

App-assisted language revitalization: Insights from applied cognitive linguistics

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Abstract

Current theoretical advances in applied linguistics have not yet found wide practical application in the field of language revitalization. In this paper, plans for an open source application for desktop computers and mobile devices for Indigenous language learning settings will be outlined. The app consists of building blocks inspired by cognitive linguistics and task-based language learning. Members of Indigenous language communities can use these to create exercises and assessment modules for their respective languages. In the paper, a mock-up with model exercises will be showcased to illustrate how certain aspects of the afore-mentioned theories can be applied. For example, vocabulary tasks are informed by insights from the analysis of collocations, connotations, frames, metaphors, prototypicality, and semantic relations.

Keywords: *computer/mobile-assisted language learning, task-based language teaching, cognitive linguistics, endangered languages.*

1. Introduction

In many endangered language communities around the world, continuous hard work has been undertaken to document and revitalize their languages and cultures. For instance, traditional documentation and revitalization efforts include the development of writing systems, the production of dictionaries and grammars, publications and media productions, language classes and programs such as Language Nests (Grenoble & Whaley, 2006), and Master-Apprentice Language Learning Programs (MALLP; Hinton et al., 2018).

Considering these programs, it is noticeable that certain findings in the field of applied linguistics have not yet found wide practical application, in particular Cognitive-Linguistic (henceforth CL) approaches as well as task-based language learning. Based on these findings, we have developed a project plan to create an application for Indigenous language learning settings that will put current theory into practice. In this paper the application's fundamental principles to date will be presented and we will delve into the aspects and applications of the aforementioned theories that will form the basis of the app user's learning experience.

2. Project outline

2.1. Theoretical foundation

Since the early 1990s, researchers have conducted research at the cognitive-didactic crossroads (for instance, Dirven, 1989; Taylor, 1993). In the context of Indigenous languages, Ahlers (1999) successfully explored this field to enhance the Hupa community's revitalization efforts. Her understanding is that

language is seen as natural outcome of humans..., who have exploited their rich cognitive resources—such as the ability to focus attention, to automatize, to categorize, to form generalizations...—to develop language, that is, to express meaning. ... Instead of an emphasis on rules or abstract principles particular to language, CL focuses on established cognitive and perceptual principles.... Such a view of language entails that morphosyntactic patterns are not meaningless, as they reflect, albeit in rather abstract form, human conceptualizations (Verspoor & Tyler, 2007, p.160).

Much of the pioneer work of early cognitive linguists was, in fact, done with Indigenous languages. As Rice puts it, “some of the core tenets of the field are based on analysis and promotion of actual usage, the ubiquity of metaphor and metonymy in lexicalization and constructionalization, and the primacy of situated and embodied interaction” (Rice, 2019a). While, according to Rice, this is exactly what has

long provoked a high degree of intellectual excitement and wonderment at the diversity and ‘special genius’ of individual languages [in researchers], speakers and learners of threatened languages can come to appreciate this same excitement... when helped to approach their languages intuitively and from the perspective of meaning and usage – as advocated by CL (Rice, 2019b, p.93).

Additionally, though in more general terms, Littlemore points out that CL “suggest[s] ways in which the relationships between grammatical expressions and their original lexical meanings can be made apparent in the language classroom to enhance learning and memorization” (Littlemore, 2009, p.3).

Another valuable strand of research that will be incorporated in the development of the app is task-based language teaching. Nunan (2004, p.6) presents this methodology by establishing the following principles:

- needs-based approach to content selection
- emphasis on learning to communicate through interaction in the target language
- introduction of authentic texts into the learning situation
- provision of opportunities for learners to focus not only on language but also on the learning - process itself
- enhancement of the learner's own personal experiences as important contributing elements to classroom learning
- linking of classroom language learning with language use outside the classroom

Like CL, task-based language learning allows for insights into language as well as thought processes. On top of that, it ensures that language learning adequately prepares for successful communication in the target language by focusing on task-based and needs-based grammar and vocabulary. In our view, this must be the ultimate goal of any language revitalization activity.

2.2. Current state of app development

While some technical details of the app are yet to be determined, mock-ups of tasks have been created in order to demonstrate some aspects and applications of cognitive linguistics and task-based language learning that will form the basis of the app user's learning experience. One of these mock-up tasks is shown below in Section 2.3.

For example, vocabulary tasks in our app will aim to present lexical items within their semantic networks by providing information about prototypicality, collocations or frames. Furthermore, insights into the motivated rather than arbitrary nature of lexemes will be given by presenting them in the light of conceptual metaphors, embodiment, onomatopoeia or phonesthemes. Similarly, grammatical tasks that will teach the system and underlying constructions of the respective language will be prepared according to suggestions in the relevant cognitive linguistic literature, where available.

