

Talking Around Technology:  
The Affect of Spanish Language Websites on Students Language Choice

Francisco J. Herrera Jr.  
University of California, Los Angeles  
Email: fherrera@ucla.edu

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### **Abstract**

This study set out to examine how introducing technology into Spanish instruction, specifically using Spanish language websites, as part of the social science curriculum in a 2<sup>nd</sup>/3<sup>rd</sup> mixed-grade bilingual classroom would affect students' language choice. Students utilized websites as part of their social studies curriculum on the ancient Mayan civilization. Students were surveyed on how they make use of computers and the Internet at home and at school. The study documented students' language choice while they utilized Spanish language websites as a data-gathering tool on the Mayan culture during Spanish instruction. Students were video and audio taped as they worked in pairs exploring the Maya websites. Analysis of discourse, survey, and observational data indicated that the websites encouraged discussion on the topic of the Mayan culture, with the majority of student discourse in English, for both English and Spanish dominant students. In addition, the Spanish language websites did serve to prompt students to switch between languages, most often from English to Spanish, in discussing content from the websites on the Maya. As bilingual education sometimes leads to a mixing of the two languages, identifying code-switching that may occur in bilingual classes, may aid teachers in making use of these language strategies in their curriculum. It may also be the case that Spanish language websites can serve as a supplement to bilingual curriculum, by fostering second language discourse for multilingual learners.

## Introduction

As technology is becoming ever more present in many classrooms as an integral component embedded across curriculums, educators in area of second language acquisition have begun to successfully implement technology into their schools and in their curriculums, primarily in the content areas of science, math and social studies. More recently technology has once again been looked at as a novel way to capture students interest and aid students in the area of second language acquisition, as educators begin to utilize technology as a teaching tool in bilingual programs (Bishop, 2000). For example, teachers of English learners are finding novel and creative ways of the using the technology they have available to them, to aid their students, by using computers to capitalize on student interest in this medium as both a motivational and learning tool which allows for student, peer and teacher interaction around computers (Meskill, 2005). As a result of such interest in using technology in second language acquisition, studies have focused on building students vocabulary, word translations, reading comprehension, and listening comprehension. Such research has found success using multimedia in aiding students learning of a new language (Plass, Chun, Mayer, Leutner, 1998; Jones & Plass, 2002).

Second language acquisition (SLA) theory has long held the notion that students require exposure in the intended second language from a varied of sources and from a variety of communicative contexts such as home, school and society. In fact research has shown that it takes about 5,000 hours of second language instruction to produce academic adequate fluency and academic literacy in the second language (Carey & Crittenden, 2000). Thus, students need the opportunity to practice and develop the language skill's they have or are acquiring through sustained discourse with others through meaningful communicative activities. Research has shown that children use greater complex language and employ communicative skills such as turn taking when collaborating on computer activities (Van Scoter, Ellis & Railsback, 2001). Computer programs that have been somewhat successful in second language acquisition are those that allow for negotiable outcomes of conversational discourse (Young, 1988). That is, giving students the freedom to explore and engage in tasks and activities that they themselves find

meaningful and are open-ended enables students to take control and use computers as a cognitive tool, which when these computer activities are solely teacher-controlled and curriculum-driven, without student control, have been shown to be less effective in aiding students knowledge representation (Jonassen, 1996).

Using technology specifically computers and the Internet, which can allow for exposure to content in a variety of languages through websites that contain prose in the language of acquisition, may allow for student discourse in the target language. For example, this would allow both English and Spanish dominant students to work on the same activity using the same Spanish language websites with fellow classmates while communicating with each other in Spanish and thus having the opportunity to communicate, collaborate and exchange ideas with peers through the social facilitation of computers (Wild, 1995). This would theoretically provide group discussions between all students and allow all students the opportunity to construct and negotiate their Spanish and English language knowledge in a social context.

With research demonstrating that bilingual children often switch between languages in conversations with familiar adults, primarily with adults who also have some knowledge of both languages, it might also be the case with familiar fellow students who had been together for several years in the *Learning in Two Languages* program. Therefore, the Spanish language websites may lead to prompting student's Spanish discourse and or code-switching between languages.

