# Expanding the Frontiers of Literacy: Developing Braille Codes for Languages Other Than English

International Council on English Braille

8th General Assembly

Auckland, New Zealand

May 2024

## Presenter

Jen Goulden, M.A., EDP, UEB Technical

Crawford Technologies Inc.

ICEB Treasurer, Canadian delegate

## Abstract

For many of us, advances in technology have made braille easier to access than ever before … but what about languages that still don’t have a braille code at all? At a time when we celebrate how far we have come in the last two centuries, we can also take the opportunity to consider braille codes that have yet to be developed.

Over the last few years ICEB has received enquiries about developing braille codes for specific languages. We have also been made aware of various attempts to develop such codes. Although this is technically out of scope for a council focussed on English braille, we felt it was important to provide a resource that might at least give some introductory guidance to anyone with an interest in this subject.

This paper will discuss the guidance document that ICEB has prepared, as well as factors to consider when developing a braille code. It will also provide an overview of the recent development of the Mi’kmaw Braille Code and its adoption in both Canada and the United States.

## Introduction

According to the latest edition of the Ethnologue*[[1]](#footnote-1)* there are 7,168 languages in use around the world today. The Duxbury Braille Translator (DBT) has the capacity to produce braille in more than 150 of those languages. Liblouis, an open-source braille translator and backtranslator, can support roughly 100, and *World Braille Usage Third Edition* provides basic information on braille codes for 133 languages used around the world. Many have worked diligently to develop these codes and make them available in various braille translation software and hardware, but there is still much that remains to be done.

The framework of this paper centres around *Developing Braille Codes for Languages Other Than English: Best Practices*, which was prepared by the International Council on English Braille (ICEB) in 2023. The ICEB Executive Committee tasked me with drafting these best practices in response to recent attempts to create braille codes by individuals who lacked the necessary braille and linguistic expertise. I would like to thank Dr. Robert Englebretson for his guidance and his invaluable contribution to this document.

An article published in the Journal of Blindness and Innovation Research (JBIR) summarizes the importance of braille codes for Indigenous languages in particular:

There has been a recent resurgence of Native American and First Nations [of Canada] language use as a part of a broader effort toward community wellness and cultural revival. In order for blind people in these communities to fully participate in language-oriented programming, the establishment of a braille code for the language in question is necessary. Creating a braille code for a Native American or First Nations language requires collaboration between literate native speakers and braille experts. As blind Native American and First Nations people learn braille codes for their languages, they can experience empowerment and increase their well-being. Teachers of the blind can offer instruction in these braille codes, building relationships marked by understanding while simultaneously empowering their students to participate in language-oriented, community-based programs and activities. (Salisbury and Begay Green, 2019)

While ICEB affirms the value of braille in any language, the development of codes for languages other than English is beyond its scope and mandate. Nonetheless, the Executive Committee made the decision to provide some high-level guidance because there are very few resources available for individuals or communities who are seeking to develop a braille code to represent a specific language. Furthermore, the resources that do exist are not easy to find. This reality is emphasized by the fact that a Google search with the terms “How to develop braille codes” or “developing/creating braille codes for foreign languages” yields search results on how to produce braille and transcribe it in various languages, but virtually nothing on how to develop a well-constructed braille code.

My aim is not to argue for the need to develop new braille codes. I propose instead that in order for a code to truly meet the needs of its readers, the development must be a collaborative effort.

## Important Considerations

Before beginning to develop a code for a given language, it is important to determine whether a code has already been approved for use in that language. The best place to start is *World Braille Usage*. This is a resource that provides basic information on braille codes around the world. Users of this reference book can look up braille codes by language as well as by country, and it also contains contact information for each country’s braille authority. For more details and to download the PDF and BRF versions, please see the “Resources” section at the end of this paper. Anyone interested in developing a braille code should also contact the braille authority of the country where the language is spoken. They will be able to advise of any codes in existence or under development. If there is no braille authority, contacting the appropriate department of education or a blindness organization within that country is a good alternative.

People often assume that knowledge of one braille code is sufficient to develop codes for other languages and that it is simply a matter of assigning symbols to various dot combinations. Another equally concerning misconception is that a braille code – or at least a braille alphabet – can be generated in a matter of minutes. Indeed, such efforts have been brought to the attention of ICEB in the last few years. These efforts are often praised in the media, regardless of whether or not the codes are well-constructed and have been accepted by the community that would rely on them.

In reality, the following expertise is required:

* Knowledge of an existing braille code;
* An understanding of how braille codes are developed;
* A linguistics-based perspective on language and orthography;
* Fluency in the language that the code will represent; and
* Familiarity with the print orthography already in use for that language.

It is absolutely critical that members of the language community (including braille readers) are actively involved in the project. In fact, braille codes that have been implemented successfully are those that have been initiated by members of the community i.e., speakers of the language in question. Well-intentioned efforts that did not begin with speakers of the language are much less likely to receive widespread acceptance because they may be perceived as being imposed on the community from the outside. Furthermore, a braille code must always be developed for braille readers in the community as a whole, rather than a specific individual.

