Closing The Gap

Computer Technology in Special Education and Rehabilitation

A fresh look at Braille

By Jim Halliday

Braille has been a center of controversy for many years. Braille advocates say that it is fundamental to literacy. Speech advocates say that Braille is not necessary because speech can provide the same information faster and cheaper. Braille advocates profess that the brain pathways for Braille and visual processing are similar but that the speech pathway is totally different. They say that if sighted people aren't forced to replace print with speech, then why should people who are blind be expected to use speech instead of Braille? Braille opponents tell us that Braille production can take months with outrageous costs and overwhelming bulk for shipping or storage. Braille devotees say that without Braille's direct access to spatial information, it is difficult to understand fundamental formatting issues like indentions, centering, columns, etc. and that speech can be confusing and imprecise when dealing with complex formats. Braille adversaries say that contracted Braille is a totally different code from the mainstream print and therefore traps users in an information world of their own. Braille enthusiasts stress the value of reading a prepared speech to an audience, reading notes while participating in meetings, and reading to their children. Braille foes say that we are already spending millions of dollars on Braille and that we haven't the time, money or production capabilities to produce even a fraction of the Braille books currently requested.

If we look objectively at this controversy, we can appreciate both sides of the debate. It is difficult to deny the value of Braille, but it is also injudicious to ignore the drawbacks. However, looking closely at the debate, we realize that the majority of issues separating the two sides are totally unrelated. In other words, the Braille advocates want equality in terms of reading and information processing. Braille opponents are concerned with costs, inefficiencies and isolation. The purpose of this article is to inform the reader of the monumental technological advancements that have occurred in the past three years and to explain how these developments are breaking down the barriers that have kept this debate raging.

The validity of Braille

According to the September/October 1997 issue of JVIB, 74 percent of working-age people who are blind are unemployed (Kirchner & Schneidler). Blind Inc. <www.blindinc.org> tells us on their Web site that 93 percent of those blind people who are employed read and write Braille. Although different studies quote different statistics, all studies consistently show that the vast majority of blind people who are employed are Braille users. These studies in no way undermine the use of speech products, but clearly, speech usage alone has nowhere near the impact on employment that Braille has. With such profound evidence to support Braille, we must accept the fact that Braille usage is a tremendous advantage in both educational and employment settings.

Contracted Braille

The issue of contracted Braille isolating people who are blind is a not relevant in our modern world. Products like Duxbury's Braille Translator ($595), a computer program that converts standard text to contracted Braille or visa versa, makes it easy to convert files as required ensuring equal accessibility to both print and Braille users. The real issue is not print or contracted Braille, it is whether information is available electronically. With today's technology, any text that is stored electronically can be presented in a wide variety of media from Braille to speech to large print or all of the above.

Personal productivity

Productivity is directly influenced by one's reading/writing medium and one's working environment. For a person who is blind, an environment that is text-based is far more accessible than the graphics-based environment preferred by most sighted people. Of course, at the text level, a sighted person still needs print whereas a person who is blind requires Braille or speech. BrailleNote ($4,295-$5,995) is an example of a product that has Braille as well as speech output and a built-in Duxbury Braille Translator. Windows CE has enabled programmers to create an appropriate, text-oriented user interface for blind users that provides direct access to applications. As a result of this unique use of Windows CE, converting files to and from contracted Braille is surprisingly simple.

• E-mail – When a BrailleNote user receives an email from a sighted person, that e-mail can be read in either computer Braille or contracted Braille. Likewise, a BrailleNote user can write an e-mail in either computer Braille or contracted Braille and the sighted person will receive the e-mail in standard text.

• Attachments – A sighted person can attach a file produced in Microsoft Word to an e-mail and a BrailleNote user can choose to open that file in computer Braille, which will preserve the original format, or

Address
526 Main St.
P.O. Box 68
Henderson, MN 56044

Phone
507-248-3294

Fax
507-248-3810

Web site
www.closingthegap.com

E-mail
info@closingthegap.com

This article originally appeared in the Dec. 2003/Jan. 2004 issue of *Closing The Gap*, Vol. 22, No. 5.

in contracted Braille, which automatically reformats text information into the preferred, contracted Braille format. Again, this process can be reversed.

• Scanned documents – Whether using a computer with a scanner and Kurzweil 1000 ($995) software or a stand-alone scan/read system like ScannaR ($3,299), BrailleNote's translator can receive the scanned text of the document directly and instantly translate it into contracted Braille and even convert it back into print so that the document can be shared with both blind and sighted readers.

