Constructing an interactive Old Norse text with LARA

Branislav Bédi[1], Haraldur Bernharðsson[2], Cathy Chua[3],
Birgitta Björg Guðmarsdóttir[4], Hanieh Habibi[5], and Manny Rayner[6]

Abstract. We describe how the open-source Learning and Reading Assistant (LARA) platform was used to convert a classic Old Norse text, the *Völuspá*, into an interactive online form. The LARA version includes high-quality recorded audio, translations, notes on key words and phrases, an automatically generated concordance, and links to other online resources. The interactive text was created in two different editions, one with Modern Icelandic translations designed to support Icelandic school students who read the poem as a set text, and one with English translations designed for English readers with basic Old Norse who wish to able to appreciate the poem in the original as a piece of literature. Initial feedback from groups has been positive.

Keywords: collaborative work, computer assisted language learning, interactive text, Old Norse, reading.

1.   Introduction

LARA[7] (Akhlaghi et al., 2019) is an open-source learning-by-reading platform that has been under development since 2018. The basic philosophy is in line with Krashen's (1982) input hypothesis: students develop language skills best in a low-anxiety situation using comprehensible input they want to engage with. LARA implements this abstract idea by providing tools that transform text into an annotated multimedia form designed to provide cognitive scaffolding that supports learning of pronunciation and meaning.

1. The Árni Magnússon Institute for Icelandic Studies, Reykjavík, Iceland; branislav.bedi@arnastofnun.is; https://orcid.org/0000-0001-7637-8737
2. University of Iceland, Reykjavik, Iceland; haraldr@hi.is; https://orcid.org/0000-0003-1353-547X
3. University of Adelaide, Adelaide, Australia; cathy.chua@adelaide.edu.au; https://orcid.org/0000-0002-5462-2441
4. University of Iceland, , Reykjavik, Iceland; bbg14@hi.is; https://orcid.org/0000-0002-5032-6303
5. University of Geneva, Geneva, Switzerland; hanieh.habibi@unige.ch; https://orcid.org/0000-0001-7602-2933
6. University of Geneva, Geneva, Switzerland; emmanuel.rayner@unige.ch; https://orcid.org/0000-0002-6002-2434
7. https://www.unige.ch/callector/lara/

Figure 1.   The controls at the top allow navigation (1); each verse is provided in audio form (2); text is presented in both original (3) and modern orthography (4); lines are highlighted as they are played (5); clicking on a word (here, *heima*) (6) brings up a word information page for the associated lemma (here, *heimr*) (9), containing links to online resources (10) and a concordance (11); hovering over a word shows a popup word translation and over the Runic character shows a popup segment translation (8); words marked in red in the main text (7) are linked to notes (12); additional lists of frequency and alphabetical indexes are included (13)

In Bédi et al. (2020, this volume), we describe how we used LARA to construct an interactive online version of a classic Old Norse epic poem, the *Völuspá*. We had two user populations in mind. First, we wanted the resource to be useful to Icelandic middle-school students, who study Old Norse literature as a required subject. Modern Icelandic has evolved from Old Norse. Although the two languages are still closely related, the grammars are no longer the same; many words have changed spelling or meaning, while others have disappeared, and cultural references which were commonplace in medieval Scandinavia are now obscure. In general, it is by no means easy for an Icelandic middle-school student to understand the *Völuspá*. The second group of users was anglophones interested in medieval Icelandic literature; the *Völuspá* is highly regarded, and many people would, in principle, like to be able to read it in the original language. The LARA version aims to address the needs of both groups, and make the text comprehensible and enjoyable to experience. With regard to 'comprehensible', words are presented in both modern and original orthography, and linked to translations, explanatory notes, automatically generated concordances, and pages from the *Lexicon Poeticum* online resource. With regard to 'enjoyable', each verse is prefaced by a high-quality audio recording produced by a near-professional voice (see Figure 1).

