

The Braille Literacy Crisis in America



Facing the Truth, Reversing the Trend, Empowering the Blind

A Report to the Nation by the National Federation of the Blind
Jernigan Institute

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NFB

National Federation
of the Blind

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Executive Summary

A good education is the key to success, and every American deserves an equal opportunity to receive a good education. Inherent to being educated is being literate. The ability to read and write means access to information that, in turn, leads to understanding and knowledge. And knowledge is power—the power to achieve, function in the family, thrive in the community, succeed in a job, and contribute to society.

Nearly 90 percent of America's blind children are not learning to read and write because they are not being taught Braille or given access to it. There is a Braille literacy crisis in America.

The National Federation of the Blind (NFB), the largest and most influential membership organization of blind people in the United States, is taking swift action to reverse this trend. This year, 2009, marks the 200th anniversary of the birth of Louis Braille, inventor of the system that allows blind people to read and write independently. Coinciding with this anniversary, the NFB has announced specific action to address the education of America's blind children so that every blind child who has a need for Braille will have the opportunity to learn it.

In this report to the nation on the state of Braille literacy in America, the NFB examines the history and decline of Braille education, addresses the crisis facing the blind today and key factors driving

it, and proposes a number of action steps to double the Braille literacy rate by 2015 and eventually reverse it altogether.

Key Report Findings:

I. Facing the Truth

- Fewer than 10 percent of the 1.3 million people who are legally blind in the United States are Braille readers. Further, a mere 10 percent of blind children are learning it.
- Each year as many as 75,000 people lose all or part of their vision. As the baby-boom generation moves into retirement age and as diabetes (the nation's leading cause of blindness) approaches epidemic proportions, the NFB expects this number to increase dramatically and, if nothing is done, the Braille illiteracy rate as well.
- The current effects of this crisis are dire. Over 70 percent of blind adults are unemployed, and as many as 50 percent of blind high school students drop out of high school.

Factors contributing to this low literacy among the blind include:

◆ **The Teacher Crisis.** There is a shortage of teachers who are qualified to teach Braille. In 2003 there were approximately 6,700 fulltime teachers of blind students serving about 93,600 students. In that same year the number of new professionals graduating from university programs to work with blind or low-vision students fluctuated between 375 and 416 per year. In addition there is no national consensus on what it means to be certified to teach Braille, and states have a patchwork of requirements for certification.

◆ **The Spiral of Misunderstanding.** There are many misconceptions about the Braille system. For example, “Braille isolates and stigmatizes students from peers who read print,” or “Braille is always slower than reading print and difficult to learn.” Yet studies have found that Braille is an efficient and effective reading medium with students demonstrating a reading speed exceeding 200 words per minute.

◆ **Blind Children with Low Vision Are Deprived of Braille Instruction.** Parents often find themselves battling with school administrators to get Braille instruction for their children with low vision because of the historical emphasis on teaching these children to read print. Many students with residual vision cannot read print efficiently even with magnification. Children with some residual vision account for around 85 percent of the total population of blind children.

◆ **The Paradox of Technology.** Eighty-nine percent of teachers of blind students agree that technology should be used as a supplement to Braille rather than as a replacement. Advances in technology have made Braille more available than ever before. Computer software can translate any document into literary, contracted Braille quickly and accurately. Further, hundreds of thousands of Braille books are available from Internet-based services.

II. Reversing the Trend

Undoubtedly the ability to read and write Braille competently and efficiently is the key to success for the blind. The National Federation of the Blind Jernigan Institute is committed to reversing this downward trend in Braille literacy in order to ensure that equal opportunities in education and employment are available to all of the nation’s blind.

Braille literacy can be accomplished by:

- Increasing access to Braille instruction and reading materials in every community nationwide.
- Expanding Braille mentoring, reading-readiness, and outreach programs.
- Requiring national certification in literary Braille among all special education teachers. By 2015 all fifty states must enact legislation requiring special education teachers of blind children to obtain and maintain the National Certification in Literary Braille.
- Requiring all Braille teachers to pass the National Certification in Literary Braille (NCLB) in order to assure their competency and fluency in the literary code.
- Advancing the use of Braille in current and emerging technologies.
- Researching new methods of teaching and learning Braille.
- Making Braille resources more available through online sharing of materials, enhanced production methods, and improved distribution.
- Educating the American public that blind people have a right to Braille literacy so they can compete and assume a productive role in society.