Portability / workstations

The BrailleNote is a portable PDA designed to enhance and promote personal productivity. Its friendly environment and specially developed applications make it the ideal companion for a well-organized, productive and informed person on the go. Although many people use their BrailleNotes as Braille terminals with their computers, anyone who spends the whole day at a computer workstation may find a Braille Star more appealing. Braille Star ($5,999-$10,999) works with a variety of screen readers, but rather than being a dumb terminal, it is intelligent. The Braille Star's "scratchpad" is a simple editor that makes it possible for a user to disconnect it from the computer and take it to a meeting to take notes. One can also load files or even books from a computer into Braille Star's memory and read them while unplugged from the computer. As a result, the user has an ergonomic workstation while retaining some degree of portability.

Electronic information

In the last century, information resided in a paper world. Today, that world is electronic. Although we still use paper, most information is now created and distributed electronically, even if it is also available in print. Electronic standards are still being debated, but the future is clear. All newly published information will be available electronically. Old, paper-based information is gradually being scanned and stored electronically.

The good news that comes from all of this is that computerized devices have the ability to convert much of this electronic information into a variety of accessible formats. We have the option of generating original materials on a computer or a PDA. We can scan information and use Optical Character Recognition (OCR) engines to convert printed text into digitized text. Book publishers are increasingly able to make books available in electronic formats. Newspaper publishers are placing their news on the Internet so that readers use more individualized forms of access. Less and less research is done in libraries as more and more research is conducted over the Internet. Documents are sent through cyberspace and received through a variety of wireless devices. The challenge and opportunity now is to develop receiving devices that can present the world of growing electronic information in an appropriate and accessible form.

Electronic Braille books

In addition to BrailleNote's built-in ability to translate electronic text into Braille, BrailleNote has a browser with the ability to download books from other computers or from the Internet.

• The National Library Service (NLS) offers over 7,000 Braille books for electronic download.

• Bookshare.org is a Web site sponsored by Benetech. Bookshare.org now has approximately 12,000 books available that they or their contributors have scanned for download by anyone with a certified print disability. To protect the copyrights of these books, Benetech has encrypted the downloadable books. When you sign up ($25) as a qualified subscriber ($50 annual fee) you are issued decryption software for use on your PC. BrailleNote has decryption software built-in and is the first PDA that has the ability to download and decrypt Bookshare.org books.

Because text-based information requires very little memory, BrailleNote, with an optional 5-Gigabyte hard drive can store literally thousands of books in a space the size and thickness of two credit cards. In paper Braille, that same volume of reading material would require a whole warehouse. Now, that warehouse of books takes up virtually no physical space.

"Looking" at Braille

Sighted teachers, parents and employers can now "look" at Braille that is translated on-the-fly into print. Just use the BrailleNote's serial interface or infrared wireless interface to send what the user is typing to a computer running HyperTerminal or to a Palm Pilot running special BrailleNote display software. Any Braille typed into the BrailleNote will be instantly displayed on the computer's screen or on that of the Palm Pilot as print characters. This is particularly good for sighted people interested in watching contracted Braille being translated. For example, if the BrailleNote user types the letter "L," the back-translated word "Like" will appear in print on the visual display of the computer or Palm Pilot. If the user types a second "L," the word "Like" instantly changes to "LITTLE," the back-translation of "LL." All of this happens instantly so it is easy for a sighted person to see what combinations in contracted Braille generate what words in print.

With products like the BrailleNote, Duxbury Translator, Kurzweil scan/read software, ScannaRs, and access to Web sites like Bookshare.org and NLS, the world of slow, bulky, expensive Braille is quickly being replaced by a world of low cost, fast and compact Braille options. When we think that a single textbook may cost as much as $20,000 to produce in hardcopy Braille and a BrailleNote 18 can do all that it does plus provide instant access to 20,000 books in Braille for only $4,300, the controversy over Braille evaporates. Now that we have the right technology, we must make sure that all text is made available electronically to facilitate more Braille literacy.

Duxbury Systems, Inc., 270 Littleton Rd., Unit 6,Westford, MA 01886-3523 USA; Phone: 978-692-3000; Fax: 978-692-7912; E-mail: <info@duxsys.com>

Pulse Data HumanWare, 175 Mason Circle, Concord, CA 94520 USA; Phone: 800-722-3393; Fax: 925-681-4630; E-mail: <info@humanware.com>

Kurzweil Educational Systems, Inc., 14 Crosby Drive, Bedford, MA 01730-1402; Phone: 800-894-5374; Fax: 781-276-0650; E-mail: <info@kurzweiledu.com>

National Library Service, 1291 Taylor Street, NW, Washington, DC 20011; Phone: 202-707-5100; Fax: 202-707-0712; E-mail: <nls@loc.gov>

The Benetech Initiative, 480 S. California Ave., Suite 201, Palo Alto, CA 94306-1609; Phone: 650-475-5440; Fax: 650-475-1066; E-mail: <info@benetech.org>

Jim Halliday is President Emeritus at Pulse Data HumanWare.