



The voice of blind and partially sighted people in Europe

Access to Reading and Using Braille – a matter of the future

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Abstract

Over the past few decades immense developments in information and communication technology have provided enormous progress for visually impaired people. Assistive technologies have opened up the world of information with considerable freedom and independence. And even if visually impaired people are still struggling against accessibility barriers, the current situation is hardly comparable to the era without computers and various digital aids to help alleviate the restrictions of the disability.

How does Braille influence the life of blind and many partially sighted people today? (Braille is used in majority by blind people, but also some visually impaired individuals, and also by deafblind people, the terms used in this document apply to all these users). Does it still represent an indispensable and crucial tool for their lives? The majority of experts in the world would answer this question by saying “yes!” and call for even greater attention to the use of Braille. It is important to emphasize early Braille education for blind children as well as the development and training of Braille skills for adults with sight loss to develop adequate reading speeds.

Widespread use of Braille in public areas, its accessibility and availability in everyday life and the provision of the necessary tools for its creation are essential to further promote the importance of Braille.

In order to reach this objective, a two-sided approach is needed, both internal as well as external. The internal approach is aimed at blind people and Braille users whereas the external approach targets legislation, the built environment, product designers, technology developers etc. The reason for the promotion of Braille is clear: literally to

keep blind people literate and to give them the chance to participate in the information age on an equal rights footing.

The importance of the innovation brought by Braille

Since the invention of the Braille alphabet by Louis Braille in 1825, blind and many partially sighted people have been able to read and write on their own. Until then, there had been no effective tool for reading and writing for them and thus no access to education at all. By arranging symbols into six dots Louis Braille developed a unique system that is easy to understand and flexible enough to not only include whole alphabets, numbers or punctuation, but offering also variability in alphabets of many languages with their respective specifications. It was the simplicity of the few dots which empowered Braille to quickly disseminate all over the world.

It is important to distinguish Braille from other tactile ways of displaying the information. Not all the materials which are made of dots can be considered as Braille. Braille consists only of six or eight dot patterns, contained in Braille cells, which represent letters, numbers, punctuation or other symbols or special Braille symbols, such as indicators or prefixes. The exact dimensions and shape of Braille dots are defined globally, with few exceptions. Any other relief materials should be designated as ‘tactile materials’, even if they are drawn by dots, when they do not consist of Braille cells with their exact shape and dimensions.

To-date, Braille is considered as the **optimal and most effective tactile signage** for sensitive fingertips. The dot patterns are easily identifiable and can be read much more fluently than, for example, the complex structures of raised letters of the Latin alphabet. Even a few basic skills are enough to use Braille as a marking system for playing cards or spice jars in the kitchen. This way Braille can very quickly find its way into the life of a blind person, whether he or she is a child or an adult who lost sight due to an accident or a progressive illness.

Developing good reading skills will allow a blind person to learn and acquire knowledge, to delve into areas such as the sciences, foreign languages, music notation and proper grammar and vocabulary skills. “Braille literacy has been linked with the attainment of higher levels of education, personal satisfaction, independence, and employment” (Eldridge; Lund & Cmar; Ryles; Schroeder; Silverman & Bell; Stephens; in Englebretson et al., 2022). Englebretson et al. (2022) clearly state

Braille as the “**direct experience with literacy**”, allowing blind or deafblind people to actually read and write text on an equal footing with sighted people. All the other auditive forms of the perception are passive access to the information, whether it is an audiobook, synthetic voice of a computer or a smartphone or voice of a person reading the information for us (Englebretson et al., 2022).

Braille is of great importance in the lives of blind and many partially sighted people as one of the keys to being literate. It is paramount to developing their reading and writing skills in early childhood or quickly after sight loss. As such, Braille is essential in their education to be well prepared for a professional career.

The importance of Braille is celebrated worldwide on January 4th each year, since 2019, with the United Nations [World Braille Day](#), which aims “to raise awareness of the importance of Braille as a means of communication in the full realization of the human rights for blind and partially sighted people” (United Nations, n.d.).

Braille is used more and more in public spaces, such as on lift buttons, handrails, medicine packaging or in restaurant menus. The improvement is slow; for instance, most products in shops still come without accessible labelling to give if only basic information about the content of the package, and one can easily imagine what it would mean for sighted people if all the packages in a shop were to be stripped of all ink-print labels. But at least the progressive improvement brings hope of a less complicated life for visually impaired people.