Code-switching is the alternation of two languages (e.g., English to Spanish or Spanish to English) within a single discourse, sentence or constituent (Poplack, 1980). Code or language switching most often occurs with another bilingual person (Crystal, 1987). Research has indicated that code switching can provide a linguistic advantage rather than an obstruction to communication in that it has the ability to supplement speech. For instance when used due to an inability to express oneself in the non-dominant language code-switching can allow a speaker to convey attitude and other emotions, which can allow an individual to express solidarity with a particular social group. These notions suggest that bilingual speakers use code switching as a socio-linguistic tool, (Crystal, 1987).

Therefore, in this study I explored students' language use including instances of code switching during independent Spanish Study by documenting the frequency of occurrence by both Spanish dominant and English dominant students and to what role that the learning environment (e.g., Spanish language websites, peer interaction, etc.) played on student's use of their two languages in order to understand how self-directed activities utilizing Spanish language websites influences student discourse. Thus, I examined students' language choice (i.e., Spanish, English, or code-switching) with both Spanish dominant and English dominant students while they engaged in a short-term WebQuest, which utilized Spanish language websites during students' investigation of *The Maya* as part of their social studies curriculum during Spanish instruction (see Marzano, 1992 for detailed description of a WebQuest).

## **Method**

### *Participants*

A total of twenty-four (n = 12 boys, n = 12 girls) second and third grade students in a West Los Angeles elementary school participated in this study. Grade level distribution consisted of twelve students (n = 5 girls, n = 7 boys) at the third grade level and twelve students (n = 7 girls, n = 5 boys) at the second grade level. The students ranged in age from 8-10 years old with a mean age of 9 years old (SD = .68). In terms of the classroom composition, 71% of the students were Latino, 17% were mixed race, and 12% of the class was Caucasian. The majority of the students (71%) were either bilingual or had Spanish as their primary language.

### *Procedure*

Students explored Spanish language websites during Spanish Studies, which were pre-selected and approved by the primary teacher and researcher. All websites coincided with the current curriculum activities of the Maya unit. Students utilized these websites as a data-gathering tool during Spanish Study. That is, when students began the Maya unit, as a part of the social science curriculum, they continued their social science activities during Spanish Study by using the Internet to learn more about the Maya by exploring Spanish language websites, which pertained to the Mayan culture.

Students were instructed to take notes about information they and their partner deemed important about the ancient Maya civilization from the Spanish language websites. This is supported by research which has shown that elementary school students' discourse is much more task oriented when those tasks are centered around computers as compared to their conversations during non-computer tasks, in that when students are gathered around a computer their conversations are often directed to the problem at hand with increased participation among all group members with discourse exchanges between participants and between one user and the computer (Young, 1988).

### *Measures*

A survey was used to document students' knowledge of computers (e.g., word processing, the Internet, PowerPoint, email, etc.), as well as their computer use and habits in school and at home. The survey was presented in English and Spanish based on each student's preference (see Appendix A), with students allowed to answer in either language. Survey questions pertained only to students' experiences using computers and the Internet both at home and school. The survey was created in collaboration with the primary teacher.

Students were video and audio taped in order to capture their use of language, particularly their Spanish discourse, and for incidences of code switching as they progressed through the pre-selected websites in attempting to complete the activity, which in this case was taking notes from the websites on what students judged to be important information regarding the Mayan culture. Videotaping also allowed for documenting students choice of partners during the study based upon language dominance, (e.g., Spanish dominant and English dominant students working together versus two English or two Spanish dominant students working together).

As video coding consisted of examining transcriptions of student discourse, with a focus on instances of code-switching by students, the unit of analysis was at the student utterance level, in order to determine the frequency of code-switching and Spanish discourse. This allowed for indexing when students code-switched as well as calculating the frequency of students code-switching and use of Spanish.

To establish reliability of identifying code-switching in the data, two (40%) of the videoed session transcripts were randomly selected and coded independently by two

coders. Agreement was calculated using Cohen's kappa, which corrects the proportion of agreement by taking into account chance agreement between coders. The mean kappa was .76, which is substantial strength of agreement according to the guidelines in Landis and Koch, (1977).

Video transcript coding also consisted of transcribing and coding the data in terms of categories that identified the cluster of factors that were contributing to student's language choice. This entailed analyzing the data by looking for factors (e.g., Spanish language websites, the language dominance of their partner, etc.) that could be attributed to students' choice of code-switching or their use of Spanish.

In order to calculate inter-rater reliability on the application of the coding scheme the primary researcher and a colleague coded 20% of the transcripts. Agreement was determined using Cohen's kappa. The mean kappa was .71, which is substantial strength of agreement according to the guidelines in Landis and Koch, (1977).