III. Empowering the Blind

Blind people who know Braille and use it find success, independence, and productivity. A recent survey of 500 respondents by the National Federation of the Blind Jernigan Institute revealed a correlation between the ability to read Braille and a higher educational level, a higher likelihood of employment, and a higher income.

Hundreds of thousands of blind people have found Braille to be an indispensable tool in their education, their work, and their daily lives. In the hearts

and minds of blind people, no alternative system or new technology has ever replaced Braille. For this reason the National Federation of the Blind is launching a national Braille literacy campaign to enhance the future prospects for blind children and adults in this country and to help make Braille literacy a reality for the 90 percent of blind children for whom reading is a struggle, if not an impossibility.

The future of sighted children depends on a proper education; the future of America's blind children is no different.

The Braille Literacy Crisis in America

Facing the Truth, Reversing the Trend, Empowering the Blind

A Report to the Nation by the National Federation of the Blind Jernigan Institute

Introduction

Unquestionably a good education is the key to success. In national polls Americans routinely identified this issue as an important national priority (Blackorby, 2004). Education is generally understood to encompass literacy, defined as “the ability to read and write” (*Concise Oxford Dictionary*, 2009). According to the National Institute for Literacy, literacy is “an individual’s ability to read, write, speak in English, compute and solve problems at levels of proficiency necessary to function on the job, in the family of the individual, and in society” (<http://www.nifl.gov/>). Schools not doing a good job of teaching children to read and write are correctly seen as failing schools. Yet, for thousands of children across the United States, it is considered acceptable to fail to teach them to read and write. These children are blind, and they are not learning to read and write because they are not being taught Braille.

Despite its versatility and elegance, and notwithstanding the fact that it is the official system of reading and writing for the blind in the United States, Braille is not being taught to most blind children or to adults who lose their vision. This has led to a literacy crisis among blind people. Many commentators on the Braille literacy crisis agree that one of the most significant contributing factors is a negative societal attitude toward Braille (Riccobono, 2006; Hehir, 2002). The bias against Braille

is further evidenced by hundreds of published accounts from blind people themselves. The archives of the monthly publication of the National Federation of the Blind, the *Braille Monitor*, are full of personal stories detailing the problems blind people experience when they are not taught Braille at an early age. When educators and parents insist that children who are blind or have low vision read print to the exclusion of reading Braille, the ultimate result is that many of them are functionally illiterate.

Braille has been controversial since its invention. At the time Louis Braille developed the system, most of those who were attempting to educate the blind were not blind themselves but sighted people with altruistic impulses (Lorimer, 2000; Mellor, 2006). They believed that the blind should be taught to read print rather than using a separate system. Many educators still believe this today, arguing that Braille is slow and hard to learn and that it isolates blind children from their peers. These arguments and their mistaken assumptions will be addressed in detail in the following pages.

Beliefs among educators about Braille are only one reason, albeit a very significant one, that Braille literacy has declined in the United States to the point where it is estimated that only 10 percent of blind children are learning it. Other factors include a shortage of teachers qualified to give Braille instruction, the need for improved methods of producing and distributing Braille, and not enough

certified Braille transcribers (Spungin, 1989, 2003). All of these issues must be addressed if the downward trend in literacy among the blind is to be reversed. And it must be reversed, for to fail to reverse it is to condemn blind children and adults to illiteracy and to a permanent struggle to keep up with their sighted peers in getting an education. By contrast, reversing the downward trend in Braille literacy will ensure that current and future generations of blind children, as well as adults who lose their vision, have access to knowledge and the power and opportunity that it represents.

This report discusses Braille's history and effectiveness, the reasons for the crisis in Braille literacy, and what the National Federation of the Blind is doing to address this crisis. It is a call to action for all who are concerned about the welfare of America's blind children to join with the National Federation of the Blind in our effort to ensure that every blind child and adult who has a need for Braille will have the opportunity to learn it.

