

Selective teaching of L2 pronunciation

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Abstract. The pronunciation of a second or foreign language is often very challenging for L2 learners. It is difficult to address this topic in the classroom, because learners with different native languages (L1s) can have very different challenges. We have therefore developed a Computer-Assisted Listening and Speaking Tutor (CALST), which selectively offers exercises for listening and pronunciation training tailored in relation to the learner's native language (L1). Based on information given in its connected database *L1-L2map*, CALST offers exercises focused on Norwegian segmentals for speakers of more than 500 languages, and exercises related to phonotactics for 10 languages. Exercises focusing on stress placement in words, word tones, fast speech phenomena and intonation are under development. As there is no spoken standard of Norwegian, the user can choose one of eight dialects as target language. The latter choice is so far valid for segmental exercises only. *L1-L2map* is easily expandable, and single language access is given to expert contributors on request at <http://calst.hf.ntnu.no/L1-L2map/>. At present, CALST can be used to learn Norwegian pronunciation (www.calst.no). However, it can easily be extended to other languages by adding relevant content into the existing framework.

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1. Introduction

In Norwegian language courses for foreigners there is generally not much time allocated for individualized pronunciation or listening training, since these activities are considered as going at the expense of more basic and important language learning needs. Adequate pronunciation and listening skills are however of great importance in practical communicative situations and will, if mastered, normally enhance the students' integration process when it comes to academic studies, professional careers or social life.

Even though teaching of Norwegian as a second language has been going on for about 50 years, teaching material aiming at pronunciation and listening skills must be described as scarce. There are several reasons for this. One of them is related to the fact that there is no spoken standard of Norwegian.

The default choice in pronunciation teaching has put a spoken form of *Bokmål*, the most common of the two written forms of Norwegian, as its goal. Both segmental inventory and prosody vary significantly from dialect to dialect. The application of the dialectal variants into spoken Bokmål results in several versions of the target language, and these are the forms that are introduced to learners in the second language classroom.

Spoken Bokmål in its different forms is not used in verbal interaction between Norwegians, who prefer to use their dialect in all kinds of public and private verbal interactions. The second language speaking skills of adults learning Norwegian is thus restricted to a form that Norwegians only use when reading Bokmål aloud, but not when they are speaking. This means that speaking and listening skills taught to foreigners in general will differ more or less from dialects used in Norway.

The pronunciation teaching provided is mostly segmentally orientated and is normally found in the first chapters of introductory books. There is not much material found that is explicitly aiming at a wider scope of pronunciation skills. The teaching material is also general in the sense that it is aiming at particularities of Norwegian without taking the learners' mother tongue into consideration.

The project presented here takes both these matters into account. The learner decides what will be the target dialect of Norwegian, and this is connected to

information about the speaker's L1. Based on this information a contrastive analysis is performed in the L1-L2*map* database, and from that analysis a set of exercises is picked from the exercise bank of CALST and put into action.

2. Resources

2.1. L1-L2map

This database is created from information made available through the UCLA Phonological Segment Inventory Database (UPSID, Maddieson, 1984), the Lyon-Albuquerque Phonological Systems Database (LAPSyD) and other available sources.

The information is accessible in two ways. In L1-L2*map* (<http://calst.hf.ntnu.no/L1-L2map/>) phonological information is presented as in the IPA chart (Koreman, Bech, Husby, & Wik, 2011). Other information like phonotactic patterns is in designated tables (Martínez-Paricio et al., 2014). The dialectal perspective of Norwegian is maintained, as phonological information of eight Norwegian dialects is included (two dialects from each of the four dialectal regions).

The database is permanently under construction. On one hand new languages are included; today L1-L2*map* contains more than 500 languages. On the other hand, the language information is being "widened" in the sense that segmental information given in UPSID is supplemented with information related to phonotactics and stress placement. Later other prosodic features like tone and intonation will be included.

L1-L2*map* functions as a wiki, and experts on non-included languages are invited to contribute. There are no priorities for which languages to add, but from a Norwegian point of view, information on immigrant languages is of course important.

2.2. Multilingual tool

The contrastive analysis can be made between any of the languages in the database. In this sense CALST is a multilingual tool that can provide exercises for all languages included in the database given that such exercises are made available. A second version of CALST is currently under construction. Here English is the target language. Any initiative to broaden this perspective is welcomed.

2.3. CALST

The CALST exercise module has two submodules: vocabulary and phonology (Wik, 2011). The first contains 1000 frequent words. It introduces the central vocabulary for language learners at beginners level. The dialectal approach also allows the learner to check the pronunciation of each word in several dialects. In this way the skills in understanding different forms of Norwegian is improved.

The second module consists of phonological oriented exercises based on the linguistic data provided by L1-L2map. The linguistic data function as a filter and is fed into the exercise databank of CALST to create language specific exercises related to the spoken form of Norwegian chosen by the user.

The student activities are logged. The information on scores and progress is available to students, teachers and researchers. In addition, CALST is a learning system as exercises that do not present challenges to students will be removed. This is based on analysis of the behaviour of the initial group of students of a certain L1. Exercises where all students get top scores are regarded as not necessary, and will be removed by the program.

2.4. Exercises

The vocabulary exercises are of three kinds:

- *Listen and click*, where students click on illustrations as a response to spoken key words.
- *Listen and speak*, where students repeat spoken key words. The evaluation of the pronunciation is currently done by the user. We are now working to develop speech recognition systems to provide relevant feedback to accented pronunciation.
- *Listen and write*, where students type the keyword.

Speech samples can be provided at slow and normal speech rates, and the user can choose to see English translations of words.

Among the segmental exercises, there are two kinds of *Listen and click* exercises (AXB, Minimal pairs) in addition to *Listen and repeat*, and *Listen and write*.

The same exercises are found for exercises related to phonotactic properties. Since it is impossible to predict the repair strategy/ies which L2-learners use to adapt L2 structures to the restrictions which apply in their L1, CALST offers exercises to learn strategies to overcome these like simplification of clusters, replacement of sounds in clusters and metathesis.

3. Discussion

The construction of CALST has presented us with several challenges. Language data needed for L1-L2*map* is hard to find outside what is found in UPSID or LAPSyD. Descriptions may also be insufficient as information is completely lacking or not complete. The information may also be inconsistent. For levels "above" the segmentals, the problems can be summarized as follows:

- The theoretical foundation of phonological properties may have different approaches. For instance retroflex sounds have different status in phonological descriptions of Swedish, where they are not regarded as phonemes, and Norwegian, where they have phonemic status.
- The phonological properties of one single language may be analysed in several ways. One may ask who is the reliable authority of a given language to be quoted.
- The description of the phonological properties is insufficient. For instance information on diphthongs or phonotactics may be absent.
- There is no theoretical framework that can function as a reliable basis for contrastive analysis of phonological properties. What is the conceptual basis for crosslinguistic comparisons relating tones, intonation or speech rhythm?

For CALST the main challenge is to provide adequate ways of analysing the user's accented L2 Norwegian. Today the student is responsible for deciding whether their pronunciation is adequate.

In order to be able to make more objective evaluations, we have just launched a project with the aim to use automatic speech recognition as a basis to detect insertion, for instance (not to mention duration, stress placement, sound quality, intonation and speech rhythm).

4. Conclusions

CALST is a new multilingual tool that can be adapted to any target language if there is phonological information available. So far CALST contains segmental exercises related to eight Norwegian dialects. Exercises related to English as a second language is under development.

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