As the resulting method of analysis yielded a great amount of casual factors attributed to students' language choice, I limited the inclusion and explanation of data to incidences of code-switching and Spanish discourse occurring during activities utilizing the Spanish language websites. While these codes cannot possibly capture all factors influencing students language choice, for the purposes of this study these codes were selected as they were identified by coders to be the most likely determining factors of students language choice based upon transcripts from both audio and video tapes of students working on the Spanish language websites.

## **Results**

### 1) What are students experiences using computers both at school and at home?

As this study involved students using the Internet to explore websites and the fact that this was a mixed age/grade classroom it was important to determine students understanding of what the Internet was and how it could be utilized. Results from the survey revealed that grade level was significantly correlated with understanding of the Internet ( $r = .513$ ,  $p < .05$ ) and Internet use ( $r = .447$ ,  $p < .05$ ). Based on the survey results 96% of these students reported that they enjoy using computers with 83% of students having experience using the Internet.

Data from the computer survey also indicated that 96% of students have computers at home with 75% of those students also having Internet access. In terms of how students make use of computers, both at home and school, students reported that they primarily used computers for playing games and searching. The greatest influence on students' computer knowledge comes from home and school access and use, according to students' self-reports. Therefore using Spanish language websites as a medium for fostering student initiated talk in Spanish appeared to be an appropriate curriculum supplement during Spanish Study, as students not only enjoyed using computers but also were familiar with the activity of using computers and the Internet.

2) What effect do Spanish language websites have on students' language choice as they use the Internet as a data-gathering tool during Spanish Study?

From examining video and audio transcripts of student discourse at the conclusion of the study it was found that the 326 Spanish words spoken by students only accounted for 11% of student speech while exploring Spanish language websites about the Maya during Spanish Study. Of the Spanish discourse produced by students, approximately 87% of Spanish was spoken by Spanish dominant students, with English dominant students accounting for 13% of the Spanish spoken during the activity. As one would expect this is a significant difference between English and Spanish dominant students in terms of Spanish discourse ( $M = -.75$ ,  $SD = 2.50$ ),  $t(325) = -5.40$ ,  $p = .000$ . For the majority of the activity both English dominant and Spanish dominant students spoke significantly more English than Spanish ( $M = .78$ ,  $SD = .42$ ),  $t(2923) = 100.92$ ,  $p = .000$ . Thus English was spoken approximately 89% of the time, confirming that English was the preferred language for all students.

The code-switching produced by both English and Spanish dominant students accounted for 10% of all discourse by students over the course of the week long activity. Code-switching was analyzed by examining adjacent pairs of student utterances from the beginning of each conversation segment and identifying language switches for each student throughout the transcripts for each conversation segment. Results indicated that students' code-switched from English to Spanish approximately 61% of the time, with students only code-switching from Spanish to English 39% of the time. In terms of code-switching by language dominance, Spanish dominant students had the greatest amount of

code-switching (70%) as compared to English dominant students (30%). For instance in the following example, two Spanish dominant students are working together on a computer. They begin by speaking in English and then code-switch to Spanish later in the discourse exchange.

- STU23: Where did you get this? (Referring to pictures on Student 9 desktop)
- STU9: That, I got it from a website
- STU9: Look at that, a lot of pages [to Student 23]  
(Referring to the websites bookmarked on their browser)
- STU9: This is a new page dude, this is number two [to Student 23]  
(Referring to the second website bookmarked on their browser)
- STU9: That's the wrong one [to Student 23]  
(Student 23 clicks on the wrong website)
- STU9: *¿Ahora dónde estamos?\** [Now where are we?] [to Student 23]  
(Referring to the website Student 23 clicked on)
- STU23: *mira uno, mira* [look one, look], [to Student 9]  
(Referring to the information on the website)
- STU23: *Don't quit* [to Student 9]  
(Referring to Student 9 attempting to close the website)
- STU23: Is that information or what? [to Student 9]
- STU9: *Yeah that's a lot, wow*  
(Acknowledging that the website Student 23 found has good information)

What is interesting in this example is that it demonstrates the phenomena of how when one student chooses to code-switch, their partner, if able, follows their partners lead by responding in the language last uttered. In addition Student 23 then reverts back to speaking English. Thus the question remains why did Student 9 and Student 23 chose to code-switch when they did, which leads to following research question.

3) What prompts students to switch from speaking English to Spanish or to decide to use Spanish during particular discourse exchanges?