A Brief History of Braille

Braille is a system of raised dots that allows blind people to read and write tactilely. Named for its inventor, Louis Jean-Philippe Braille (1809-1852), the Braille code is the universally accepted method of reading and writing for the blind. It is the only system that allows blind people to read and write independently and to do both interactively. Because of its effectiveness, Braille has been adapted for almost every written language. Other Braille codes represent mathematical and scientific notation and music. Even blind computer programmers have a Braille code, computer Braille. All of these codes are based on Louis Braille's original system, a cell consisting of six dots in parallel vertical columns of three each. The Braille code was first introduced into the United States in 1869 but was not adopted until 1932 as the Standard English Grade Two Braille code.

Braille cell



Braille alphabet

a	b	c	d	e	f
⠁	⠃	⠉	⠋	⠑	⠥
g	h	i	j	k	l
⠎	⠏	⠗	⠘	⠙	⠚
m	n	o	p	q	r
⠍	⠏	⠕	⠖	⠗	⠞
s	t	u	v	w	x
⠠	⠡	⠢	⠣	⠤	⠥
y	z				
⠹	⠺				

For most of human history no method existed allowing blind people to read and write independently. Some blind people did learn to read print in a tactile form, but usually they had no way to write tactilely; even if they learned to reproduce print characters accurately, they could not read what they had written. In addition, the difficulty and expense of producing books with embossed print lettering made such books rare. As a result most blind people were condemned to illiteracy, along with the

poverty and deprivation accompanying it. If they earned a living at all, they did so as storytellers or musicians or through certain kinds of manual labor, including basketry and massage.

This was the state of affairs when Louis Jean-Philippe Braille was born in the small village of Coupvray, France, just outside Paris, in 1809. At the age of three Braille was blinded in an accident, probably resulting from playing with tools in his father's harness-making shop (Lorimer, 1996, 2000; Mellor, 2006). Braille's family was not wealthy, but his parents were literate and determined that their son would obtain an education. When it became clear that the local school could no longer meet Braille's needs (though he had progressed astonishingly far given that he could not read and write), a local nobleman put up the funds for him to attend the Royal Institute for the Young Blind in Paris, the world's first school for blind children (Mellor, 2006; Lorimer, 1996). At this school Braille found a limited number of books with embossed print letters and quickly read all of them.

In 1821 a French army captain, Charles Barbier de la Serre, came to the school to show the students an invention that he thought might be of use to them. Barbier had developed a system called "night writing" consisting of raised dots punched into cardboard with a stylus. A metal frame, or slate, was used to guide the stylus in the proper placement of the dots. This system was invented as a way for soldiers to transmit messages in the dark without striking a match, which would give away their position to enemy gunners. While Braille recognized the system's potential, he believed that it could be improved. In particular he thought that the dot formations should represent alphanumeric characters instead of sounds (Barbier's system was also called sonography because the symbols represented the sounds of speech rather than letters). He also thought that the number of dots making up each character should be reduced so that they could be read with a fingertip rather than having to be traced. Braille worked on improving the system for several years. By the age of twenty he had developed the six-dot Braille cell that is used today and had published a booklet on the method.

Braille's fellow students adopted his new system immediately. Not only could they now read books, which were hand transcribed by Braille and his friends, but they could take their own notes in class and read them back later rather than learning exclusively by listening and memorizing. The instructors at the school were skeptical, however, and some

Only about 10 percent of blind children in the United States are currently learning Braille. Society would never accept a 10 percent literacy rate among sighted children; it should not accept such an outrageously low literacy rate among the blind.

of the administrators were actually hostile. The school was a political showpiece and made money from selling crafts produced by its blind students; if the blind became too independent, its prestige and revenue might be reduced (Mellor, 2006). At one point the school's director burned all of the books that Louis Braille and his friends had transcribed by hand and confiscated the students' slates and styluses. The result was an open rebellion among students, who began to steal forks from the dining room to replace their lost writing implements. This early struggle for the acceptance of the Braille system would be only the first of many battles pitting blind people against those who professed to know what was best for them. These struggles continue to this day.

