Incorporating Dynamic Authentic Materials in a Multimedia Gloss

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This paper reports on the development of a web-based multimedia glossing tool that seeks to connect students directly to authentic materials while at the same time helping them to effectively use the materials as language learning resources. To build an effective and engaging aid for vocabulary learning, the tool dynamically creates a multimedia gloss, including an L1 gloss, aural and visual input, key-word-in-context output, a dictionary definition, and L2 synonyms. This paper discusses the underlying theory behind using dynamic authentic materials, as well as considerations that direct the development of this tool, such as selection of materials, effective presentation of materials, and technical aspects of gathering materials from a variety of sources to produce a cohesive, useful resource.

This paper documents an effort to develop a web-based multimedia glossing tool that exploits Web 2.0 technologies to enable real-time inclusion of authentic materials in learner input. The purpose of the tool, named Voca, is to give learners the opportunity to go beyond the simple snapshot provided by the typical multimedia gloss; Voca allows users to explore examples of real-world usage and seek common themes that ultimately may become a part of the learner’s understanding of the term.

BACKGROUND

Communicative Technologies

Web 2.0 technologies, specifically those in the social-software category, are going beyond simply making materials available and instead are encouraging the creation of virtual communities coalesced around shared content, similar interests, or shared experiences.

The term Web 2.0 has become so ubiquitous that its meaning has been diluted. To many people it simply means new technologies, but there is a distinct set of features that set Web 2.0 technologies apart from the rest of the World Wide Web.

In his article defining Web 2.0, O’Reilly (2005) includes a number of indications that these technologies point users towards interaction, communication and dialog (see Figure 1). Specifically, he highlights the involvement of users (or the audience) by describing Web 2.0 with phrases such as “Participation, not publishing”, “Software that gets better the more people use it”, and “User as contributor” (p. 1). These phrases indicate that communication and interaction occurring amongst the technology’s users are central tenets of Web 2.0.

Another important feature which distinguishes Web 2.0 from other technologies is known as granular access to content items: content is not restricted to a hierarchical
Tagging allows for the kind of multiple, overlapping associations that the brain itself uses, rather than rigid categories. In the canonical example, a Flickr photo of a puppy might be tagged both ‘puppy’ and ‘cute’--allowing for retrieval along natural axes. (p. 2)

In this way, access to materials is made much more flexible, and links between content items are easier to establish. This detailed access allows users to more easily locate other people who share the same interests. Once the people who share these interests are located, the tools exist to allow interaction over their common interest.

These two features of Web 2.0 technologies (encouraging user participation and allowing granular access to content items) lead these technologies to facilitate the establishment and fostering of communities. This is of special significance to language teachers and learners, as Web 2.0 communities enable and encourage communication and allow language learners to engage in meaningful interaction.
Authentic Materials

Virtual communities formed around shared content are rich sources of authentic materials for language learners. Though the materials are often posted for the benefit of a smaller community, they are implicitly intended for a worldwide audience. The learner, then, is a part of the intended audience in a broad sense, but the significance of the materials can be greatly enhanced if the learner participates in the smaller community in which the materials appear. This notion of encouraging learners to participate in communities that surround authentic materials aligns well with theories that emphasize the importance of the relevance of materials. Widdowson (2003) defines a difference between genuine materials and authentic materials based on the extent to which the learner is able to establish a meaningful relationship to the materials. If the material is relevant to the learner in some way, and the learner is able to define a relationship between himself and the text, the genuine material becomes authentic. I believes that when learners engage and participate in virtual communities, they are establishing a relationship with the content around which the communities are built. Participation and involvement in the community can be achieved through contributing by posting comments, creating new content items to be shared, referring (and linking) to content items, and so forth.

The goal of the Voca project is to draw on materials from virtual communities to create a tool that attempts to provide learners with a useful, multimodal gloss while at the same time exposing learners to and encouraging participation in the communities from which the materials originate.

Multimedia Glosses

A large number of studies have confirmed that learners learn and retain vocabulary better if they are given an image to associate with the term to be learned. (Chun & Plass, 1996; Underwood, 1989; Yeh & Wang, 2003) Catering to learning style preferences has been shown to increase learner motivation and enhance learning outcomes. (Kinsella, 1995; Kroonenberg, 1995; Reid, 1987) As a result, multimedia glosses are a common feature of many language-learning applications. Voca, like many other tools that rely on such convincing research, seeks to create a multimedia gloss that caters to learners who prefer input encoded visually, verbally, or aurally.

In addition, Voca seeks to use the multimedia gloss as a starting point, encouraging learners to use the materials presented in the gloss to further investigate the meaning of the term in question. The tool is intended to be used for a form of data-driven language learning (Johns, 1994) in which learners use key word in context (KWIC) output and images to supplement and amplify the meaning presented by an L1 gloss. The contexts in which a term is used, both in the verbal and visual output may shed light on semantic nuances in ways which a simple L1 gloss may not be able to replicate. In the process of discovering these nuances, learners encounter and, depending on how the tool is used, are drawn into virtual communities.
MATERIALS DEVELOPMENT

Compiling Materials

To accomplish its pedagogical goals, Voca pulls together materials from various dynamic sources to present learners with a multimodal gloss, including an L1 gloss, several images, KWIC output, and an audio sample. The tool is designed to bundle these materials from a variety of sources.