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\* As is conventional in the literature, I will signal code-switching boundaries by a change from regular to *italicized* text.

Through examining the transcripts of students discourse as they were exploring Spanish language websites, several codes emerged from the data that could be attributed to student's language choice. These codes, which seemed to explain the influence on student's language production in a given language, were used to explain student's decision to code-switch or speak in Spanish with those students working with them. To explain students' language choice, student's code-switching utterances and Spanish discourse were categorized (see Tables 3 & 4) based on the content of their discourse exchanges.

**Table 3***Code-Switching Coding*

	Code-Switching							
	Spanish Dominant				English Dominant			
	CS → S <sup>1</sup>		CS → E <sup>2</sup>		CS → S		CS → E	
Codes**	N	Percentage	N	Percentage	N	Percentage	N	Percentage
COMP	1	5.6%	2	14.3%	0	0.0%	0	0.0%
REM	1	5.6%	3	21.4%	5	50.0%	0	0.0%
RMD	1	5.6%	0	0.0%	0	0.0%	0	0.0%
SD-ED	0	0.0%	3	21.4%	0	0.0%	1	25.0%
SD-SD	6	33.3%	2	14.3%	0	0.0%	0	0.0%
SLW	9	50.0%	4	28.6%	5	50.0%	3	75.0%
Total	18	100%	14	100%	10	100%	4	100%

<sup>1</sup> CS → S = code-switching to Spanish

<sup>2</sup> CS → E = code-switching to English

\*\* Codes: COMP = Describing computer terminology and/or computer actions; REM = Remembering to speak Spanish; RMD = Reminder to speak Spanish; SD-ED = Spanish dominant student speaking to English dominant student; SD-SD = Spanish dominant student speaking to Spanish dominant student; SLW = Conversation due to Spanish language on website.

These categories comprise: reminders from teachers, teaching assistants or peers to speak Spanish (RMD), describing and/or discussing computer actions/terminology (COMP), remembering to speak Spanish (REM) and reading from Spanish language websites (SLW), in which students either read aloud directly from the websites or discussed content from the websites.

Another deciding factor that was taken into consideration for student's language choice was documenting whom students were working with at the time of the activity and whether those students were English or Spanish dominant. Therefore additional codes were created for documenting these factors influencing language choice: Spanish dominant student working with another Spanish dominant student (SD&SD) and Spanish dominant student and English dominant student (SD&ED) working together or an English dominant student working with another English dominant student (ED&ED).

From analyzing the transcripts using the aforementioned codes, Spanish language websites had the greatest effect (54 %) on students' use of Spanish and code-switching. This was especially true for English dominant students. This was determined by the fact that all discussion and speech by English dominant students in Spanish was in reading content from the Spanish language websites about the Mayan culture. Video was also examined in order to understand how students' language choice might have been affected by their choice of partners in regards to language dominance. During the length of the study, 27 pairs of students participated in exploring the Spanish language websites. Of these pairings 55% consisted of Spanish and English dominant students. In terms of students choosing partners with the same language dominance as their own, there was a significant correlation between English dominant students choosing to work together versus Spanish dominant students choosing to work together ( $r = .806$ ,  $p < .01$ ). That is English dominant students chose to work with other English dominant students 26% of the time, with Spanish dominant students choosing to work with other Spanish dominant students 19% of the time. These pairings did influence students language choice, with results indicating that English dominant students when paired together, code-switched 16% of the time, as compared to when English and Spanish dominant students worked together in which code-switching accounted for 20% of their discourse, similar to the amount of code-switching between Spanish dominant students (40%).

**Table 4***Spanish Discourse Coding*

Spanish Discourse				
Codes**	Spanish Dominant		English Dominant	
	N	Percentage	N	Percentage
COMP	6	15.0%	0	0.0%
REM	2	5.0%	0	0.0%
RMD	1	2.5%	0	0.0%
SD-ED	1	2.5%	0	0.0%
SD-SD	7	17.5%	0	0.0%
SLW	23	57.5%	6	100.0%
Total	40	100.0%	6	100.0%

Thus, as the majority of pairs differed in language dominance it may have been the case that the onus of language choice, specifically the use of Spanish, fell upon Spanish dominant students as Spanish dominant students in this study were more proficient in English than English dominant students were in Spanish. As a result, Spanish dominant students may have chosen to speak English rather than encouraging their English dominant partners to speak Spanish. It must be noted that students were not restricted to talking only to their partner. They were allowed to discuss their findings with other students and move to other groups to discuss what they had found from the Spanish language websites.