Despite these setbacks the Braille system was eventually adopted by the Royal Institute for the Young Blind, and two years after Braille's death it became the official system of reading and writing for the blind in France. To this day Louis Braille is considered a national hero in his native country; his body is interred in the Pantheon in Paris. The Braille code was later adopted in England because of advocacy by the founders of what is now the Royal National Institute of Blind People, and other blind people and educational institutions for the blind began to use it. Helen Keller reported using the system. Rosalind Perlman (2007), in her book *The Blind Doctor: The Jacob Bolotin Story*, reports that the first physician to have been born

blind, practicing in Chicago during the early part of the twentieth century, learned Braille at the Illinois School for the Blind and used it for notes in medical school and throughout his subsequent career. Braille was adopted as the exclusive means of teaching blind people to read and write in the United States in 1932. At the height of its use in the United States, it is estimated that 50 to 60 percent of blind children learned to read and write in Braille.

The Decline of Braille Literacy

The decline in the number of Braille readers since 1963 (Miller, 2002) has been widely discussed by professionals and censured by consumer groups (Rex, 1989; Schroeder, 1989; Stephens, 1989). Although there is no consensus on the causes of this decline, a number of factors have been cited. Among them are disputes on the utility of the Braille code (Thurlow, 1988), the decline in teachers' knowledge of Braille and methods for teaching it (Schroeder, 1989; Stephens, 1989), negative attitudes toward Braille (Holbrook and Koenig, 1992; Rex, 1989), greater reliance on speech output and print-magnification technology, and a rise in the number of blind children with additional disabilities who are nonreaders (Rex, 1989). The greatest controversy over whether to teach a child Braille arises when a child has some residual vision; such children account for around 85 percent of the total population of blind children (Holbrook and Koenig, 1992).

Pressure from consumers and advocacy groups has led thirty-three states to pass legislation mandating that children who are legally blind be given the opportunity to learn Braille. The Individuals with Disabilities Education Act also mandates that the teams who help to write educational plans for students with disabilities presume that all blind children should be taught Braille unless it is determined to be inappropriate. But these laws have not ended the controversy. Whereas professional groups have called for a renewed emphasis on teaching Braille (Mullen, 1990), others have opined that Braille is only one educational option. Braille should be viewed as one tool among many, a tool

that allows blind people to operate at a high degree of proficiency when performing a multitude of functional tasks (Eldridge, 1979, Waechtler, 1999). But rather than seeing Braille as a tool that every blind child should have in his or her toolkit for dealing effectively with vision loss, to be used in conjunction with and not to the exclusion of techniques that rely on the child's remaining vision, some educators insist that a choice must be made between print and Braille and that only one reading medium must be used (Federman, 2005). These disagreements translate in the field into disputes among professionals in planning meetings researching how to deal with individual children. Parents caught in the middle of these disputes and often themselves confused about the best course of action find that they and their children become the real victims in these academic battles.

The Crisis Facing the Blind Today

The American Foundation for the Blind (1996) has estimated that fewer than 10 percent of people who are legally blind in the United States and fewer than 40 percent of the estimated number who are functionally blind are Braille readers. The American Printing House for the Blind estimates the Braille literacy rate among children to be around 10 percent. Experts estimate 1.3 million blind people live in the United States, and approximately 75,000 people lose all or part of their vision each year. These numbers may increase dramatically as the baby-boom generation reaches retirement age. Macular degeneration, the most common form of blindness in older Americans, is likely to increase as this population increases, particularly since Americans are living longer. The nation's leading cause of blindness, diabetes, has reached epidemic proportions in this country, so a higher incidence of blindness can be expected.

The Teacher Crisis

U.S. education faces a chronic shortage of teachers qualified to teach Braille. In 2003 there were approximately 6,700 fulltime teachers of blind

students serving approximately 93,600 students (Spungin, 2003). Far too few teachers of blind children have graduated from accredited programs; a 2000 report observed that the total number of new professionals graduating from university programs to work with students who are blind or have low vision fluctuated between 375 and 416 per year during the previous seven years (Mason, et al., 2000). Not all of these teachers are qualified to teach Braille. Many teachers who are considered qualified to teach Braille have not necessarily learned it themselves. There is no national consensus on what it means to be certified to teach Braille, and states have a patchwork of requirements for certification. Local school districts depend upon state education agencies to set the certification standards for teachers. All states have specific certification standards for those who teach children who are blind or have low vision; however, these standards vary across the country (Vaughn, 1997).