## Additional Requirements

1. The braille code must parallel the print orthography. Some languages have more than one, so this is an issue that requires collaboration with members of the community who will understand the relevant cultural context. It is not up to the developers of a braille code to choose one orthography over another. If there is variation in the print orthography this should not be eliminated in braille. A braille code that does not parallel the print orthographies used by the linguistic community could put some readers at a disadvantage.
2. It is often preferable to use one cell per phoneme[[2]](#footnote-2), rather than a multi-cell symbol to represent each component (e.g. letter, accent mark, macron). For example, the acute e (é) requires three cells in Unified English Braille (⠘⠌⠑). In French, this symbol and the phoneme it represents are extremely common and only require one braille cell (⠿). It is tempting for those whose background is in English braille to want to break down the components of the print symbol into letter and accent marks, but it is much more efficient for braille readers to have common symbols represented by a single cell where possible.
3. If a language uses a syllabary for its print orthography, do not try to force the braille into an alphabetic system.
4. In order to be considered robust a braille code must include an alphabet – or a syllabary if appropriate. It must also be able to represent numbers, punctuation, accents (if applicable), and any additional symbols that are necessary in order to accurately reflect the print orthography.
5. Where possible, use well-established symbols already used in other braille codes to facilitate learning. For example, several languages use the same symbols for letters, common punctuation and accented characters. This makes it easier for individuals who use more than one language to learn new braille codes.
6. Similarly, if members of the language community speak a second language that already has a braille code, consider whether it is appropriate to ensure that there is consistency between the codes where this is feasible.
7. It is best to develop the basic elements of the code (e.g. alphabet, numbers, etc.) before considering whether or not contractions would be appropriate. Many braille codes do not have contractions. In cases where there are few resources and a relatively small readership, introducing contractions may add unnecessary complications. For instance, introducing a system of contractions would require the development of rules to govern their use, as well as training materials for readers, transcribers and teachers. This could in turn discourage easy use and adoption of the code. If contractions are to be added, attention should be given to frequency of words and groups of letters and the ease with which they may be learned. Ensure that there is no ambiguity caused by the addition of contractions. This is especially important for back translation from braille to print.
8. With regard to braille formatting, follow the guidelines used in the country where the language is spoken in order to ensure consistency.

I would propose that in order for a braille code to be considered valid it should at minimum meet requirements 1 to 6 listed above and should also have buy-in from the relevant linguistic community. The best way to ensure this is to have community involvement from the outset. As I noted earlier, a braille code developed by people who do not speak the language in question would be viewed as imposition from the outside, and understandably so. That said, the ideology behind this perspective can obscure a very critical issue: a braille code developed outside the linguistic community may be so flawed as to be unworkable. To put it another way, the active participation of the linguistic community is of utmost importance not because of political correctness, but because they have the knowledge that is essential for the success of the code.

## Approval or Adoption of a Braille code

After a braille code has been developed and approved by the language community it is important to seek endorsement from the local braille authority if one exists. This statement is not meant to imply that speakers of a language need outside approval to use a code that they have been instrumental in developing. There are some very practical reasons to seek this kind of endorsement.

Although members of the local braille authority may not be proficient in the language in question, they can verify that the code was developed in accordance with the principles outlined in this document. In addition, the code can be publicized and made available to those who need it. Endorsement from a recognized braille authority also helps to preserve a record of the code, and can facilitate its inclusion in a future edition of *World Braille Usage*.

## Putting it into Practice: Development of the Mi’kmaw Braille Code

There are 13 Mi'kmaq First Nations in the Canadian province of Nova Scotia. It should be noted that Mi’kmaq refers to the people themselves or the community as a whole, whereas Mi’kmaw is the term used for the language spoken by this linguistic community. According to the most recent statistics, the community populations range from approximately 283 in the Annapolis Valley First Nation to 4,314 in the Eskasoni First Nation. In total, there are approximately 16,250 Mi’kmaq registered in Nova Scotia. (Source: Aboriginal Affairs and Northern Development Canada (AANDC)

Christine Muise is a certified braille transcriber from Halifax, Nova Scotia, working with the Atlantic Provinces Special Education Authority (APSEA). She had a student whose first language was Mi’kmaw, and she believed it was important to provide course materials and other literature in this language. Her interest was timely because the Mi’kmaw Language Act, which recognized Mi’kmaw as the original language of Nova Scotia, was set to come into effect in October 2022. When Ms. Muise learned that there was no braille code to represent the Mi’kmaw language she was determined to get involved and help to facilitate the development of such a code.

I first heard of this initiative during the summer of 2021 when Dr. Robert Englebretson, Associate Professor of Linguistics at Rice University, put Ms. Muise in touch with me. Throughout the following year Ms. Muise collaborated with linguists, braille experts and native speakers of Mi’kmaw. One of the subject matter experts involved in this project was Dr. Bernie Francis, a linguist and a native speaker of Mi’kmaw. He was a co-creator of the Francis-Smith print orthography, which was approved as the official orthography for Mi’kmaw by the Mi’kmaq First Nations in 1980.