\*\* Codes: COMP = Describing computer terminology and/or computer actions; REM = Remembering to speak Spanish; RMD = Reminder to speak Spanish; SD-ED = Spanish dominant student speaking to English dominant student; SD-SD = Spanish dominant student speaking to Spanish dominant student; SLW = Conversation due to Spanish language on website.

## Discussion

This study set out to examine how introducing technology into Spanish instruction, specifically using Spanish language websites, as part of the social science curriculum would affect students' language choice during Spanish Study. It was my hypothesis that by having students participate in an activity which would involve gathering information that was in the target language (i.e., Spanish), through a medium they enjoyed (i.e., the Internet), would promote Spanish discourse between students as they worked independently from teacher assistance during Spanish instruction.

Students reported that they enjoyed the activity of exploring the Spanish language websites about the Maya, and were able to collect a great deal of information from the websites as documented in their notes. The websites did serve as a prompt for Spanish discourse and code-switching from English to Spanish, as much of students' speech in Spanish originated from reading aloud from the Spanish language websites pertaining to the Maya. In addition the websites were successful in getting students to theorize about the Maya civilization through meaningful discussions about the Mayan culture. In one exchange two students discussed interpretations of Mayan art,

*"I think the Mayans, they put a lot of texture into their paintings and like...the things they draw kind of look like fantasies."*

Thus students were able to infer a great deal about the Maya even when they could not fluently read all the information from the Spanish language websites.

To account for all student discourse, considerations such as students' language ideology, the task embedded within websites, language dominance of peers in groups, are some of the factors that may need to be taken into account in order to produce cooperative learning environments that allow for effective communication in group talk around computers (Wild, 1995). In addition it cannot be expected that the websites alone be the determining factor in promoting student discourse, with respect to language choice. Past research on computer-based activities, has demonstrated that a learner-centered approach, rather than a technology-centered approach can be the most effective in multimedia learning (Clark, 1994; Jonassen, Campbell, & Davidson 1994; Mayer, 2003). Wild (1995) concludes that considerations of the language expected of students in

computer-based activities should be anticipated in order to foster “higher levels” of language use by students, which would be of even greater importance in designing tasks involving technology where second language acquisition is desired.

Several limitations in this study can be possible avenues for future research. As data was collected at the end of the school year, students were not formally interviewed after the completion of the study. Interviews could have shed light on why students chose to speak English more so than Spanish and what about the websites interested the students and prompted them to speak Spanish. It may also be the case that at this age (7-9 years old) students require more structured activities with teacher oversight to remind students to speak Spanish during Spanish instruction.

In conclusion, results suggest that incorporating technology, such as the Internet, into Spanish instruction, by capitalizing on students’ interest in this technology, did allow for students to successfully gather information and prompt discussion on the topic of the Maya. This supports research that computers can facilitate collaborative work, increase motivation, learning and problem solving which can promote discussion and exchange of ideas between students (McLoughlin & Oliver, 1998). It may be the case that using Spanish language websites for encouraging Spanish discourse may be aided through more structured activities that require Spanish discourse from students, and which take into account students’ language ideology, by providing students with opportunities to practice and develop their second language and/or maintain their native language. In addition, as students at this age (7-9 years old) may still be developing their language ideologies, students may need reinforcement from teachers, teaching assistants and the school community as a whole that acquisition and maintenance of Spanish is valued not only during Spanish instruction but at all times across all content areas.

Future analysis will also examine students note taking in conjunction with the video data of the websites students chose to utilize for their reports. Questions remain as to the characteristics of the websites, which influenced student discourse in terms of language choice and discussion of information relevant to the WebQuest involving the exploration on the topic of the ancient Maya civilization. Better understanding of the websites contributions to peer discourse may aid in helping educators how to best utilize multilingual websites for second language learners.

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**Appendix A**

**Computer Survey<sup>\*\*\*</sup>**  
**We are Learning in Two Languages**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Do you like to use computers? Why/Why not?
2. How do you use them (at school)?
3. Do you have a computer at home?
4. What kind of computer is it?
5. How do you use it?
6. What do you like to do on your computer?
7. What is the Internet?
8. How do you use it?
9. Is there something new you would like to learn this year, using computers? What, why?
10. Is there something you learned about computers that you would feel comfortable teaching someone else? Explain.

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<sup>\*\*\*</sup>Computer Survey created in collaboration with the primary LTL teacher.