States license or certify candidates who want to teach children who are blind or have low vision in three ways: requiring the candidate to graduate from an approved bachelor's or master's program from an approved college or university, requiring the candidate to have a generic degree in special education, or requiring the candidate to have an endorsement to an existing certificate in early childhood, elementary, secondary, or special education, with certain courses needed to gain that endorsement (Frieman, 2004). In order to approve a program, the National Council for the Accreditation of Teacher Education requires performance-based criteria. The Council for Exceptional Children has developed performance-based standards for programs to train teachers of students who have a visual impairment. If a candidate graduates from an approved program that follows the Council for Exceptional Children's standards, an administrator can predict that the teaching candidate will have the necessary background to teach Braille. However, only nineteen states require candidates to have graduated from an approved program. Seven states require that candidates have only a generic degree in special education with no specific mention of Braille. Twenty-four states require candidates to have taken courses in order

to earn an endorsement. These standards specify that the teacher has taken at least one course in Braille, but give no guarantee that the individual is actually competent in Braille or is able to teach it (Frieman, 2004). Teachers who are uncomfortable with Braille are likely to be reluctant to teach it, especially when they can get by without doing so for students who have low vision but can read some print.

To act in the best interests of blind children and adults, schools must require that every child who is blind will have the right to be taught Braille and that Braille be taught by someone who is competent in its use. This is not what is currently happening in schools (Vaughn, 1997). Today there is no guarantee that a teacher, even one with formal credentials, will be fluent in Braille. In order to assure Braille fluency, teachers of blind children must be tested on their actual Braille skills by way of a comprehensive and validated test. States should require Braille teachers to pass the National Certification in Literary Braille (NCLB) in order to assure competency and fluency in the literary code. Passing the NCLB examination will not in itself ensure effective Braille teaching, but it will provide a measure of how well a person knows and uses Braille.

There is a chronic shortage of teachers who are qualified to teach Braille. It was reported in 2003 that there were approximately 6,700 fulltime teachers of blind students serving approximately 93,600 students.

Even assuming a teacher is competent in Braille, the size of the teacher's case load will often influence how well his or her students learn Braille. An itinerant teacher is essentially a consultant who is responsible for meeting the needs of several students. Teachers of blind students often must travel within or even between school districts each week to help a number of students. They are typically expected to teach sixteen or more students who are widely spread over large geographic areas

(Caton, 1991). As a result many students are trained in Braille for only two to three hours a week, and some even less than that.

Teachers of blind students must often teach a number of skills, including cane travel and the use of technology such as a computer with text-to-speech screen access software, and there is evidence that Braille instruction is not priori-

Experts estimate that 1.3 million blind people live in the United States, and approximately 75,000 people lose all or part of their vision each year.

tized. According to one survey respondents spent an average of 35 percent of their instructional time using assistive technology with students in grades 7-10 (Thurlow, et al., 2001). The primary goals most often cited for instructional time were “become a proficient user of assistive technology” (42 percent) and “read using a combination of approaches” (30 percent), with “become fluent Braille reader” (18 percent) selected less often. Respondents spent an average of 27 percent of reading instruction time on direct instruction of how to use assistive technologies to assist in reading, 19 percent of time in supported reading aloud, and only 9 percent of time in direct instruction of phonemic strategies (Braille or print). Furthermore, anecdotal evidence suggests that a teacher of blind students spends more time tutoring than teaching blindness skills (Amato, 2002).

