The Impact of ICT on A Person with Special Needs

Introduction

This essay focuses on the way that Mr Glassey uses ICT to overcome being blind.

Mr Glassy has been blind all his life but hasn't let this hold him back. Over time he has developed coping methods to overcome the difficulties caused by being blind in a sight dominated society. The use of ICT has increased his freedom and flexibility.

Mr Glassey owns and runs a "virtual office" for new and small companies. His job involves taking calls for other companies; for example a new delivery business would only employ one person, the driver of the van, and it would not be feasible to staff and maintain an office to take calls. The new and small companies divert their calls to Mr Glassey's "virtual office" service, where he takes calls on behalf of his clients.

He needs equipment that allows him to answer the phone, understand written text, make and receive calls in and out of work and even equipment for the simple things like knowing whether it is light or dark and telling what is in front when walking.

Work at Work – PC Technology

How it works

The Braille In Keyboard is a Braille keyboard where characters are entered using the chord typing system. The Braille In Keyboard connects to a standard keyboard port, like standard QWERTY keyboards. The device has the users' national Braille code pre-installed on its' internal flash-ROM; to change the Braille code the user can connect the device to a serial port, download the desired Braille code from the HumanWare website and install the new language to the internal flash-ROM. The Braille In Keyboard is a stand-alone device meaning it requires no resident software to function with a computer; this allows it to be a highly versatile device working flawlessly with DOS, Windows, NT, OS/2 and UNIX operating systems. The Braille In Keyboard supports all functions containing Shift, CTRL, ALT, etc that a standard QWERTY keyboard would provide; there is no loss in functionality between the two different devices. If it proves too difficult remembering all chord combinations of these functions a QWERTY keyboard can be connected to the Braille In Keyboard and both devices used simultaneously. The Braille In Keyboard features 8 ergonomically placed Braille keys, a space bar and 10 function keys that make tasks fast and easier.

How does he use it?

Mr Glassey has this specially designed keyboard connected to his computer and uses it to perform all the tasks that a normal person would use a standard 102 key QWERTY Keyboard for, for example, typing a word document, filling out an internet form or entering a password. Mr Glassey uses this keyboard to type grade 2 Braille, English with many contractions and abbreviations.

Why does he use it?

Mr Glassey works in an office and he uses the Braille In Keyboard for accuracy and comfort when working at a computer. He uses the Braille In Keyboard because it allows him to quickly perform Shift, CTRL, ALT, etc functions. Mr Glassy also uses the Braille In Keyboard for the 10 function buttons, which further increase his accuracy and comfort.

What are his needs?

Mr Glassey needs a keyboard that gives him the same level of function as a standard 102 key QWERTY Keyboard. From a keyboard he requires:

- The ability to create grade 2 Braille
- Use Shift, CTRL, ALT, etc functions
- Type at a reasonable speed
- Be ergonomically designed for comfort.
- Compatible with any computer he has to use

How does it meet his needs?

The Braille In Keyboard does allow Mr Glassey to create grade 2 Braille, due to the chord system of typing. The device allows him to perform Shift, CTRL, ALT, etc functions, whether it be by using a standard QWERTY keyboard in conjunction with the Braille In Keyboard or using the button combinations on the device itself. Grade 2 Braille offers a way of typing that matches the speed of standard of typing because the Braille In Keyboard allows Grade 2 Braille to be typed; it fulfils his need for a reasonable typing speed. The Braille In Keyboard needs no computer resident software to run, this means it is compatible with all computers, except for Macintosh based systems. As most ICT systems are Microsoft or UNIX it is unlikely that Mr Glassey will encounter compatibility issues.

Evaluation

The Braille In Keyboard does an amazing job at emulating a standard 102 QWERTY keyboards and offers a larger amount of flexibility; Mr Glassey is using a device which is well suited to his needs. It is very effective at meeting his needs; all aspects of the device have been well thought out rather than token gestures towards functional features. The Braille In

Keyboard does not however offer the same level of functionality as at standard 130 QWERTY keyboard.

If Mr Glassey was looking for an alternative to the Braille In Keyboard he could use a standard QWERTY keyboard with either stick-on Braille dots or Braille keys although this would not allow for Grade 2 Braille. If he wanted a cheaper alternative to offer the same level of functionally which is but less ergonomic he could use the Portset Braille Keyboard.