In order to add each of these output modes to the gloss presented to the learner, a range of methods were employed. New technologies that have evolved to accommodate Web 2.0 ideals make the real-time construction of a multimedia gloss possible. Rich user interfaces and remixable data (not tied to a single use and/or interface) are an extension of the Web 2.0 ideal of enabling and accommodating the user (see Figure 1).

Asynchronous Javascript and XML (AJAX) and Application Programming Interfaces (APIs) are tools that enable developers to provide a rich user interface and to remix data to suit an application. AJAX essentially enables the developer to dynamically include content from multiple sources on a single page. This enables the tool to query several sources and create a new gloss each time a search is performed. APIs, in turn, are used by many web services to make the service's data available for use outside of the service itself. For example, the Flickr API allows developers to access and use Flickr images and metadata without interacting with Flickr’s user interface (Flickr, 2009). Voca uses AJAX to send a request to web service APIs and display the data returned as a part of the multimedia gloss. Voca uses this method for both the L1 gloss and the images.

The L1 gloss incorporated in the output is provided by Google’s Language API. (Google AJAX, 2009) At this time, Google is the only major translation service offering an open API to do the simple Spanish to English translation needed for this tool. Additionally, Google’s translation service is based on computer analysis of billions of words in target language texts and human-translated parallel texts. The translations are usually very accurate, as they are based on large amounts of real language use. Using the API, any given term entered into Voca’s search field is run through Google’s translation engine, and the result is returned and displayed alongside the original term.

The KWIC output and audio sample are both derived from the popular Spanish language learning podcast Notes in Spanish.² (Curtis & Diez, 2006) Notes in Spanish has been selected as the source for these materials for a number of reasons. Because there are already a large number of episodes available for download and new episodes are added regularly, there is sufficient material for the podcast episodes to serve as a corpus on which concordance style searches can be performed. When a learner performs a search for a term, Voca performs a concordance-style search of the podcast transcripts and returns the results in a KWIC format, as seen in Figure 2. Each occurrence of the term in the KWIC output is linked to the audio portion of the podcast where that term occurs. Clicking on the term starts the playback of a 10 to 15 second portion of the podcast audio where the term is used. The audio playback is accompanied by subtitles as shown in Figure 3.
Images for the multimedia gloss are obtained from Flickr, the popular web site used by over a million people around the world to share photos. Voca uses the Flickr API to search for occurrences of the search term in the metadata describing images. Images are returned to Voca if the search term is located in the title, description, or tags associated with the image. Voca limits the number of images displayed to seven images at a time and only uses the first forty-two images returned from Flickr. The images are displayed as small thumbnails and, when clicked, take the user directly to the image record on Flickr, where learners see the image along with the title, description, tags, and comments connected to that image. One benefit of this approach is that, because Flickr’s database is queried each time a search is performed, the images returned are always current and dead links do not occur.
EXAMPLES

In many cases, particularly with concrete nouns, the L1 gloss, the KWIC/audio output, and the images align nicely to create a coherent overall picture of the meaning of a given term. The multimedia gloss presented to the learner is fairly straightforward and easily interpreted. One may see two such examples by clicking on the following links for lluvia (rain) and tren (train).

In most cases however, the output is not as straightforward and clean as those links demonstrate. For instance, in the output for the term hermano (brother), the L1 gloss, the KWIC/audio output, and most of the images present a clear picture of the meaning of the term. However, a few images do not immediately seem related. Only by clicking on the image and seeing the image in its context (along with its title, description, and comments) does the learner understand how this image is related to the search term. For example, at the time of this writing, when conducting a search for hermano an image of a book shaped memento appears. Upon investigation the learner can see that the memento is in remembrance of the Flickr user’s brother. The description of the image includes information about the boy’s passing and a short note from the owner of the image to his long-lost brother. The image of the memento and the accompanying text afford users the opportunity to associate emotions (such as the image owner’s lament over the loss of his brother) with this vocabulary term, reinforcing their understanding and making the meaning more memorable. This sort of investigation, though it may require more from the learner than less sophisticated glosses might, is one of the key features of this tool. Encouraging the learners to reconcile seemingly unrelated images through investigating their context involves the learners in an internal negotiation of meaning about the term in question. This investigation leads to a deeper understanding of the term.

This heuristic approach is particularly useful when using Voca to learn abstract terms that are not easily captured with images. When the learner is willing to take the time to investigate why a particular image showed up in a search for a certain abstract term, they will often discover a link between the imagery and the term that was not readily apparent without the image’s metadata. Once the link is discovered, however, the learner’s understanding of the term is reinforced. For abstract terms, the key to relating the image to the term is in the image’s metadata. However, sometimes it is simply seeing the common theme that emerges from a set of images that clarifies the meaning of a term.