The Spiral of Misunderstanding

Attitudes about Braille, which are often based on myths and misconceptions about the system, are also a barrier to proper Braille instruction. One of the major reasons for the increasing illiteracy of the blind and those with low vision is the historical emphasis on teaching children with residual vision to read print (Spungin, 1996). Most blind children have some residual vision; they are legally blind but not totally blind. But many students who

have residual vision cannot read print efficiently even with magnification; attempting to read print results in eye strain, headaches, and other problems. Furthermore, many degenerative eye conditions are progressive, meaning that the student’s vision will continue to decrease over time, making print harder and harder to read. Students with low vision are particularly at risk for not receiving appropriate instruction in Braille. These students tend to receive less direct service from teachers of blind students and are surrounded with more emphasis on “vision” over nonvisual skills and learning techniques. Additionally, if Braille is not introduced early, student motivation to accept Braille will greatly decrease due to frustration in learning Braille, emotional issues with looking and acting different from one’s peers, and issues involving emotional acceptance of additional vision loss. It is important for educators to give these students appropriate instruction based on their needs in the long term rather than simply considering only their most immediate needs.

Parents often find themselves battling with school administrators to get Braille instruction for their children with low vision. The Colton family of Park City, Utah, took out a second mortgage on their home in order to hire lawyers for litigation against the school district to get Braille instruction for their daughter Katie, who has a progressive eye disease (Lyon, 2009). “We’d had to argue a wait-to-fail model is not appropriate for a progressive disorder,” her mother was quoted as saying in the *Salt Lake Tribune*.

The Jacobs family was told that their blind daughter could read print if the font was 72 point or higher, so there was no need for Braille (Jacobs, 2009). Needless to say, the child will never have access to print that large in the real world, except perhaps on billboards. The school system justified having the child read print by claiming that she was “resistant to Braille.” But a school district would never refuse to teach a sighted child to read because he or she was “resistant” to reading. Furthermore, resistance to Braille is often a product of the way it is taught; if Braille is presented to a blind child as different and hard, rather than the positive way in which reading is presented to sighted children, then the child will

naturally absorb the expectations of the adults doing the teaching (Craig, 1996; Stratton, 1999).

The experiences of the Colton and Jacobs families are not uncommon; they are merely examples of the experiences of hundreds of families across the United States. On the other hand, the experiences of parents of blind children who have successfully introduced their young readers to Braille and fought for inclusion of the system in the child's education suggest that, when Braille is simply presented as reading and reading becomes fun for the family, children readily absorb the system.

Others argue that Braille isolates and stigmatizes students from peers who read print. This has never been backed by any kind of research; it is without foundation. Blind children will always have to use alternative technologies or methods to read, ranging from holding a book close to their face to using a magnification device or putting on headphones to listen to recorded text. Their peers notice these differences as surely as they notice that the child reads Braille instead of print, but they do not necessarily treat the child differently because of reading differences.

Ultimately, all of these mistaken beliefs about Braille come down to low expectations of blind students. Whether they will admit it or not, many of the sighted educators and administrators charged with providing instruction to blind students do not believe in the capacity of their students or in the effectiveness of Braille and other alternative techniques used by blind people to live successful, productive lives. As one commentator has put it: "A little honest reflection about this situation (decline in Braille literacy) suggests that the real culprit here is the inadequate and inappropriate education of the special education teachers who are not competent or confident themselves in using Braille and who also believe that their students should not be expected to compete successfully in school or in life" (Ianuzzi, 1999).

Blind students who are not properly taught Braille and other blindness skills and who therefore struggle with literacy ultimately experience low self-confidence and a lack of belief in their own ability to live happy, productive lives. By contrast, those who

do receive effective Braille instruction and use the code effectively gain a sense of hope and empowerment. Dr. Fredric Schroeder (1996) commented that Braille literacy "should be viewed more expansively than simply as a literacy issue." Schroeder's analysis of interviews with legally blind adults "found that issues of self-esteem, self-identity, and the 'stigma' of being a person with a disability were integrally intertwined with the subjects' reported feelings about using Braille...For some, Braille seems to represent competence, independence, and equality, so the mastery and use of Braille played a central role in the development of their self-identities as persons who are capable, competent, independent, and equal."

