Jul 9th, 9:15 AM - 9:50 AM

From study design to conference presentation in one semester: Introducing students to the research process in Laboratory Phonology

Caroline Smith
*University of New Mexico, caroline@unm.edu*

Follow this and additional works at: [https://digitalcommons.montclair.edu/labphonology_workshop](https://digitalcommons.montclair.edu/labphonology_workshop)

Part of the Phonetics and Phonology Commons

Smith, Caroline, "From study design to conference presentation in one semester: Introducing students to the research process in Laboratory Phonology" (2020). *Pedagogical Approaches to Laboratory Phonology*. 2.
[https://digitalcommons.montclair.edu/labphonology_workshop/2020/phonology_sessions/2](https://digitalcommons.montclair.edu/labphonology_workshop/2020/phonology_sessions/2)

This Event is brought to you for free and open access by the Conferences, Symposia and Events at Montclair State University Digital Commons. It has been accepted for inclusion in Pedagogical Approaches to Laboratory Phonology by an authorized administrator of Montclair State University Digital Commons. For more information, please contact digitalcommons@montclair.edu.
From study design to conference presentation in one semester:  
Introducing students to the research process in Laboratory Phonology  
Caroline L. Smith  
caroline@unm.edu  
University of New Mexico

This is a transcript of the narration of the video with descriptions of the images given in[].

[title screen]
The purpose of this presentation is to discuss my experience of taking a class through the entire process of a laboratory phonology research study in a single semester, in fact, in about three months.

[CLS talking]
First of all, what is gained by having a class do all the steps required for research in a single semester?
- It’s common in graduate classes to have each student or small group design and carry out a project, which they then write up as a term paper. That can certainly give them experience with many of the processes in research.
- But a lot of research in laboratory phonology is collaborative, which is more or less necessary in order to execute a larger-scale study in any kind of reasonable time frame. Most students have not participated in larger projects, and they often have less experience of collaborative work lasting several months, which requires coordinating ideas and contributions of different kinds as part of a larger group. This class was designed to give them that experience, to help them to learn about the process of research and the skills needed at different stages.
- Finally, the class presented their project as a poster at a local conference. Presenting a poster is a different skill from writing a term paper, so the students gained experience with this medium which is of course very widely used in laboratory phonology, and increasingly in all areas of linguistics.

Not related to the time frame, but another goal of this class was to give the students experience with explicit hypothesis testing. Linguistics students often write papers that discuss or describe some issue, but they tend to have less familiarity with quantitative evaluation of explicit hypotheses. Taking a project from the initial general idea, to the statement and testing of specific hypotheses, shows students how to work with the rigorous methodology that we use in laboratory phonology.

[HDLS logo]
The schedule for this class was possible because there was a conference scheduled in our department in November, late enough in the semester that it seemed feasible to do a project before the dates of the conference. This was the meeting of the High Desert Linguistic Society, our graduate student organization. It draws participants from all over the US and from other countries, covering a broad range of topics.

So what did we investigate?
The general theme was phonological reduction in conversational speech, and I narrowed this down to variation in consonant clusters. There have been vast amounts of research on consonant clusters in English, but fewer studies have looked specifically at patterns of simplification within longer word-final clusters, so this was identified as a gap in previous research.

We took our data from the Buckeye Corpus. For those of you not familiar with the Buckeye Corpus, it’s made up of recordings of conversational speech by 40 American English speakers, with segmentation of words, transcribed orthographically, and phones, transcribed in a broad phonetic transcription.

We narrowed the target data down further to processes involving deletion or assimilation of word-final three-consonant clusters, as those are the longest clusters that occur with sufficient frequency to see variation within a moderate-sized data set.

This screen shows an example of the kind of data we were looking at, where the orthographic transcription on the bottom tier shows that this word ‘crafts’ would canonically end in a three-consonant cluster, but the transcription shows that in this case the speaker did not pronounce the [t], and this can be verified from the waveform.

We took the corpus transcription as given, and searched in Praat for tokens of clusters that met our criteria. This meant we could very quickly identify the data we wanted to work with. With the speech already segmented, students could focus on assembling and organizing data, rather than doing waveform labeling.