2.   Constructing Völuspá in LARA

The LARA *Völuspá* was constructed in two editions, one with Icelandic word translations, and the other with English. The starting point was a hand-tagged XML-formatted version of the text associating each word with its lemma. A member of the team with software engineering skills wrote a script which converted this into LARA form; the linguist members of the team cleaned up a few inconsistencies by hand, and the software engineer wrote a second script to insert the forms of the lines in the original orthography and other HTML formatting, including the audio controls. After this, the bulk of the work was done through the LARA portal by the linguists, comprising the following:

- annotation of multiword expressions, in particular *kennings*, nominal compounds expressing a poetic simile and characteristic of Old Norse poetry;

- addition of word translations. This was the largest single task, and was carried out using the portal function shown in Figure 2; and

- recording of the audio. This was done using an online recording tool integrated into LARA. The portal automatically handles the book-keeping, creating the recording script, downloading the recorded audio files and associated metadata, and linking them into the text.

Finally, the timing figures that were needed to support synchronised audio highlighting were manually added, using the Audacity tool to review the audio files. The total effort was about four person-weeks.

Figure 2. Example LARA translation window for *Völuspá*. Each verse (1-4) includes a group of three lines: source text on top, translator fills in the middle line, and the third is the verse-level translation from a different source

3. Initial user feedback

The English edition of the LARA *Völuspá* was trialled in a reading group hosted on the Goodreads[8] review site during March-April 2020. Several people met intermittently online, and exchanged comments about the text. The group accumulated a total of 54 posts and 63 views. Though small in scale, this experience was quite positive; the comments posted were often long and well-informed, and

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8. https://www.goodreads.com/topic/show/21221144-v-lusp-reading-group-verses-1-6#

the people who had tried out the resource were enthusiastic, particularly about the recordings.

The Icelandic edition was trialled by a small group of Icelandic speakers, selected from a group of acquaintances and contacted by email, in late July 2020. Twenty participants agreed to cooperate, 11 male and 9 female, aged 17-27; each participant got a link to the online text. Afterwards, they received an anonymous online questionnaire adapted from the one in Bédi et al. (2019), which included 31 questions about learners' backgrounds and perceived usefulness with Likert-scale answers (see results in Table 1), and some open-ended questions.

Table 1. Readers' perceived usefulness of reading Old Norse in Icelandic edition of LARA

No.	Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1.	The reading task would be difficult to perform without this application.	7	7	4	2	
2.	Using this application gives me greater control over my reading task.	11	6	1	2	
3.	Using this application improves my understanding of the text.	11	6	1	2	
4.	Using this application saves me time when reading the text.	9	6	4	1	
5.	This application enables me to accomplish the reading tasks more quickly.	10	7	2	1	
6.	This application supports critical aspects of my learning.	8	7	1	3	1
7.	Using this application allows me to accomplish more reading tasks than would otherwise be possible.	10	4	5	1	
8.	Using this application reduces the time I spend on unproductive activities.	8	6	4	1	1
9.	Using this application enhances my effectiveness in reading.	8	5	5	1	1
10.	Compared to using books, using this application improves the quality of reading.	8	3	4	3	2
11.	Using this application increases my learning productivity.	9	5	3	3	
12.	Using this application makes it easier for me to read texts in Old Norse.	13	2	3	2	
13	Using this application makes it easier for me to learn vocabulary in Old Norse.	11	5	2	2	

14.	Using this application makes it easier for me to learn grammar in Old Norse.	6	4	5	5	
15.	Using this application makes it easier for me to learn pronunciation in Old Norse.	8	3	5	3	1
16.	Overall, I find this application useful in gathering knowledge about vocabulary in Old Norse.	7	10	1	1	1
17.	Overall, I find this application useful in gathering knowledge about vocabulary in Modern Icelandic from translations of Old Norse.	6	4	6	3	1
18.	Overall, I find this application useful in having translations in Modern Icelandic.	10	4	3	3	

Even though a few participants experienced some technical problems when using LARA, in particular with audio, all but one of them liked it as a tool for learning Old Norse. Suggestions for improvements included making it possible to switch off audio or change the font size, excluding 'z' from the spelling to enable compatibility with the grammar information in DIM[9], colour-marking words that no longer exist in Modern Icelandic, and adding summaries of verses, page numbers, manuscript facsimiles, and instructions.

4.   Summary and future work

We have presented an overview of the online *Völuspá* that we have constructed using LARA. Even though work on using LARA for Old Norse is still at an early stage, responses so far are encouraging. Next, we plan to develop more texts of this kind, test more rigorously with both groups of users, and improve the interface in line with initial feedback.

5.   Acknowledgements

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9. Database of Icelandic Morphology (DIM), https://bin.arnastofnun.is/

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