

Using Internet and Speech Technologies to Teach a French Phonology Course

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The Practice

Introduction

The course French 215, an introductory linguistics course focusing on French, was developed for second-year French majors. Most of the students wish to become French teachers. Thus, one of our goals in the course is to give them a good understanding of the French linguistic system. However, we also wish to help them acquire that system, partly so as to be able to detect, analyse and then offer appropriate feedback on the language errors of their future students, but also so as to become good linguistic models themselves. In this article I will refer only to the French phonetic and prosodic systems, since the course material I discuss concerns only the Phonology part of the course.

Tools and Procedures

Two learning websites were developed to complement the lectures and the reading material required for the course. As well, [WinPitchLTL](#), a speech visualization and synthesis software program served as the main tool to work on the acquisition of French phonemes and prosodic patterns. With this software and the two web sites, students could work not only in class, but also on-line outside of classtime, either from their computer at home or from computers available on campus.

The first website, "[Quelques notions de base en phonétique corrective...pour apprenants Anglophones](#)" presents in a multimedia form the concepts and theory describing the French Phonetic and Prosodic systems. For each concept, students can simultaneously read the definition or the explanation, listen to audio examples and see speech visualization items. Students who have difficulty understanding the description of specific phonetic or prosodic phenomena have, therefore, the opportunity to immediately hear and visualize these phenomena. They can, at leisure, deepen their understanding of all the notions covered in class, and complement their knowledge with the audio and speech visualization files available on-line.

The second website, "[La prosodie du français: leçons pour apprenants Anglophones](#)" allows students to work on-line on a large number of rhythmic and melodic discrimination activities based on authentic speech. In this website, students are progressively trained to identify the rhythmic structure of French, and then to hear and visualize ascending and descending melodic contours alternating according to the French prosodic structure. The understanding and recognition of alternating ascending and descending melodic contours has proven to be very important for Anglophone students who at first have a tendency to produce a "bell" shaped pattern on every word group or a high pitch on each stressed syllable, regardless of the structure of the sentence. In the last section of the discrimination activities, students have to predict the melodic pattern of sentences, according to the rules of French prosodic grammar. Each activity presents audio files and speech visualization files based on authentic recordings of francophone speakers. The on-line activities can be submitted to the instructor electronically, or students can self-direct and self-evaluate their work by listening and visualizing each answer, as well as by reading an explanation for each answer. Links to the first website help reinforce the theoretical understanding of a notion.

Once a concept has been presented in theory in class and reinforced through the use of the two websites, students start to work on their oral expression using WinPitchLTL, which allows them to visualize, hear and manipulate their speech for corrective purposes. It also allows teachers to provide extremely precise and individual feedback on the students' oral production (A. Germain-Rutherford et P. Martin, 2000). Students work once a week with the instructor in a multimedia classroom, and are then able to work on their own on the computers of several multimedia rooms where the software has been installed. To solve the problem of geographical distance and still allow intense and frequent work on the acquisition of French prosodic patterns, a system of shared folders on the university server is established, where WinPitch files can be saved and retrieved at any time by students and the instructor using an [intranet](#) or an [internet](#) (WS_FTP or iXplorer) connection. This system allows corrective feedback, suggestions, questions and new working WinPitch files to be added at any convenient time or place. As a result Students are also able to work at their own rhythm, and on a very individualized basis, even at a distance (Germain-Rutherford, 2001).

Guiding Principles Behind the Practice

A first principle is that the addition of a reliable visual dimension to the auditory dimension of the task to be learned when combined with the ability to manipulate those dimensions will assist the learner's progress. The ability to repeat the exercises as frequently as necessary on a convenient schedule should also enhance the learning.

Sources of Inspiration or Influence for the Practice

Since the 60's, several studies on speech visualization report positive effects in the combined use of audio and visual feedback for language learners (de Bot, 1980, 1981, 1983, Cranen, Weltens, de Bot and van Rosum, 1984, James, 1976, 1977, Weltens and de Bot, 1984). These studies show that visualization of melodic curves eases the acquisition of the second language prosodic patterns and that it better profits weaker students (de Bot, 1983). However, although active by nature, the imitation of a model by a student using visual cues delivered by speech analysis does not make any active use of the technology itself. Re-synthesis techniques allow very good quality re-synthesis of a natural speech wave after modifications of the prosodic parameters. With appropriate interfaces, it is possible to have the learner modify his/her own realization to approach the features of the model. Doing so, we can expect a much better understanding of the phonetic and phonological mechanisms involved as the activity approaches the learning by doing model instead of being just imitation of a stimulus (Germain-Rutherford & Martin, 2001).