2.3. Exemplary vocabulary task

In the mock-up in Figure 1a and 1b, the learner takes part in a cooking session which introduces him or her to the semantic frame of preparing food. The first screen (Figure 1a) depicts an introductory video which shows two people making a dish. Below the video, transcriptions in the target language are available for the learner to follow along. Optionally, translations in the source language are added via tooltips (see Figure 1a).

On the second screen, the learner is asked to apply the newly gained knowledge. In a first task, the learner has to decide on the correctness of prompts (see Figure 1b). In this task, relevant vocabulary is presented in collocation-enriched and frame-fitting context. The exercises highlight additional collocations (e.g. *to make bread*) and introduce related vocabulary (e.g. *soup, flour*). In a second task, he or she is asked to fill out gaps (see Figure 1b). This promotes the repetition of constructions presented in the video.



Figure 1a. Mock-up part I.



Figure 1b. Mock-up part II

While this mock-up is still at an early stage of development, it serves to showcase a) the future modularity of lesson creation and b) our understanding of task-based learning.

2.4. Ownership

At the core of our idea is the conviction that any tool developed to support language revitalization efforts first and foremost needs to be a gain for the respective language communities. In order to make an impact, tools need to be adaptable to the local context, including the available resources, the goals of the users etc. Further, as Robert Elliott points out, “issues of ownership and control of data and information have historically affected Indigenous and minority communities disproportionately” (2021, p.297).

Thus, in order to guarantee that ownership of language data is exclusive to the community and that community members have maximum control over their language use, we have carefully set parameters for our application which are further detailed in sections 2.5., 2.6. and 2.7.

2.5. Community involvement in design and development

Much like an online platform that allows users to build their own websites by combining building blocks, our app will merely provide a skeleton which local language experts will be able to gradually populate by choosing templates for exercises or assessments and adding content to them. These blocks will be bare and only provide the technical functionality. It will be the community’s task to create a curriculum based on their needs and wants, as well as bringing the software to life by adding audio, text, and images.

In order to ensure that the software will be of the greatest use to Indigenous communities, we will be presenting the software prototype to two partner communities during the design and development stages. They will be asked to test and evaluate the software. These meetings with the communities will also involve the first sessions of user training. After the official software release, we will offer software training and technical support for any user to help with potential issues of any kind. We are currently approaching potential partner communities and hoping to

establish ties for collaboration. Furthermore, it is our desire to build a long-term and diverse network of language experts and activists, Indigenous teachers and developers, and Master/PhD students to see our software development continually rooted where it belongs.

2.6. Technological and economic considerations

We are planning to create an application that is both optimized for desktop computers as well as mobile devices. This is to ensure that the majority of users will be able to access it, be it at school, in a language center, on the move, or remotely in the countryside. We also bear in mind that internet access cannot (and should not) always be presumed. The application will therefore be functional both online and offline.

In regards to financing, we are entertaining different options, such as third-party funding, donations, or a very low-level software leasing model. We are also going to take inspiration from the open-source community. The principal aim is to keep the hurdles as low as possible for the communities. Our app will be non-proprietary and ideally free of charge.

2.7. Why yet another app?

The idea to support language revitalization efforts with the help of apps is far from new. Not only the Miriwoong people already have a dictionary and a language learning app at their disposal.¹ What makes our approach special is that (i) it will not be designed for one language in particular, (ii) the infrastructure will be based on theoretical advances in cognitive linguistics and task-based language learning, so that the potential for positive outcomes in language learning is maximized, and (iii) community involvement is central to all stages of the development process.

For example, there will not be a predefined and fixed set of semantic fields to be filled with words from the respective language. Rather, the community can decide which fields are relevant to their culture. Similarly, for language learning exercises, those templates can be selected that best reflect local ways of learning and that can be implemented with the available resources.

3. Goals and Mission

For many Indigenous communities affected by language endangerment, language revitalization is a matter of crucial importance but is also enormously challenging. This process is not merely about teaching vocabulary and grammar. One of its major goals is to promote the community's pride and identity and to strengthen the relationship of the people with country and kinship. Regular language learning technology, as we know it from Western cultures, cannot cater to these manifold and unique aspects.

Our mission is therefore to adopt a new and creative approach which will allow for a learning environment that is, on the one hand, adapted to the human brain, and, on the other hand, rooted in the respective practical context and motivated by local community needs.

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¹An overview of a variety of apps and other digital resources can be found, for example, here: Petersen, Rachael. 2013. iDecolonize: A Review of Indigenous Language-Learning Apps. Retrieved July, 30, 2023, from <https://rising.globalvoices.org/blog/2013/06/21/idecolonize-a-review-of-indigenous-language-learning-apps/>. The Miriwoong app Learn Miriwoong is described here: Miriwoong Mobile App. Retrieved July, 30, 2023, from <http://mirima.org.au/mdwg-work/miriwoong-app/>

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