Nisotak:
An Example of Flexible Design for Indigenous Language Learning Apps and Reconciliation

Marguerite Koole, University of Saskatchewan, Canada*

https://orcid.org/0000-0002-0041-5615

Randy Morin, University of Saskatchewan, Canada

Kevin Lewis, University of Saskatchewan, Canada

Kristine Dreaver-Charles, University of Saskatchewan, Canada

Ralph Deters, University of Saskatchewan, Canada

Julita Vassileva, University of Saskatchewan, Canada

Frank B. W. Lewis, University of Saskatchewan, Canada

ABSTRACT

This paper outlines the design, development, and preliminary usability study of a system comprising 1) a web-based Indigenous lesson-creation interface and 2) an accompanying mobile app for studying the lessons. The Nisotak project was developed in response to the need for the preservation of Indigenous languages and to support reconciliation within Canada. In this paper, the authors discuss the technological aspects of the project and the less tangible decision-making that helped navigate software development in ways that support and honour Indigenous languages, Indigenous knowledge, and Indigenous people while, at the same time, making space for non-Indigenous allies. The key decisions that guided this project included privileging the target language(s), accommodating multiple dialects, creating an easy-to-use and engaging interface for non-technical users, and designing for easy transfer of ownership and management. Finally, the authors share the results of a small usability study.

KEYWORDS

Indigenous Language Revitalization, Language Loss, Materials Development, Mobile Learning, Reconciliation, Seamless Learning

INTRODUCTION

In Canada and globally there is great need for revitalization of Indigenous languages and cultures. There are between 5000 to 7000 languages in the world today (Tao, 2019), 40% of which are endangered or nearing extinction (UNESCO, 2020); most of the endangered languages are Indigenous. In the Canadian context where the nisotak project emerged, Statistics Canada (2017) indicated that there were 228,765 people who spoke an Indigenous language at home. Of these, nêhiyawêwin[1] (also referred

*Corresponding Author

to as 'Cree'), one of the most widespread languages in the country, was spoken by only 83,960 at home. The 2021 Canadian census data provides some good news—although the number of Indigenous language speakers is still declining overall, the number of "children 8 years and younger who speak an Indigenous language grew from 11,715 to 28,755" (Taylor, 2022, para. 3).

In 2017, a research group (Koole et al., 2018) in Saskatchewan compiled a database of mobile applications ("apps"), podcasts, videos, and websites focused on Indigenous languages learning. The researchers found only 156 resources, 83 of which were dictionaries. This finding is in keeping with research by Joshi et al. (2020) who write that "only a very small number of the over 7000 languages of the world are represented in the rapidly evolving language technologies and applications" (p. 6282).

To address the lack of Indigenous language learning resources, the nisotak project involved the development of a learner app and lesson creation interface (LCI). The term, nistotak, is an acronym that refers to "nêhiyawêwin instructional syntax online for teaching and knowledge" (Lewis & Koole, 2020). The word, nisotak, is an old nêhiyaw word that means "two canoes". The nisotak app is available to anyone, Indigenous and non-Indigenous, who is interested in learning Indigenous languages.

In this paper, we[2] first address the imperative of Indigenous language revitalization and how it can be supported through the development of appropriate and sustainable technologies. We outline the challenges faced as we began this project. We share the approaches that that helped us overcome these challenges in ways that respect the autonomy and uniqueness of distinct Indigenous communities in Canada. These approaches also guided how we designed and programmed the nistotak system to tailor it for local Indigenous languages. Finally, we share the key results of the usability study that took place in the spring and summer of 2022.

BACKGROUND

The Imperative to Halt Language Loss and Address Reconciliation

The year 2022 marked the beginning of UNESCO'S Decade of Indigenous Languages (UNESCO, 2020). When languages are lost, human knowledge is lost including "whole cultures and knowledge systems . . . philosophical systems, oral literary and musical traditions, environmental knowledges systems, medical knowledge, and important cultural practices and artistic skills" (Hinton, 2001, p. 5). The nêhiyawêwin language connects to the nêhiyawê sense of identity and the land. When languages are lost the impacts are far reaching. As Yunkaporta (2010) writes:

There is deep knowledge in our languages. There is a spirit of learning in our words. This is more than just knowledge of what to learn, but knowledge of how we learn it. This is our pedagogy, our way of learning. We find it in language words about thinking and communicating. We find it in language structure, in the way things are repeated and come around in a circle, showing us how we think and use information. The patterns in stories, phrases, songs, kinship and even in the land can show us the spirit of learning that lives in our cultures. (p. 1)

In Canada, efforts at reconciliation between the First Nations peoples and settler communities has become a national priority. The Canadian Truth and Reconciliation Commission's (TRC) Calls to Action include recognition of language rights and support for language preservation initiatives (Truth and Reconciliation Commission of Canada, 2015). The TRC (2015) released the 94 Calls to Action to propel the country to "redress the legacy of residential schools and advance the process of Canadian Reconciliation" (p. 1) calling on the government to recognize and support Indigenous language rights and revitalization.

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