Braille in the digital environment

Also important is how Braille fits in the digital environment. Braille within computers was introduced with the arrival of Braille displays. Since 1980, blind and many partially sighted people can enter the digital world through Braille using their fingers to read the digital information on a singled-lined Braille display, a hardware device capable of raising dots in appropriate Braille patterns and refreshing them quickly when the content of the line changes. These single-lined Braille displays are now widely used, although they have been updated with many features, including Bluetooth connectivity with computers, tablets or smartphones.

In recent years a lot of effort has been made by Braille hardware producers to achieve a multi-line Braille display so as to allow the full capture of a digital page with all the contextual dependencies of the text.

Many experts across the world are working on adapting the digital Braille file format to allow the genius dot-system to develop its full potential in the digital environment.

However, in spite of such progress and promises, there are also reasons to be concerned that the importance of Braille appears to be neglected nowadays.

Worrying trends for Braille

Insufficient acquisition of Braille reading skills

A Braille device or a file format alone are never going to suffice to equip the user with the necessary digital Braille skills. According to the Report for the European Blind Union and European Commission of 2018, [Braille Teaching and Literacy \(2018\)](#), in many countries children are introduced to electronic Braille devices and digital Braille at a very late age, often due to the unavailability of assistive technologies. This phenomenon badly impacts the development of reading skills along with the skills of using the Braille hardware efficiently, by skipping a most crucial period for learning.

Looking beyond the digital context, the report points at shortages of works available on paper in Braille format that may further reduce a child's motivation for the development of appropriate Braille reading skills.

Moreover, building on extensive research on the “situation of Braille” in 9 European countries, the report shows that the activities in training, methodical preparation, promotion and usage of Braille differ significantly. None of these countries had a clear understanding of the number and the status of the Braille reading population. It is therefore difficult to evaluate any activities concerning the development of Braille skills, and to determine the potential number of persons who could benefit from the delivery of Braille services. Even though Braille is part of the education process in mainstream schools in most of the countries examined, Braille instruction is given by special assistants (teachers, parents, special pedagogues). The research suggests that the quality of Braille instruction may be inadequate. In most of the countries, an apparent lack of testing of Braille proficiency and reading speed was recorded. All in all, the development of literacy skills was reported as insufficiently monitored.

The report does indicate many good practice examples in educational and play materials for Braille training but, as the authors state: “it is not clear from the data whether these are widespread practices or one-off instances”.

Auditory perception to the detriment of Braille

Another worrying trend is that the assistive technologies that appear to be privileged are those that give visually impaired people quick access to information through auditory perception. Screen-reading software makes computers, mobile phones, tablets and some other devices such as tv sets accessible, making interaction with these devices possible.

Production of audiobooks is a great expansion of access to literature, and podcasts, which have become very popular, offer countless hours of listening to all kinds of topics.

It is difficult to say if the relative negligence of Braille teaching mentioned before is not related somehow to the modern availability of all this auditory input. In any case, it would be a mistake to consider that auditory input is anything but a welcomed addition to tactile channels of perception, especially Braille. This, of course, if only because deafblind people cannot rely on auditory perception; but there are reasons that also concern other blind and many partially sighted people, beyond the deafblind.

Braille texts, whether printed on paper or presented digitally, are important in studies and occupations, not only as tactile representations of words. They provide structured information, mathematical or statistic formulae, and the possibility to read and write organised information showing items related to each other.

We expand on this aspect hereafter.

The added value of Braille in education

The importance of Braille as a graphical representation of information was proved many times in different studies. According to Diana and Doug Brent (2000) "the sequenced, ordered characters of Braille provide a medium laid out in space very much like print. Indexes, lists, outlines, indentation, are meaningful in Braille. One can read them quickly or slowly, stop and back up, and follow a developed argument in ways that are difficult when listening to words flow by on a tape". Although tape is no longer used, the implication is clear: auditory perception of the information does not offer a tactile experience with the text itself. Even

though Braille is not so easily transportable nor as easily accessible as audio materials or computers with screen readers and requires transcribing and thorough training, it offers crucial skills for a person to become literate. As Diana and Doug Brent (2000) put it: “Braille, like print, is a code, a written representation of our spoken language. We would never consider substituting a purely oral medium for print reading and writing for our sighted children. These same priorities and expectations must be observed for those who are blind or severely visually impaired. When oral and written communication is balanced rather than having one substituted for another, technology can become a most empowering and exciting tool, but technology in and of itself cannot be a teacher of literacy.”