When the necessary symbols had been defined and agreed upon, members of the Mi’kmaq community put Christine in touch with Chief Terry Paul, so that the code could be brought before the appropriate authorities within the Mi’kmaq community for approval. In the documentation outlining the Mi’kmaw code Ms. Muise stated that the Mi’kmaw Braille Code was based on – and inspired by – the Navajo code that had been developed by Carol Begay Green in the United States a few years earlier. She also explained that the code “is meant to ensure that all blind readers of Mi'kmaw have a standardized, consistent braille code available to them, as well as being available to transcribers across North America.” In his letter confirming approval of the code by the Mi’kmaq First Nations, Chief Terry Paul wrote: “Creating a braille code that represents our language plays an important role in communication and accessibility to Mi’kmaq cultural education for future generations of Indigenous students.”

The next step was to present the Mi’kmaw Braille Code, along with the development process, to the Board of Braille Literacy Canada (BLC). As I have already stated, the purpose of this was not to impose “outside” approval on the Mi’kmaq community. The intention was simply to endorse the code as one that has been developed according to practices that would ensure its successful implementation. It would be accurate to state that BLC endorsed the development process more so than the braille code itself. After approving the code, the Mi’kmaq First Nations in Nova Scotia shared it with their counterpart communities in Maine, in the United States. They approved the code as well, and Chief Edward Peter Paul provided a similar confirmation letter to the Braille Authority of North America (BANA). Similar to BLC, the BANA Board endorsed the Mi’kmaw code from the perspective of the development process.

It is beyond the scope of this paper to clarify the reasons why a code that will be used in Canada and the U.S. would be endorsed by both BANA and BLC rather than by BANA alone, but suffice it to say that there are instances where there is an advantage to having the input of a solely Canadian organization. A grant application for government funding to produce material in Mi’kmaw braille would be one such instance.

I am pleased to report that the Mi’kmaw Braille Code is already being implemented. Ms. Muise has completed transcriptions of some Robert Munch books that had been translated into Mi’kmaw (this was her student’s favourite author at the time the code was developed). In addition, there are plans to build a Mi’kmaq cultural centre where signage will be in Mi’kmaw and English, with both languages represented in braille. These are just two examples of which I am aware.

## Overview of the Mi’kmaw Braille Code

As is the case with many braille codes around the world, the Mi’kmaw code uses uncontracted braille. Furthermore, numbers and punctuation, as well as typeform, use the same symbols as those found in Unified English Braille (UEB). Readers of Mi’kmaw reside in Canada – and the U.S. – and a vast majority are already familiar with these symbols.

The short vowels and most consonants are also represented as they are in UEB. The apostrophe (dot 3) follows a vowel to show that it is lengthened. Where a lengthened vowel appears in a fully capitalized word, the dot 3 does not terminate capitals mode as it does in English, because it is not functioning as an apostrophe. Dots 146 represents the schwa, and the five acute accents (á, é, í, ó and ú) will be familiar to anyone who has studied languages such as French and Spanish: ⠷⠀⠮⠀⠌⠀⠬⠀⠾. The use of symbols that already exist in English and French braille will be particularly helpful to Mi’kmaq students in Canada, who will likely learn to read all three languages.

## Conclusion

As language revitalization becomes more prevalent, the need to develop braille codes is also increasing. This is particularly the case with Indigenous languages, many of which do not yet have an established braille code. To say that language is complicated is an understatement, and those of us in the braille community know that a well-constructed code has complexities of its own. The development of the Mi’kmaw code and the process for its adoption demonstrate how a collaborative approach results in a robust code and ultimately benefits braille readers. It is my hope that the development of braille codes will become increasingly viewed as a critical component of language revitalization. I also hope to have these codes, including Navajo and Mi’kmaw, incorporated into future editions of *World Braille Usage*.

## Resources

Braille Codes for Native American and First Nations Languages

<https://nfb.org/images/nfb/publications/jbir/jbir19/jbir090104.html>

Creating a Code, Preserving a Language

<https://nfb.org/images/nfb/publications/fr/fr38/1/fr380108.htm>

Developing Braille Codes for Languages Other Than English

<https://iceb.org/>

The Ethnologue: How many languages are there in the world?

<https://www.ethnologue.com/insights/how-many-languages/>

Guidance for the production of braille in the Mi'kmaw Language

<https://www.brailleliteracycanada.ca/en/braille/standards>

Liblouis

<https://liblouis.io/>

Navajo Braille Code

<https://www.pathstoliteracy.org/resources/navajo-braille-code>

*World Braille Usage Third Edition*

<https://www.perkins.org/resource/world-braille-usage/>

1. The Ethnologue was first published in 1951 and is a reference containing a wide range of language-related statistics. It serves as a useful guide for making informed decisions in language contexts around the world. [↑](#footnote-ref-1)
2. A phoneme is a distinct unit of sound that distinguishes meaning. For example, b and p are distinctive phonemes in English, as in "bought" and "pot". Phonemes are not necessarily consistent across languages. [↑](#footnote-ref-2)