

CS486C – Senior Capstone Design in Computer Science  
Project Description

<b>Project Title: Website for Authentic Spanish Language and Pedagogy</b>	
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**Project Overview:**

**The challenge:** The first stages of language instruction depend on modified speech samples, simple language constructed for the express purpose of teaching the language to beginners. They are loosely based on what a native speakers might say, but as students advance, they must be able to understand and produce "authentic speech", that is, authentic speech produced in everyday contexts by native speakers.

The importance of authentic speech to second language learning has been recognized for decades but spontaneous, authentic speech is unpredictable and cumbersome unless accompanied by activities appropriate to the student's level. It does not adhere to text chapter themes, presents uncontrolled vocabulary, includes dialectical variation, and is full of hesitations, blended words, incomplete thoughts, and the occasional ungrammaticality that confuse learners.



Made-for-learner videos do not prepare learners to listen around or through such natural, high-frequency features, a skill essential to understanding real world language.

I have filmed almost 600 oral history interviews across the Spanish-speaking world. These are transcribed and divided into anecdotal movie clips. Teachers who have attended my conference presentations and day-long workshops are enthusiastic about the videos but find the time commitment involved in creating activities based on them to be daunting. Busy teachers need a way to access theme and level-appropriate clips with ready-made or better yet, easily made, materials that complement their texts and are in-line

with their teaching goals and the level of their students. I have developed learning frameworks with HyperCard, Gemini, Toolbox, Authorware, PowerPoint and VISTA. As each authoring system was discontinued, I have redeveloped the materials.

I now have a set of linked blogs at [authenticlanguageandpedagogy.blogspot.com](http://authenticlanguageandpedagogy.blogspot.com). Three are based on level of difficulty, one on grammar, and the rest dedicated to specific themes such as immigration, civil war, and folklore. Though not exactly viral, the site has logged almost 87,000 hits in the last few years, some of which come in large clusters suggesting that the material is being used for classes, most in the United States, Russia, and western Europe.

The blogs are clearly highly popular and are useful, but (a) it's hard to organize/add material, it's hard to curate them in general, it's hard to search/find appropriate material, and there really is not direct support for the teaching process; it's just a bunch of blogs.

## **What is needed.**

To make these language learning resources truly useful we need a powerful Web2.0 framework for presenting and organizing the hundreds of clips and associated exercises we have created in a powerful online framework that not only makes them easily searchable/accessible, but provides comprehensive support for content creators, language teachers using that content to teach their students, and for the student learners that will be using the materials. The basic aims include:

### **Level 0, minimal functionality**

- A cloud-based web service in which users can create accounts as either content providers (like myself), teachers, or students. At as well as the language they are working on, along with other profile information.
- Develop, under my guidance, a framework for classifying video clips by language, level, topic, learning focus and other criteria; this provides the basis for searching for desired clips as well.
- Once logged in, all users arrive at a sort of dashboard where they can see all content collections (like mine...but others could be created or exist as well) for their language.
- Allow content creators like myself to upload video clips (batch upload possible for people with big existing libraries like me) into the system, classifying them using the model defined.
- Allow content creators to add exercises of at least one type (e.g., multiple choice question) to clips. The clip plus associated questions are essentially “a lesson”.
- Allow teachers to log in and create “courses” that they are teaching. Inside a course, teachers can create modules to represent major topics (e.g. chapters) of their course; and inside of a module, a teacher can search for, select, and install multiple “lessons” (clip plus questions) from the database. In this way, a teacher could basically set up a curriculum of video clips for his/her students to work through.
- Students can be either “unaffiliated” (just people learning language on their own) or they can be attached to course created by a teacher. Students can search/find their own random lessons by criteria-based search, or they can follow through the modules in a course set up by a teacher.
- In any case, the system tracks what videos the student has viewed and performance on the associated questions. This information should be summarized for the student in a graphical way; for students in courses, the teacher should also be able to inspect the summaries.

### **Level 1, a nicely equipped application**

Here we add a few nice features beyond the bare basics that would make this an actual enjoyable, usable Webapp:

- Allow content creators to create question types beyond the basic “multiple choice” format specified above. Examples include “Drag these sentence fragments into order”, “match items in one column to items in another column”, and “drag and drop items from word bank into appropriate blanks in a paragraph”.
- Provide better course management infrastructure: allow teachers to restrict access to a course, e.g., access based on emailed invites. Allow points to be associated with exercises to provide a more robust scoring potential, and allow graphical overview of effort level (doing lessons) and performance.
- Provide content creators with a decent “lesson builder”: lets you create a new lesson, then upload a clip for it, and create one or more exercise questions associated with it. This way anyone can easily add/build resources at any time!

### **Level 2, really nice...cutting edge cleverness**

- Provide a “smart” adaptive learning mode for students. We develop a metric for assigning the “difficulty” of lessons. When student engages this mode, the system then randomly selects lessons to present to the student. If the student succeeds at the exercises, the system slowly presents “harder” exercises; as the student fails at exercises, the system adapts and moves to lower difficulty levels. In this way, each student is always learning at exactly their optimal level of challenge.
- Provide tools for visualized a student’s progress over time. Or the progress across a whole “course”. Or progress of learners within an entire language. In short, provide a little data mining and analysis support.

Obviously, Level 0 is the minimum expected deliverable. Level 1 features would make this real-world useful...and Level 2 would be thrilling. This is my spring 2017 sabbatical project and, in addition to serving as domain expert for all design questions, I will focus on creating appropriate clips, activities, and ancillary materials for this site.

**Knowledge, skills, and expertise required for this project:**

- Knowledge of the Spanish language is **not** necessary. You are organizing my teaching resources, not doing the class!
- General web programming expertise, including cloud services, and appropriate frameworks.
- Familiarity with some advanced UI webapp functions, e.g., drag and drop within exercises.
- Familiarity with how to present/play video files within web browsers.

**Equipment Requirements:**

- Team will need access to appropriate multi-media workstations for developing a Web2.0 site.
- The videos are already digitized in clip format from 30 seconds to 5 minutes in length. Many are on YouTube. Alternate suggestions welcome.

**Software and other Deliverables:**

- A complete Web2.0 site, installed in the free tier of some cloud hosting platform. At Level 0 (above) of functional competence or better. You must provide me a personal demo of the completed site, and install me as the overall site admin.
- A strong as-built document that details the design and implementation of the site. This must be robust enough to allow a future development team to pick up where you left off.
- A complete archive of the code archive developed for the site, on a USB stick.
- Transfer of the online code repository to my name, so that I can easily continue future development.

When this web site is functioning I will introduce it to current blog users and present it at a state and/or national language conference. My primary academic passion is to make the wonderful oral histories I have been given available to all who love the Spanish language and wish to know more about it's diverse peoples and cultures.