Very few works in the last 30 years have focused on Braille reading and writing skills, for example Millar’s work from 1997 (Englebretson et al., 2022), and there has been little attention in scientific research to the influence of Braille on the literacy or attained level of education of visually impaired people. As Englebretson et al. (2022) stated, “there is not a single mention of Braille in the recently published 2nd edition of *The Science of Reading: A Handbook* (Snowling et al.)”. However, the few studies performed strongly suggest, that “individuals who were primary Braille readers since childhood had greater life-satisfaction, self-esteem, and job satisfaction than individuals who reported not using Braille as their primary reading medium during childhood”, supporting “the premise that Braille literacy is key to life satisfaction and self-esteem in addition to academic and job success” (Silverman and Bell, 2018). In other words, existing scientific literature on the matter confirms what appears to be pure common sense: a person with good reading and writing skills, who can efficiently communicate in written form following the grammatic rules, and to efficiently manage data is likely more employable than a person without these skills. And it is not only higher education or a vocation these skills help to achieve. If the literacy of an individual is consistently trained and well developed, it helps to improve their well-being and quality of life.

The research by Natalie N. Stepien-Bernabe, Daisy Lei, Amanda McKerracher and Deborah Orel-Bixler (2019) - [The Impact of Presentation Mode and Technology on Reading Comprehension among Blind and Sighted](#) – studied a small sample of 65 individuals. In this study the authors hypothesized a correlation between physical engagement and text comprehension in scientific material and

investigated the impact of assistive technologies on text comprehension. The results of this study suggest that actual reading of scientific text, whether by sight or fingers, is superior to the same information received by auditory perception. Furthermore, for the sample of blind individuals the study showed a 10 per cent increase in text comprehension when the text was read by touch rather than listened to using a screen reader.

Other studies also suggested that Braille materials and tactile tools were the tools which proved an effective way “to allow blind students to better engage with course material, increasing the likelihood that blind students will stay involved in the sciences” (Supalo et al. in Lillehaugen, 2014).

In substance, blind and partially sighted people need to exploit all the possible means of perception as tools for receiving information. Leisure time may be spent by listening to texts, books, newspapers and magazines, but it is only through personal reading that the full meaning of the written text is revealed and good orthographic skills are developed and maintained. Those who want to read more complicated texts, write things down themselves, read to others, learn foreign languages, or use computer programs must master Braille. It is also indispensable for successful professional employment. The personal ability to read and write must therefore always be a major goal in the education of visually impaired people. But they are not the only ones that have to be familiar with Braille if the education environment is to be inclusive. According to Tobin and Hill (2015, p10), who conducted a study on the future Braille usage, “the key factors will be the training of specialist teachers in mainstream and special schools and of rehabilitation professionals in adult centres”.

The convenience of Braille

Besides its added value in education, there are some practical reasons to maintain Braille as a part of the life of blind and many visually impaired people either in paper or digital form:

- Braille is easy to write with a slate and stylus or a Braille typewriter.
- The system of arranged dots and dot patterns is easy to understand and learn.
- It is not necessarily expensive to start a Braille training program to begin using it in the household and in daily life.
- The dot combinations along with their rules and standards are a universal tool, which can be used to represent Latin as well as

Greek or Cyrillic letters, mathematical or chemical formulae and even musical notes.

- Braille is also an essential tool when studying foreign languages to develop good grammar and spelling skills.
- Braille has found its way into the digital age thanks to Braille displays, electronic publications (books or magazines), and due to the agreed digital format of Braille.
- Mobile phones, computers and the internet can be efficiently used with a Braille display, thus allowing for Braille and auditory usage of the same device.

Today, the six or eight tactile dots are more available and easier to produce than ever before, not only as printed Braille material, but also in digital format, thanks to developments in Information technology (Cornish, in Englebretson et al, 2022). It does not necessarily require high-tech solutions to produce Braille. A DYMO Labeller, slate and stylus or Braille typewriter offer quick and relatively cheap access to Braille. Furthermore, even personal embossers, offering fast production of Braille materials, are now quite affordable for schools or institutions or even personal use at home with possible support from state or other funding programme or support services for visually impaired people.

Upholding the development of Braille usage skills

Bearing in mind the above considerations and considering all the possibilities of Braille production we now have at our disposal, it is crucial to uphold the importance of Braille and the development of Braille usage skills in the 21st century, over 200 years after its invention.