Social at Home - Communication

How it works

This is a dual band mobile phone, working on Global System Mobile Communication/General Package Radio Service 900/1800 (GSM/GPRS 850/1900 also available), is purpose built for the blind and visually impaired. The device has state-of-art speech synthesis and excellent audio quality making it easy to understand and operate. The phone also contains common features found on visual based mobile phones for example time and date, menu shortcuts, keypad Lock, notification of missed calls, notification of unread messages, last number re-dial, call waiting, call hold, call forwarding, call barring, automatic network selection, hide and show number, battery and coverage status; this gives the phone the same level of functionality as more conventional mobile phones. Like many mobile phones today this device has a high volume loudspeaker for hands-free mode; this feature is particularly useful on this audio based mobile phone. The mobile phone also has a serial port for connection to other devices. It has the ability to host a headset allowing complete hands-free operation. The devices' software can be updated, adding new features or software fixes; making it future proofed and adaptable. The mobile phone has a vibrator mode for silent notification of incoming calls and received messages. The phone only weighs slightly more than most conventional phones at 125g and is roughly the same size. A lot of effort has been given to creating an easy to use audio based phone book, which holds up to 250 entries; each entry contains name, address, home phone, mobile phone, office phone and email address. The mobile phone allows you to receive short message service messages and unstructured supplementary data. The internal 1500 mAh Li-Ion battery allow up to 8 hours talk time or 200 hours standby time and it only takes 3 hours to completely recharge.

How does he use it?

Mr Glassey uses this mobile phone to call and text his friends and family for all manner of reasons, for example, to arrange a drink after work or just for a chat. He also uses the phone to store numbers for later use.

Why does he use it?

Mr Glassey uses this mobile phone because it is a practical solution to his disability. It has a good balance between cost and functionality, not usually found in devices for the blind. He uses the phone because its' operating system has been excellently designed to allowing him to easily navigate through the various options and menu without a visual display. Mr Glassey also uses this phone because of the head set capabilities.

What are his needs?

Mr Glassey does not need a phone full of features he needs an easy to use device that allow him to call and text his friends and family. Mr Glassey needs are:

- Make and receive calls
- Send and receive text messages (SMS)
- Store numbers of friends and family
- Head Set Capability
- Vibrate Alert

How does it meet his needs?

Like most mobile phones on the market this one can send and receive calls and texts, this fulfils two of Mr Glasseys' needs. This phone is head set capable allowing him to operate it hands free. This phone has a vibrate alert that notifies him, silently of incoming calls and received messages.

Evaluation

This device is very effective at fulfilling his needs, it allows Mr Glassey to socialize with his friends and family and it meets all the needs he has for a mobile phone. This device is the leader in mobiles for the blind and its' functionality reflects that. If Mr Glassey wanted an alterative device he could use the MPO by ALVA which is the first mobile phone and PDA for the blind. This device would offer Mr Glassey much higher functionality due to the 18 cell Braille Keyboard, the only downside its the high cost of the device.

Personal At Home – Mobile Technology

How does it work?

This Personal Data Assistant or PDA, the BrailleNote PK is specially designed for the blind or visual impaired. This PDA offers most features found on standard PDAs these features include, Bluetooth allows the device to connect to other wireless Bluetooth devices for example, cells phones, wireless keyboard and perform ActiveSync with a Personal Computer. If a computer does not have Bluetooth capability a USB connection can be made between a personal computer and BrailleNote PK for ActiveSync. The BrailleNote PK is WiFi compatible and can be used for high speed surfing over wireless network at wireless hotspots or over a secure wireless networks when a wireless card is inserted. HumanWare (the creators of the BrailleNote PK) supplies their own internet browser based on Microsofts' Internet Explorer (version six) named KeyWeb with the BrailleNote PK. KeyWeb is customized to meet the needs of the blind; taking visually orientated web pages and translating it into a user-friendly speech and Braille format. Whilst working the user has the option to use the Enhanced KeySoft media player to listen to music, in stereo; separate speech synthesis and music volume controls allow the user to set the balance between the two. The BrailleNote PK has an eighteen cell Braille display that displays text, for reading web pages, reading a document or reading messages; thumb navigation can be set by line, sentence or paragraph. The device uses the chord system for typing, eight keys pressed in different combinations to create letters and symbols in other words, grade 2 Braille. The BrailleNote PK uses state-of-art speech synthesis software making it easier to use the device. The device has specially designed context sensitive help and indexed user guides. Operating in speech mode only, the BrailleNote PK can run for 20 hours on its batteries. This PDA word processing application that creates, edits and stores documents in Braille or in a range of mainstream formats, for example, Microsoft Word; the application also supports direct printing through a serial port and can convert Braille to text or vice versa. Other applications on this device include a POP3 E-mail service, Daily Planner, Address List, Book Reader (for reading e-books), scientific calculator and the option for a visual display.

