MACHINE TRANSLATION USE AS A PURPOSEFUL ACTIVITY

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I am not a trained healthcare professional but rather a translator and translation professor with a research specialization in translation technologies. In the early part of my career, my work did not have any direct links with healthcare, but then my young son was hospitalized at the Children's Hospital of Eastern Ontario (CHEO). It was in 2006 – the same year that Google released the first version of their free online automatic translation tool known as Google Translate. These two pivotal events – one in my personal life and one in my professional life – converged and led me to develop a new direction and sense of purpose in my research.

Regardless of the setting, the overriding purpose of translation is to facilitate communication between people who do not speak the same language. There is a well-known textbook in translation education entitled Translating as a Purposeful Activity [1]. In it, author Christiane Nord stresses that translators must choose their translation strategies according to the purpose that the translated text is intended to fulfil. Since communicative purposes need certain conditions to be successful, translators must analyze the text's intended purpose carefully and adapt their strategies accordingly.

Communication is central to healthcare. Without effective communication, how can a person make an appointment to see a healthcare provider? How can a healthcare professional gather a patient's history, enquire about symptoms, share information or instructions, or help to put a patient at ease? In the absence

of communication, healthcare professionals could not fulfil many of their own purposes. And if healthcare professionals and patients speak different languages, translation becomes a key element of communication.

The Toll of Not Understanding

While my son was a patient at CHEO, I learned what a privilege it is to speak the same language as the members of the healthcare team. I was already carrying a high cognitive and emotional load as I tried to process the fact that I had a very sick child. This left little space in my brain for language processing, and I was thankful that I did not need to muster up additional cognitive resources to be able to follow conversations with the hospital staff. Even in my own language (English), I encountered unfamiliar specialized terms and abbreviations, but I had a better chance of puzzling them out or remembering them (to look them up later) because I was receiving the information in my dominant language. Other families at the hospital were not so lucky since they spoke other languages and, consequently, had a different experience from mine.

In an already taxing situation, such as being unwell or having a family member who needs medical attention, imagine the additional layer of stress that would be added if you could not understand or had a limited ability to communicate with the healthcare providers. Sitting in CHEO, I did not have to imagine it. I could see it clearly in the confusion, anxiety and sometimes the sheer panic on their faces as they struggled to make sense of what they were hearing. Even though I was a translator, I specialized in technical translation (e.g. user manuals, software interfaces, websites), and I had never reflected too deeply on the added dimensions of healthcare communication. If someone is trying to accomplish a task in word processor but doesn't understand the menu options, they may feel frustrated, but that hardly compares to the level of parental anxiety that is present on a pediatric oncology ward – a level that can easily be doubled for parents who cannot understand the healthcare team. It was clear to me that even the kindest tone and most patient manner from a healthcare provider could not sufficiently mitigate the stress associated with being unable to comprehend the message. It pushed me to consider how, in contexts such as healthcare, translation is more than simply a convenience; it can be a lifeline.

Reducing Language Barriers Leads to Better Patient Outcomes

Beyond being a tool for communication, language forms an important part of a person's identity, cultural worldview, and social framework. Responding to and caring for the whole person means taking their language into account in a meaningful way and not treating it as a technical detail or an administrative burden.

Canada is a country with two official languages [2], more than 70 Indigenous languages [3] and numerous heritage languages [4]. On top of this, Canada welcomes millions of visitors from other countries annually [5]. But when a medical situation arises and some of these people need to consult a healthcare provider, what happens when there is a language barrier? Research in Canada [6] and elsewhere [7, 8] shows that patients tend to have better outcomes when language barriers are reduced. And isn't achieving the best possible patient outcomes an intended purpose of healthcare?

One common reaction to not understanding is to tune out. This could mean not really paying attention to a conversation, skimming over a document instead of reading it closely, or comprehending only fragments and piecing them together incorrectly. In some cases, people are embarrassed to admit that they don't understand, so they may fake a higher level of comprehension than they actually have. When the conversations or documents involve questions or instructions from a healthcare provider, a partial or lack of understanding could mean not providing relevant details of a medical history, or not following home care instructions appropriately. As a result, the medical issue could be exacerbated unnecessarily, or the patient may end up having to come back to the hospital – a visit that could have been avoided if better communication had been achieved during the first visit. In contrast, when a person understands the language, they are more likely to be engaged, to feel at ease asking additional questions, and to follow instructions correctly, leading to better outcomes as well as more efficient service delivery. Translation can act as a bridge that connects the healthcare provider and the patient, bringing the patient into the conversation, rather than leaving them isolated, confused, and more likely to make a misstep.