Frequently Asked Questions About the Practice and Responses:

1. Have you collected any evidence to show that the practice is valuable?

In order to evaluate how useful these tools were for the students, and which of the tools' features or functions they favoured in their learning process, students were asked to complete an [evaluation questionnaire](#) at the end of the course. The students reacted very positively. More than 90% of the 40 students registered for this class found the two learning websites extremely useful in helping them understand the different concepts explained in class. The combined effect of text, sound and visualization was graded as the most positive element in the conception of the websites. The software WinPitch LTL was graded as very useful or useful by 95% of the students. The most positive features of the software were the synthesis function (80%), allowing easy manipulation of the speech signal to transform the students into their own model via signal editing and prosodic parameters retracing, as well as the dialog function (60%) by which the students and the instructor could interact to ask or receive very precise feedback on the recorded productions.

The following are samples of students' comments concerning the two websites:

- For a student who is far from the place of the course, it has been very helpful and time saving to have the opportunity to work at home.
- The written was easy to understand and the visual was a big help. The best part of the website was the audio. I could not have gotten through that part of the course without it.
- It looks like a lot of information, which is a little scary!
- It was neat, especially to see the correlation between rhythm in music and language.
- Appealing to the eye. Encouraged me to correct my mistakes, since I could check them right away. I could access it any time of day...

These student comments concern WinPitchLTL:

- I like it... I've never had this kind of tool before in language learning... It has helped me to hear myself, so quickly and so easily.
- When Aline put her comments so specifically to the particular word or phrase I was more encouraged to understand it and try to correct it.
- Being able to see the strength of my voice and the flow of the language were both key for me. Being able to receive feedback on my work was terrific. When I logged on I could receive constructive critiques and begin to fix the problems I was having.
- This is a great program to replace "labo de Phonétique". Even improved because it lets you listen to the correction with your own voice.
- Wonderful!!! Soooo helpful and such an important tool! You can see where you are going wrong. The exchange between instructor and student was so helpful.

2. What are your plans for building on this practice?

This year was a trial to prepare more thorough research on the impact of visualization and manipulation of speech on the acquisition of L2 prosodic patterns, research that the author will conduct with language students using WinPitchLTL and a revised version of the two websites as the main tools.

For More Information (References and Links)

Bot, K. de (1980). The role of Feedback and Feedforward in The Teaching of Pronunciation : an Overview. *System*, 8, 35-45.

Bot, K. de (1981). Intonation and pitch control. *ITL Review of Applied Linguistics*, 52-2, 31-42

Bot, K. de (1983). Visual Feedback of Intonation I : Effectiveness in induce practice behavior. *Language and Speech*, 26(4), 331-350.

Cranen, B., Weltens, B., Bot, K. de, van Rosum, N. (1984). An Aid in Language Teaching: The Visualization of Pitch, *System*, 12(1), 25-29.

Germain-Rutherford, A. & Martin, Ph. (2001). Perspectives nouvelles dans l'enseignement de l'oral à distance : les technologies de visualisation et de synthèse, in *Regards sur la didactique des langues secondes*, Cornaire, C. & Raymond, P., [Les Éditions Logiques](#), 105-131.

Germain-Rutherford, A. & Martin, Ph. (2000). [Présentation d'un logiciel de visualisation pour l'apprentissage de l'oral en langue seconde](#), *ALSIC*, 3(1), 71-86.

Germain-Rutherford, A. (2001). "[How Speech technology can enhance feedback in teaching oral skills in a L2](#)", Educational Technology Conference, Carleton University, February, 2001.

Weltens, B., and Bot, K. de (1984). Visual feedback of Intonation II: Feedback delay and Quality of Feedback, *Language and Speech*, vol. 27(1), 79-88.

[Additional ideas](#) about using the computer to assist language.