Braille needs to be learned along with the other perception channels. It is not about replacing the sight of a person, but about developing a person's full capacity and ensuring a person has the possibility to work with a Braille display since the beginning of their Braille learning. This requires both financial support and adequate training in the use of the Braille display.

Training on usage of the Braille display should include at least the following:

- Reading books on stand-alone Braille displays or connected with other devices.
- Convenient reading of PDFs, Word and every other kind of document on Braille displays.

- Daily work with books or education materials by screen reader along with the Braille display.
- Efficient operation of computers and mobile devices via the Braille display,
- Transferring each kind of text from and to stand-alone Braille displays, and data exchange between computer or mobile phone and the Braille display.

Developers of screen readers and Braille displays should contribute to better digital Braille usage skills by ensuring the efficient availability of software provided by screen-readers on Braille displays. They should also make every effort to keep the prices of digital Braille devices as low as possible.

As for the financial support, all national agencies and organisations of visually impaired people should consider digital Braille devices as part of the basic assistive technology which every blind or partially sighted person should have the right to apply for (or for related funding support). Digital Braille devices are here intended as Braille displays (single-or multi-lined), embossers, software to scan or produce Braille, a Braille input keyboard, or any other device capable of displaying or entering Braille patterns.

Conclusion

Building on the information contained in scientific research as well as on the grass-root experience of support services, the European Blind Union calls on all relevant stakeholders to support the following demands:

- By law, Braille shall be part of every blind pupil's education as is the case with print-reading teaching of sighted children.
- Blind and partially sighted children should be prepared for learning Braille at pre-school, through tactile training and familiarity with writing and letters.
- Whether in special schools or in inclusive school settings, blind and partially sighted pupils must learn and practise Braille. Increased use of audio media in the classroom should not replace teaching materials in Braille.
- Visually impaired pupils should be entitled to work on a computer not only with a synthetic speech output, but also with a Braille display, so as to train the simultaneous reading of Braille.

- The training of efficient and skilled usage of a Braille display must include reading, navigating and operating a computer, phone or other connected device.
- Braille displays should be financed by society for education, professional and private life.
- The availability of qualified teachers should always be ensured to teach Braille to blind children and adults, and there should be training programs for teachers who have blind students in didactic processes involving Braille.
- Braille experts need to be trained not only in transcribing, but also teaching and training tactile skills and Braille reading/writing skills, providing training to the concerned visually impaired people, but also to teachers, special pedagogists, psychologists or assistants educating Braille users.
- People who become blind or visually impaired in their senior years should be entitled to intensive basic rehabilitation to train their sense of touch and to learn Braille.
- Braille books must be published at the same time as the original as far as is reasonably possible. Publishers should share their typesetting data with Braille producing institutions to speed up the preparation in alternative formats. Libraries and publishers of Braille should be financially equipped by society to produce and offer more literature in Braille.
- Learning materials in general, including adult education, should also be available in Braille.
- In public spaces, (for example lifts, public transport, toilets and handrails) signs and other information should be available in Braille, together with raised characters. If there is not enough space available to fit both raised letters and Braille, Braille should always be the priority though efforts should be made to use both wherever possible.
- As a matter of ensuring that products and services are accessible, there should always be the possibility of information in Braille, and additionally in other relief form, such as tactile Latin letters, prioritising cleaning, hygiene and other essential or dangerous areas. Relevant here is the [article](#) in our Newsletter of March 2022, “Security and safety at your fingertips, Braille on medicinal products”.

- In elections, tactile tools with Braille should be provided, as one of the solutions to allow blind and partially sighted citizens to vote independently and in secrecy. On this, we refer to our [report](#) of November 2018, EBU “Accessibility of Elections for Blind and Partially Sighted Voters in Europe”.

Resources

On the occasion of World Braille Day, 04/06 2023, EBU released [a new video emphasizing the ongoing importance of Braille for our community](#).

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About EBU

The European Blind Union (EBU) – **Interest Representative Register number 42378755934-87** – is a non-governmental, non-profit making European organisation founded in 1984. It is one of the six regional bodies of the World Blind Union, and it promotes the interests of blind and partially sighted people in Europe. It currently operates within a network of 41 national members including organisations from 25 European Union member states, candidate countries and other countries in geographical Europe.

European Blind Union

6 rue Gager Gabillot - 75015 Paris

+33 1 88 61 06 60 | ebu@euroblind.org | www.euroblind.org

Contact: Gary May, Information Officer
ebuinfocom@euroblind.org | +33 1 88 61 06 63