individuals with s imilar situations like yourself could be a bonus because you can make friends and also get some guidance or information on coping with that disability. By occupying yourself on the computer this could be quality time for the carer, because looking after a disabled person 12 hours a day, 7 days a week can be very strenuous and hard work.

Mobile phones are very useful for people who cannot move around easily. For it being ‘mobile’ meaning the phone being able to move, it is possible for the person to have it in their pocket and carry it around with them and answer it or phone out when necessary than for them to not be able to get to the home phone in time. Another advantage of this is that they are much more affordable than they were 20 years ago.

Learning Difficulties:

Learning disabilities cover a very broad spectrum, from mild intellectual difficulties to severe autism, as well as a range of multiple disorders

WYNN is innovative software designed to aid individuals to read and write more effectively. WYNN was developed with the help of special educators and individuals with learning difficulties.

SpeechViewer III is a powerful speech and language tool that transforms spoken words and sounds into imaginative graphics. SpeechViewer III increases the effectiveness of speech therapy and speech modification for people who have speech, language or hearing impairments.

Voice recognition software is excellent, however even some very talkative people may find it hard to speak 2000 words clearly.

People with learning difficulties are often people who find it hard to concentrate over large periods of time. Different methods of teaching can be useful and more effective than always writing down sentences and phrases in a book. By using a computer and typing, the person would have to find the letter first on the keyboard; this would be good practice recognising the letters as well as being enjoyable for them. There are many different types of software helping the student link words and phrases making sentences and forming paragraphs.

With learning, speaking is also as important as writing. There are such programmes that read out the words written on the computer, this can help them understand what they've written and be useful, as it will read out their mistakes.

Dyslexics may find the following skills difficult:

- Auditory discrimination
- Left and right
- Maths computation
- Memory
- Organisation
- Pronunciation, particularly words of three or more syllables
- Reading

- Sequencing
- Spelling
- Visual discrimination.

For people with dyslexia a range of software and hardware now exists to help learners to organise their thoughts, develop their memory skills, expand their creative writing and produce work, which reflects their a bility. However, as with other strategies, software needs to be chosen with care to suit people with certain abilities.

This outstanding multimedia package supports development of number skills over a range of levels. Using a multi -sensory approach, it adds meaning and understanding to these operations as a way of helping to improve basic numeracy. It addresses many of the difficulties, which lead students to dislike maths, including poor short -term memory, attention span and sequencing skills. It is approximately £50 - £300 depending on which software is compatible with your computer.

Language Difficulties:

Speech and language difficulties cover a wide range of need, from individuals who find it hard to articulate, through those with problems understanding or expressing language, to those who do not speak at all. For many learners with speech and language difficulties, the development of both spoken and written language is a challenge. Here we explore ways in which ICT can support this full range of skills. For some learners with speech and language difficulties, ICT is a lifeline, enabling them to communicate with the world around them. For others, it can support their classroom work and th erapy.

Text messaging has obvious uses for people with speech difficulties, it is easier for them to text, spelling the words than them speaking out the words. The ability to generate text without a standard keyboard has also proven advantageous.

When a person with language difficulties is learning to read and write English it can be very hard especially with just one learning method. ICT can be a different way to approach and teach peop le for whom English is not their first language.

There are a number of technologies that are of particular use when helping people with speech and language diffic ulties, these are:

- Overlay keyboards and software making use of these.
- Switch reproduction and synthesis.
- Switch technology.
- Word processors, including predictive word processors.

Digitised speech

Today, many computers have a digitised speech facility. Learners can record messages and incorporate them into their work on the computer. A picture, accompanied by a spoken message from the child or a record of a journey provided through a mixture of text and sound, enables the pupil to practise and develop their speech.

There is specialist software available to help students to understand language structures (for example, final consonants or consonant clusters) or single sounds. Also, there is software available that allows students to see their speech patterns or vocalisations represented on the screen. This can be used in speech therapy to reinforce work on particular sounds.

Talking books enable pupils to learn and practise different spoken language structures, often providing a chance to work more independ ently. They can work well with children who are unresponsive and who avoid conversation, as they become involved with the combination of sound effects, spoken text and visual display.

Word processors

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

Vocabulary, spelling and grammar programs

Software packages are available to assist in targeting vocabulary, grammatical structures (such as negation, plural, past tense and syntax) and various comprehension skills. Th ere are, also, 'drill and practice' spelling programs, which are carefully structured, grouping particular sounds and providing reinforcement. Examples are Starspell, Spellit 3 and Wordshark. The price of this software is approximately £60+.

Literary assistance software

Literary assistance software helps with particular styles of writing. An example of this type of software is Inclusive Writer, developed by Widgit Software and Inclusive Technology. The program comes with different literacy activities on the CD - for example story starters, and rhyming words - and also provides images and symbols.

Multiple Disabilities

For people with multiple disabilities computers can be a tool for play and communication. Webcams are useful for disabled people who are not able to go out and visit people and another advantage of this is that they are relatively cheap. ICT can greatly help those people with more than one disability. For example if someone was partially blind and had limited mobility, the use of ICT can be both practical for educational purposes along with entertainment and leisure purposes.

ICT offer both challenges and encouragement for people willing to learn. Computers on the whole are valuable and helpful. They have become important for people with disabilities. Their flexibility allows adaptations to be made easily to meet different needs, making them easier to use. Another great thing about computers is that they are very affordable nowadays, and even with additional software it is reasonable, including the Internet, this is a big impact on the carers or parents who look after the disabled person.

An immense disadvantage of computers is that it is possible to crash at any time. This will be an even bigger disadvantage for people who have more than one disability than for people who have just one because they are much more reliant on computers. Also they will find it difficult to fix it if they are in a wheelchair and have language difficulties to repair the computer than if someone just had limited mobility with a broken leg.