How does he use it?

Mr Glassey use the BrailleNote PKs' daily planner to plan and store important dates like birthdays/anniversaries of friends and family and to plan holidays and other personal events. He uses the Book Reader to listen to books he would otherwise have to buy in Braille or buy audio cassettes. He uses the word processing application to write lyrics for his musical work before having them recorded at a local studio. He uses the Internet Brower to view websites for entertainment in his spare time. Mr Glassey also uses the BrailleNote PK to listen to music, either his music or another artiste's music.

Why does he use it?

Mr Glassey uses BrailleNote PK for its excellent features, for example the eighteen cell Braille Keypad allowing him to quickly read information from the device; something which audio based PDAs for the blind don't allow. He uses it for the text to Braille converter allowing him to read much which could not be read before. He uses this device because of the powerful KeyWeb internet browser which it comes supplied with it.

What are his needs?

Mr Glassey needs a PDA that allows him to organise his personal life and entertain him in his spare time. More specifically:

- He needs a planner
- Braille to text conversion
- Text to Braille conversion
- Speech synthesis
- Connection to the internet
- Listen to music whilst working
- Large amount of Braille cells for easy reading

How does it meet his needs?

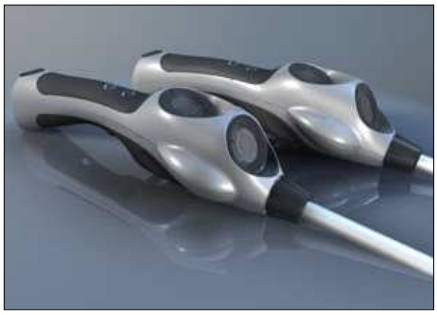
The BrailleNote PK features an advanced daily planner. The word processing application has perfect Braille to text and text to Braille conversion that completely meets the needs of Mr Glassey. As this is an audio based device the speech synthesis is second to none allowing Mr Glassey to easily understand and use his PDA. The BrailleNote PK supports wireless and Ethernet connections making it easy to connect to the internet anywhere. The media player built in to the PDAs allows him to listen to music whilst performing other tasks. The BrailleNote PK features 18 Braille cells, this does fulfil his needs but there is other PDA of the same size with more that would allow him to read information faster.

Evaluation

This produced effectively meets all Mr Glassey's, needs though he would benefit from more Braille cells as this would allow him to use a PDA more efficiently. The BrailleNote PK is a well thought out PDA for the blind and was built with the needs and wants of the blind close at heart. The BrailleNote PK, compared to other devices on the market, stands out above the rest as the best all rounder offering something for everyone. If Mr Glassey wants an alterative device he could use the BRAILLEX EL Braille Assistant, which offer all, and more, features than the BrailleNote PK and has up to

have 32 Braille cells; which would fulfill his need for many Braille cells better than the BrailleNote PK.