Schroeder's work connects to other valuable work in self-efficacy and demonstrates that blind people who learn to value and use Braille generally have a higher degree of confidence and do not spend energy attempting to reshape themselves as "normal" individuals. Schroeder's work is reinforced by more recent investigations by Wells-Jensen (2003) and through the published first-hand experiences of hundreds of blind individuals—some who did and others who did not receive appropriate instruction in Braille in childhood.

Another misconception about Braille that has contributed to the decline in Braille literacy is the idea that reading Braille is always slower than reading print and that Braille is difficult to learn. While some studies suggest that Braille is slower than print and difficult to learn because of its 189 English contractions—symbols and letter combinations that reduce the size of Braille books by making it possible to put more Braille on a page instead of spelling each word out letter-by-letter—research in this area is unreliable since studies tend to be anecdotal. Other studies have found that Braille is an efficient and effective reading medium (Foulke, 1979; Wormsley, 1996). Furthermore, the experience of Braille instructors shows that reading speed exceeding 200 words per minute is possible when students have learned Braille at an early age (Danielsen, 2006).

The Paradox of Technology

It is often said that technology obviates the need for Braille. The availability of text-to-speech technology and audio texts, for example, is advanced as an argument against the use of Braille. But literacy is the ability to read and write. While using speech output and recorded books is a way for students to gain information, it does not teach them reading and writing skills. Students who rely solely on listening as a means of learning find themselves deficient in areas like spelling and composition. Most teachers of blind students (89.4 percent [Wittenstein and Pardee, 1996]) agree that technology should be used as a supplement to Braille rather than as a replacement, even though as cited above, many of them spend more instructional time working with technology than teaching Braille. No one would seriously suggest that alternate sources of information, like television and radio, replace the need for a sighted child to learn to read; the same should be true for Braille.

Many teachers who are considered qualified to teach Braille have not learned it themselves.

For the sighted technology has not replaced print; it has in fact simplified and enhanced access to the printed word. The same is true with respect to Braille; advances in technology have made Braille more available than it ever was in the past. Computer software can translate any document into literary, contracted Braille quickly and accurately, although work still needs to be done to make other Braille codes machine-translatable. Braille displays and embossers can be attached to computers to generate Braille documents on the fly. Thousands of Braille books are available from Internet-based services like the Web-Braille service offered by the National Library Service for the Blind and Physically Handicapped of the Library of Congress (NLS) and the online community Bookshare.org. While scarcity of Braille is still a problem, it is not nearly as bad as it has been in the past. Certainly improvements can still be made in Braille production methods and technology so that more Braille will be

available, and this is one of the goals of the Braille Readers are Leaders campaign of the National Federation of the Blind. Assuming a commitment to Braille instruction and Braille literacy is renewed in America and proper steps are taken to ensure the production and distribution of more Braille materials, there will be no need to avoid teaching Braille because of a shortage of books.

The Truth about Braille

The crisis in Braille literacy is real. Thousands of blind children and adults who need adjustment to blindness training are being denied access to the most effective means of reading and writing for the blind ever invented. The effects of this crisis can be seen in the high unemployment rate (over 70 percent) among blind adults, the high dropout rate (40 to 50 percent) among blind high school students, and the lives of dependence and minimal subsistence that many blind people lead. By contrast, blind people who know the Braille code and use it regularly find success, independence, and productivity.

A recent survey of five hundred respondents by the National Federation of the Blind Jernigan Institute, conducted on a national random sample selected from a list of 10,000 people who had had contact with the NFB within the last two years, demonstrated that contact with the NFB increases the likelihood of knowing Braille. Unlike the general sample of blind individuals, where the AFB estimates that only 10 percent read Braille, more than half (59 percent) of those interviewed in the NFB Jernigan Institute study are Braille literate. This is probably due to the Federation's emphasis on Braille literacy; those who have had contact with the National Federation of the Blind tend to believe strongly in the efficacy of Braille and to be committed to learning and reading it. In this sample the ability to read Braille was also correlated with a higher educational level, a higher likelihood of employment, and a higher income level. These relationships were statistically significant.