Professional Interpretation – A Valued but Complex Solution

Of course, healthcare providers are acutely aware of the value of smooth and meaningful communication, and professional translators and interpreters[1] have long played an important role in helping to ensure effective multilingual communication in healthcare [9]. However, there are challenges associated with interpreting services. For instance, a hospital cannot employ full-time interpreters in all of the world's 7000 languages just in case someone needs this service. Therefore, hospitals usually have contracts with interpreting service providers for the most commonly used languages in a region, but if there is a patient who speaks a language not covered by this service, there is a gap. Sometimes there is a medical emergency that requires immediate communication, but the interpreter may be busy elsewhere at that moment, creating another gap. Telephone or video interpreting can be options, but telecommunications connections are not always reliable in remote areas, and if the interpreter is in a different time zone, this may also impact their availability – more gaps. Therefore, even though healthcare providers value the

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[1] In the field of Translation and Interpretation, translators are typically described as being people that work with written text, while interpreters work with spoken or signed language. In the age of machine translation, this distinction is being blurred somewhat since some people use translation apps (e.g., Google Translate) to support spoken interactions.

services of professional interpreters and may prefer to use interpreters as a first option, it is not always possible. In situations where professional interpretation is not available, a healthcare provider might be tempted to take out their personal smart phone, pull up an automatic translation app (e.g., Google Translate), and use this to communicate with a patient. In the moment, this option may seem like a good choice, but do these translation tools always succeed in meeting the purpose of the interaction? [10]

Automatic (Machine) Translation and the Need for Machine Translation Literacy

My experience of being at CHEO and observing both my own privilege in being able to communicate in my own language, and the disadvantage experienced by other families on the ward who could not, stayed with me after my son returned home from the hospital. It sparked a new sense of purpose in my research, and I began to look for ways to contribute to an improved healthcare experience through my research on translation technologies.

Unfortunately, early versions of tools such as Google Translate did not produce reliable results, especially in specialized fields. Because they were not particularly useful, these tools were largely ignored in the early years, and in many cases, hospitals and other healthcare organizations did not have any clear policies around the use of machine translation. Gradually, the tool quality improved, especially following the introduction of AI-based techniques in 2015. As the tools improved, more people began to take notice, but a lack of clear guidelines and understanding of the technology led to some misuse, which in turn led to mistrust. More organizations began to introduce policies, but these often consisted of blanket bans that lacked nuance and resulted in missed opportunities for using the tools.

A simple example that I observed while at the hospital with my son was the case of parents who wanted to ask whether they could bring in some of their child's favourite foods that were not available in the hospital. This family was newly arrived in Canada, and their child was not used to a Canadian menu. The parents wanted to give their child a small degree of comfort by bringing in familiar foods, but they didn't want to break any rules. Because I overheard their conversation and happened to know their language, I was able to help translate their request. The next day, I also got to witness that child's delight – and the parents' relief – as he ate his favourite snacks. But later I wondered whether that small pleasure would have been absent if I had not happened to overhear the conversation or know the language. That type of simple request could have been a great use for a machine translation app. Unfortunately, that experience also had a downside. Thinking that I was fully fluent in their language, those same parents later asked me for help understanding a medical document. I had to explain that, while I could navigate my way around a food menu, I did not have the domain knowledge or specialized vocabulary needed to translate the document. Their disappointment was palpable, but I am grateful that I had the sense to decline, rather than to offer them a

garbled or incomplete translation, which could have been damaging. If a machine translation app had been easily available in 2006, would they have used it? And with what result?

Today, there are few people who have not heard of or tried tools that can produce automatic translations, such as Google Translate or ChatGPT. However, most casual users of these tools still do not really understand how they work, which makes it challenging for them to appreciate the potential risks involved in using this type of technology in a healthcare setting. Healthcare professionals are unlikely to have received any formal instruction on translation or translation technologies as part of their own education and training, and many workplaces still do not have meaningful policies or guidance to help them navigate the use of these tools.

This space at the intersection of the need for multilingual communication, the availability, ease and convenience of free automatic translation tools, and the potential risks and sensitivities of a healthcare context is where I found a clear purpose for my research: machine translation literacy [11, 12]
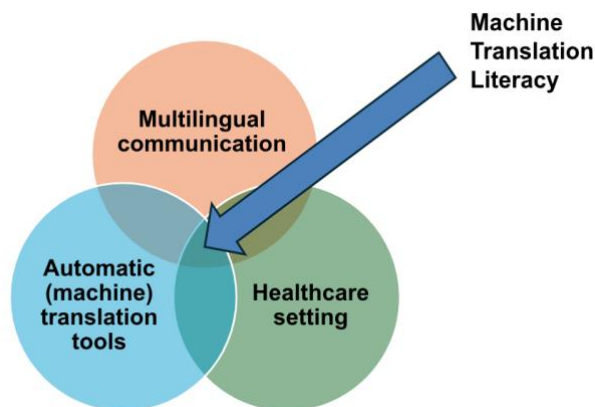
What Is Machine Translation Literacy and How Can It Help to Improve Healthcare?

Essentially, machine translation literacy involves adopting a purposeful approach to the use of translation tools. While human translators or interpreters have been explicitly trained to view translating as a purposeful activity [1] and are equipped to analyze the situation and implement appropriate strategies, translation apps cannot do this. Because the apps cannot adopt a purposeful approach to translation, the users of these apps must learn to do so. In other words, they must cultivate their machine translation literacy, which involves understanding a bit about how automatic translation tools work, evaluating when they may be helpful vs when they may cause harm, and knowing how to work with them in a responsible way. A significant part of machine translation literacy is about evaluating risk, such as by asking the question "What are the consequences of a bad translation in this particular situation?"