Figure 4. Voca output of simpatico
For instance, understanding of the terms simpático (cute, nice, pleasant) and antipático (mean, unfriendly) is easily enhanced by the overall impression one is left with when viewing the images returned as a whole, as illustrated in Figure 4.

ISSUES

The dynamic inclusion of content from multiple sources does not come without a variety of challenges and issues that need to be addressed in order to ensure the best possible experience for the learner.

One immediate issue with using these authentic materials is ensuring that the input presented to the learner is at the appropriate level. Creating a tool that would simplify materials on the fly was well beyond the scope of this project. As a result, it was decided that materials that were created with an intermediate level language learner in mind would be used as the primary verbal input. An additional and very persuasive reason for selecting these materials was that they satisfied the need that the corpus be pedagogically relevant (Braun, 2005). The Notes in Spanish podcast was selected in part because it covers the topics that intermediate learners typically encounter in classroom instruction. Unfortunately there is not a method by which the language presented in the image metadata can be simplified. However, because this input is hidden from learners unless they themselves access it, and because learners receive level-appropriate input in the initial gloss, the complexity of the language in the image metadata need not preclude the use of this tool.

Another challenge that accompanies relying on external materials is that it is difficult to filter the material to ensure that only relevant materials are returned. Because this tool makes use of materials that other people upload, and because new images are uploaded continuously it is difficult to control exactly what images, with accompanying text, are presented to the learner. This is best illustrated with the following example. When a search for natación (swimming) is conducted in Voca, the resulting gloss is straightforward and helpful, with an accurate translation and images of people swimming. However, when querying nadar (to swim) the resulting gloss offers an accurate translation, but may confuse the learner with a series of portraits of a man whose last name is Nadar. It is fairly common for each resulting gloss to return both a number of useful and related images and a number of images that are either unproductive or counterproductive in reinforcing the meaning of the term.

Yet another issue arises when the materials from the three sources present incongruous information about the meaning of the term. Sometimes this discordant output is a result of poor filtering, as mentioned previously. Sometimes, however, it reveals multiple meanings or usages of a term and can be quite useful. For example, a query for the term puente (bridge) returns an accurate translation and images of bridges. But the KWIC/audio output reveals a different use of the term related to Spanish holidays. Specifically, puente is used to convey the meaning of a holiday falling the day before or after a weekend, or a three-day-weekend. Another example of this issue is the term simpático, which Google translates as sympathetic. The images returned from Flickr (see Figure 4) include several puppies, a kitten, a little girl and other images that should
lead the learner to understand the term as meaning *cute*, *nice*, or *pleasant*. Both uses are legitimate and are represented in the gloss. However, without proper guidance the seemingly conflicting information can be confounding and frustrating for learners.

The ideal method of solving most of these challenges would be to involve both learners and instructors in assessing the materials returned in the gloss. Users could take an active role in improving the glosses by rating the images returned in terms of usefulness and relevance to the term. Upon searching for a term Voca would first return the materials that were rated by Voca users as highly relevant and helpful and would overlook the materials rated poorly in favor of new materials.

Finally, there is no function built into the Flickr API for requesting materials in any specific language. As a result, if the queried term happens to have an exact cognate in another language, Voca is likely to receive materials in languages other than the target language. As it is now designed primarily for use with Spanish, Voca frequently returns images that are described in Portuguese or Italian. One possible solution to this problem would be to run every returned image through a process that identifies the language of the metadata and filters out non-target language materials.

**CONCLUSION**

While there are certainly some challenges that need to be overcome, Voca shows great potential as an engaging language learning resource. Voca provides a useful vocabulary learning tool while at the same time exposing learners to authentic materials and involving learners in a heuristic approach to language learning. Finding ways to exercise more control over the learner input, while keeping the dynamic aspect of the gloss will make the tool even more useful.

Development of Voca is ongoing, and several possibilities for improvement and expansion are being explored. As previously mentioned, user input (a key component of Web 2.0), if properly implemented, could greatly increase Voca's usefulness. The output, both in terms of the graphical interface and the language output, need to be further refined based on data gathered from learner use research. The possibility of a companion tool to perform a simple analysis of texts and identify keywords to gloss is also being explored. All of this development must be guided by formative evaluation, consisting of feedback from faculty and students as well as research into actual learner use.

Voca has not yet been tested in a classroom setting. It is the developer’s hope that with the collaboration of the Spanish faculty at Grinnell College, it will be used in intermediate and high-intermediate level courses to enhance the texts that students are required to read. Key words of the texts will be linked to Voca glosses and the ability to perform Voca searches will be presented alongside the text. After this first deployment in the classroom, the process of evaluation can begin; this is the next step in developing Voca into an effective resource for language teachers and learners alike.
ENDNOTE

1 Notes in Spanish (Curtis & Diez, 2006) is available for all levels of learners at http://www.notesinspanish.com. Notes in Spanish is used in this project with permission.

REFERENCES