Most disciplines accept that the primary indicators of socioeconomic status in this society are employ-

ment and education leading to self-sufficiency. A study by Dr. Ruby Ryles, now the director of the orientation and mobility master's program at the Professional Development and Research Institute on Blindness at Louisiana Tech University, began to provide the objective information needed on the question of Braille versus print. In a comparison between two groups of blind people, one consisting of Braille readers and the other of print readers, the study revealed that those who were taught Braille from the beginning had higher employment rates, were better educated and more financially self-sufficient, and spent more time engaged in leisure and other reading than the print users (Ryles, 1996).

Dr. Ryles's work showed a striking difference between those who had grown up learning Braille and those who had relied primarily on print. She found that 44 percent of the Braille-reading group, as compared to 77 percent of the print-reading group, were unemployed. In other words the unemployment rate for the print group was actually higher than the generally reported unemployment rate among the blind as a whole (70 percent) (Riccobono, et al.), while the unemployment rate among Braille readers was much lower. The Braille-reading sample had significantly stronger reading habits than the print group, including more hours in a week spent on reading activities, reading more books, and subscribing to more magazines. While the overall educational rate between the two groups was not statistically significant, a dramatic difference was observed at the advanced degree level. Thirty percent of the Braille group had an advanced degree compared to only 13 percent for the print group, with only the Braille group having any individuals with doctoral degrees.

Last, the Braille group was over-represented in the higher income level and under-represented in the lowest income level, while the print group was under-represented at the high income level and over-represented at the low income level (the two groups were comparable at a medium income level). The print group contained significantly more people receiving non-employment-related funding from the government (such as Social Security Disability Income) as compared to the Braille group.

Dr. Ryles's research on the education and employment outcomes for Braille readers, combined with the difference in confidence, self-efficacy, and reported independence of Braille readers, suggests that Braille is extremely valuable for those blind people who learn and use Braille in their lives. The results of this study suggest that teaching Braille as an original primary reading medium to children with low vision may encourage them to develop the positive lifelong habit of reading as adults, enhance their later employment opportunities, and increase the possibility of financial independence.

The Future Is in Our Hands

There can be no doubt that the ability to read and write Braille competently and efficiently is the key to education, employment, and success for the blind. Despite the undisputed value of Braille, however, only about 10 percent of blind children in the United States are currently learning it. Society would never accept a 10 percent literacy rate among sighted children; it should not accept such an outrageously low literacy rate among the blind. The National Federation of the Blind Jernigan Institute is committed to the reversal of this downward trend in Braille literacy in order to ensure that equal opportunities in education and employment are available to all of the nation's blind.

The overall goals of this effort are that:

- The number of school-age children reading Braille will double by 2015.
- All fifty states will enact legislation requiring special education teachers of blind children to obtain and maintain the National Certification in Literary Braille by 2015.
- Braille resources will be made more available through online sharing of materials, enhanced production methods, and improved distribution.
- Courses in Braille instruction will be added to the curricula in high schools and colleges and offered to all students to ensure that this

reading medium becomes an established, recognized method of achieving literacy in our nation.

- The American public will learn that blind people have a right to Braille literacy so they can compete and assume a productive role in society.

For over 150 years Braille has been recognized as the most effective means of reading and writing for the blind. Hundreds of thousands of blind people have found Braille an indispensable tool in their education, their work, and their daily lives, even as professionals in the field of blindness continued to debate the merits of the system. Certainly more empirical research is needed to break down the wall of misunderstanding that still stands between all too many blind people and proper Braille instruction. The Braille codes and the technology to reproduce them can and will continue to improve.

But the lives of successful blind people testify to the usefulness of Braille, and in the face of that testimony the only truly professional and moral course of action is to ensure that all blind people have access to competent Braille instruction. In the hearts and minds of blind people, no alternative system or new technology has ever replaced Braille where the rubber meets the road—in the living of happy, successful, productive lives. That is why the National Federation of the Blind is asking all who are concerned about the future prospects for blind children and adults in this country to help us make Braille literacy a reality for the 90 percent of blind children for whom reading is a struggle, if not an impossibility. The future of sighted children depends on a proper education, and the future of blind children is no different. Let us make the commitment that no blind child or adult who needs Braille as a tool in his or her arsenal of blindness techniques will be left without it.

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