The first task for the students was formulating testable hypotheses about patterns of deletion in clusters, taking into consideration that the set of permissible word-final clusters in English constrains the questions that can be addressed. Students did preliminary analyses and voted for which hypotheses would be included in the class project. Criteria for selection were intrinsic interest and the compatibility of a hypothesis with the overall “story” that was developed, that deletion rates vary greatly among phonologically similar clusters.

Most of the analyses involved comparisons of the canonical form of a cluster with the transcriptions in different tokens, as you can see illustrated here with the cluster -nθs as in ‘months’.

The chosen hypotheses related to different structures within the cluster (for example, different combinations of places of articulation of the consonants), as well as the different contexts in which the clusters occurred (for example, length of the word containing the cluster, or properties of the following word). These analyses were done in Excel, and were manageable even for students with limited skills with the software.
One pair of students chose to test whether higher speech rate favored higher deletion rates. They were able to do scripting in Praat to make these measurements efficiently.

Once the analyses were complete, I selected a PowerPoint template for the poster. Each student or pair of students working on a specific hypothesis used the template to prepare a graph and a brief statement of their results for the poster. Then I harmonized and arranged these contributions on the poster. And in class before the conference, we discussed how to present a poster effectively.

The idea was that students would attend the conference and take turns presenting the poster, but a couple of them were not able to do so because of conflicts with outside employment. Almost all our students have jobs, often off-campus, and I felt it was unfair to penalize those who couldn’t attend the conference.

So, what strategies can make it possible to do a complete project in such a short time?

- As the instructor, I had to decide on the general topic ahead of time, for two main reasons: in order to write an abstract to submit to the conference, given that their deadline was at the very beginning of the semester. Also, in order to constrain debate about the direction of the project. The abstract was deliberately vague enough to permit the students themselves to decide on the specific questions to be asked.
- As already mentioned, a key strategy was to use a corpus that was already segmented.
- Another important strategy was to assign students to work in pairs so that each member of a pair has different skills. There were enough students in the class with some previous experience of Praat and Excel that all the pairs could use those programs at least at a basic level.
- My sense was that I couldn’t expect all students to perform all aspects of the study: one student already had programming skills and wrote Praat scripts for other students who did not know how, and I also did some of this. Another student had more extensive statistics background and was able to test the hypothesis he worked on more quantitatively than some other students with less background.

Perhaps the main one was timing. In order to come up with interesting and novel research questions, the students needed to read research related to the chosen topic. But at the same time they needed to get started right away with actual data processing and analysis. At the beginning of the semester, we did these more or less in parallel: since I’d already decided we were going to look at clusters that canonically have three consonants, they could get started on finding tokens in the corpus, figuring out what the distribution of different clusters is, and so on, while at the same time familiarizing themselves with the literature and developing research questions.

In any research project, there’s going to be issues that you haven’t anticipated, and having a very compressed time frame meant we had to make quick decisions about how to deal with them.
For example, I hadn’t thought about clusters that arise from contractions where orthographically there’s an apostrophe, e.g. “wouldn’t”. We discussed these, and in the end decided to exclude them, as they add another syllable and might pattern differently from the coda clusters we were examining. But this debate suggested one of the hypotheses that the students did choose to pursue: they looked at whether deletion rates were lower if the final consonant of the cluster belonged to a different morpheme, however, this did not turn out to have an effect.

Getting this project done in time meant that students had to take responsibility for their part of the study, and be willing to collaborate. Mostly they did but there was not surprisingly one individual who was unable to commit to participating consistently, and who ultimately dropped the class, and one or two others who were great at working alone but not so great at coordinating with others.

[photos and names of students in the class]
Scholarship on teaching and learning emphasizes the value of students feeling ownership for the work they do. By collaborating to produce a final product with real research value, the students in this class created something in which they could take pride of ownership.

[image of poster]
In the end-of-semester evaluations, one student commented that making the poster was “a new and very informative way to learn the subject matter” and another said that “conducting the actual research was very helpful.”

The students have a long-term reminder of their work: with the poster displayed in the department alongside other research posters, both those who participated and their colleagues are reminded that they produced a valid contribution to research. And this accomplishment can be added to their CVs to make their experience known.