Personal at Work – Data Capture



How it works

This is the UltraCane, an electronic white stick. It allows the blind to build a mental image of their surrounding, anticipate obstacles and manoeuvre around them. This device fulfils all the functions of a traditional cane but with 2 major additional features, it uses ultrasonic echoes to locate head height obstacles and it relays all information through vibrating buttons, with altering intensity dependant on the proximity of obstacles. These features allow the blind to feel safe when making journeys, no matter how small. The specially designed cane section and the ultrasonic echo allows the user to build a spatial map of the surroundings, this is very easy to do because humans do it automatically, blind or otherwise. This design was tried and tested putting the needs of the blind at the core of the design. The cane has a range of settings, with sensors able to detect objects at a short or long distance. The device can be customized by altering the height of the cane ranging from 105cm to 150cm (other heights can be specially ordered at no extra cost); it also comes with 3 different cane tips, Pencil, roller ball or large roller ball. It also has a comfortable, contoured handle to minimise the risk of Repetitive Strain Injury, even people suffering from arthritis can use the UltraCane. The cane is lightweight with meticulously tested height/weight distribution. The UltraCane can be easily collapsed for storage and reassembles for use. If the user should travel in the rain the cane is splash proof. The UltraCane can be used near computer and other electronic devices without disrupting their operation. The batteries in the device last, on average up to a week.

How does he use it?

Mr Glassey uses this device to travel to and from work and uses it in the working place to avoid injury to him or others. He uses it for about an hour a day and relies on it to move safely and confidently around his environment.

Why does he use it?

The UltraCane is the best Cane on the market; no other device comes close to its practicality and functionality. The reason Mr Glassey uses this device is because it's the best, the ultra sound echo system allows him to build up a 3D image of his surroundings; something a traditional normal white cane cannot do.

What are his needs?

Mr Glassey needs a device that allows him to get from A to B safely and confidently. To do this he needs:

- A device to tell him what is immediately in front of him
- A device to tell him what he is approaching
- A device to tell him if the obstacle is left, right or above him.

How does it meet his needs?

The UltraCane has a cane, like traditional white canes, that is used to detect objects immediately in front and two ultrasonic senders and receivers which are lirked to two vibrating buttons that tell Mr Glassey where objects are in relation to him. All these features on the UltraCane fulfil all his needs.

Evaluation

This is a most effective product for Mr Glassey; it allows him to move around in a sight orientated civilization in safety and with confidence, something which is difficult to achieve. The only alternative that could give Mr Glassey the same level of manoeuvrability and confidences is a guide dog. Guide dogs are far superior to the UltraCane because they react to circumstances as well the environment. But looking at practical limitation the UltraCane is the best device for Mr Glassey.

Legislation and its Impact on the Disabled

Health and Safety at the Work Place Act (1974)

This act was passed in 1974. It was designed to protect employees in the work place, giving them rights to compensation when the laws protecting them are broken. The act states that all practical steps and training should be taken to insure the safety and well being of the staff.

Mr Glassey is greatly affected by this act; he is protected by the same sections that protect us, for example employers are obliged to maintain and provide safe machinery additional to this he is protected under the clauses which states that provision should be made for, pregnant, disabled and illiterate workers.

Mr Glassey is protected against negligent and irresponsible employers, for example an employer would have to ensure his safety at work whilst allowing him to fulfil his job description and work efficiently. Some steps that an employer might have to take; wires and cables can not run over the floor, his chair would not roll, dangerous equipment would have a sound alert on it and flooring would be non-slip and rounded edge furniture. Mr Glassey also has the right to sue his employer if they don't make sensible provision for his disability.

To abide by the law Mr Glassey must follow and use the guide lines, safety measures, special equipment and training that his employer provides; if he does not do this protection the act offers against injury at work will be void. Mr Glassey must also follow the rules set out in the act, for example placing objects/furniture in places that meets regulations and making sure that his working environment is safe for him and others.

Health and Safety Regulations Act (1992)

These regulations are designed to protect employees in the work place, giving them rights to compensation when the laws protecting them are broken. This act ensures employers create safe computer work stations for their employees.

Mr Glassey's job involves working at a computer for a whole working day; this act insures that his employer will provide him with safe and functional computing equipment to fulfil his is job description. Mr Glassey's knows that his work station will have the correct equipment and if it should not meet the minimum requirements of the act and Mr Glassey should be injured at a work station covered by the act he can take legal action.

The act protects Mr Glassey from negligent and irresponsible employers, poorly maintained work stations and injury caused by awkward working conditions. To abide by the law Mr Glassey must follow the guidelines laid down by his employer; if the guidelines meet all the requirements of the act and Mr Glassey chooses not to follow and he is injured he can not take legal action. If Mr Glassey employed someone he would also have to create safe working environments for his staff to abide by the law.