A healthcare setting involves many scenarios – from booking an appointment to delivering life-altering news. Some are low-risk communicative situations, where a poor translation would not have a serious impact, while others are higher risk, and a faulty translation could have devastating results. The higher the risk, the more caution is needed when using machine translation. An important part of developing machine translation literacy is evaluating these risks. Some questions to ask include:

- **Is the information sensitive or private?** Personal devices and free online translation tools do not offer adequate security for managing sensitive data.

- **Is the language (or language variety) widely used?** Machine translation tools are data-driven, meaning that they must be pre-trained using millions of high-quality examples of text. If the language is not widely used (e.g., an Indigenous language, or a regional variety of Spanish), then the tool will not perform as well as it does for a more commonly used language or language variety.

- **Is the topic highly specialized?** The more specialized the topic and the terminology, the less likely that the training data will include a sufficient number of relevant examples, and the lower the chances that the tool will perform well for this topic.

- **Does *everyone* understand the risks?** Who has initiated the decision to use machine translation? Does the other person feel pressured to agree? Are all parties equally well informed about how machine translation works and where its limitations lie?

The data-driven nature of machine translation tools explains why the performance of these tools can vary tremendously. The tool may do a good job translating a text on a common topic between two widely used languages, but this very same tool may do a terrible job translating a text on a more specialized topic in a less widely used language. Understanding the data-driven aspect of how these tools work is a key aspect of knowing how to use them responsibly. Other suggestions for promoting the responsible use of machine translation tools in the context of whole person care include:

- **Offer basic machine translation literacy training to healthcare staff.** When it comes to machine translation, a little information goes a long way!

- **Develop some guidelines.** Be proactive and offer guidance to healthcare staff rather than missing good opportunities to use machine translation tools or regretting poorly informed uses of these tools.

- **Use plain language.** Most machine translation tools are trained on general language. Use plain language in your communications to get better results from translation tools. Avoid highly specialized terms, metaphors, idioms, or culture-bound phrases.

- **Be aware of challenges.** Machine translation tools often struggle with proper names (e.g. names of drugs), with numerical conventions (which differ across languages), with abbreviations (which abound in specialized domains), and with negatives (sometimes producing the opposite meaning).

- **Test the viability by translating some non-critical information first.** Before using a machine translation tool to convey important information, translate some non-critical information first. If it doesn't go well, be extra cautious about relying on the tool for more critical information.
- **Consult more than one tool.** Each machine translation tool has been trained using a different set of training data. Get a second opinion! Verify the translation that you get from one tool by consulting another.
- **Learn to identify the purpose of the translation and to distinguish between low- and high-risk scenarios.** Machine translation is appropriate for lower-risk situations, but opt for language professionals for higher risk situations.
- **Use machine translation tools in combination with other techniques.** Don't rely exclusively on machine translation – combine it with other forms of communication (e.g. pictograms, gestures, plain language). View the purpose of machine translation as a means of supporting human-to-human communication, rather than as a way of outsourcing an inconvenient problem to a machine.

Remember that machine translation literacy is not about trying to forbid all use of translation technologies in a healthcare setting. Rather, it is about encouraging and supporting people to develop a keen sense of judgement and risk analysis about where and how these tools can be used effectively and responsibly, and where their use may not be a good choice.

Conclusion

In many ways, machine translation literacy is about remembering to focus on the purpose of the interaction. It is also about considering the whole person and remembering that language and translation are key facets of whole person care and should not be treated as an inconvenience that can be outsourced to technology without a second thought. Language forms an integral part of a whole person, and treating a person holistically with dignity and compassion means treating language and communication issues thoughtfully and carefully as well. Sometimes translation tools may help healthcare providers to achieve this purpose, but when used without due consideration, they may be a hindrance to whole person care.

It has been almost 20 years since I sat with my son at CHEO and witnessed firsthand the difference between successful and less successful communication in a multilingual healthcare setting. I could not have anticipated in that moment the direction and purpose that my research journey would take, but it has been highly rewarding to work on helping people who are not trained in translation to develop their machine translation literacy and to approach the use of translation tools as a purposeful activity.

A key piece of the puzzle is making information accessible – I am committed to explaining machine translation in ways that non-experts can understand and making this information freely available. The website of the Machine Translation Literacy Project [13] contains a range of free materials about machine

translation in a variety of formats, including a free book called De-mystifying Translation: Introducing Translation to Non-translators [12], as well as a popular series of infographics about machine translation that are now available in more than 15 languages. I have collaborated with companies that develop translation tools, such as Care to Translate (a healthcare-oriented translation tool) [14], to share information, guidance, and resources about machine translation literacy. I have partnered with the libraries at various universities to deliver workshops on machine translation literacy, and moving forward, I would like to see machine translation literacy incorporated into training programs for various types of professionals, including healthcare professionals.

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