

# Spanish Language Topics Course with an Emphasis on Construction Safety

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The end goal of this research-based project is to evaluate whether a Spanish course with an emphasis on construction site safety would be beneficial to Cal Poly's Construction Management (CM) program and how it might also benefit the industry. The research orchestrated will be to decipher whether or not there is even a need for this type of class to be included into the curriculum. Along with data research, two separate surveys have been conducted, one administered to the Construction Management student population and the other to industry professionals. Furthermore, George Healy, a fellow CM student, is working on the deliverables such as a course syllabus and assessments of the proposed class. After analyzing the data, discussing the need with professionals, and referring to my own experiences, I have concluded implementing a Spanish topics course with an emphasis on construction safety will be worthwhile. The purpose of this course would be not only for students to learn Spanish as it relates to construction, but to also realize real world situations where a language barrier can impact a jobsite and more importantly, the integrity and safety of a project.

**Keywords:** Spanish, Construction, Safety, Language, Communication

## Introduction

Since the beginning of time, the construction industry has been one of the more dangerous lines of work. Even with all the current safety standards today, thousands of people in the United States still bear serious and sometimes fatal injuries while in the workplace. In 1971, the Occupational Safety and Health Administration (OSHA) was established in order to keep the United States' labor force safe. In 1970, it was estimated that 14,000 people were killed on the job. Since then, the numbers of fatalities has dropped significantly to 4,693 people in 2016. Of all those deaths in 2016, 21.1% were in the construction industry alone. Clearly from these statistics, construction work continues to be a leading industry of fatalities as it makes up more than a fifth of occupational deaths per year. These fatal injuries can be linked to many factors though it may be hard to pin point the exact causes on a case-by-case basis. OSHA does however call out the "fatal four" leading causes of deadly injuries in the construction industry. These four categories are falls, struck by object, electrocution, and caught-in between and they accounted for 63.7% of construction related deaths in 2016. If the industry can eliminate these leading causes, 631 lives could be saved in the world of construction every year.

As mentioned previously, it is hard to tell what exactly happens in each fatal injury scenario. Taking a step back from the numbers and looking at the "fatal four" with a

different mindset let's now think about possible prevention strategies. For falls, wet surfaces, unstable structures, and lack of fall protection are some of the root causes for these types of injuries. A few things to combat these potential hazards are the use of proper equipment, thorough training and proper planning to keep those working at elevated structures safe. These fall prevention plans are more up to the individual to abide by when compared to the other three areas. For example, it can be as simple as slipping off a wet roof. On the other hand when looking at the remaining three categories, being struck by object, electrocuted, or caught-in/between is usually a product of multiple people working with or around one another and something going awry. These types of accidents often happen in a split second and being able to communicate with one another at a moments notice is crucial. Electrocution could be a result of miscommunication on whether or not a wire is hot. Being struck by a heavy piece of machinery because the operator did not see a fellow worker. If the person in danger of being struck only spoke Spanish and an English-speaking worker sees the imminent threat, being able to yell instantly in Spanish could be the difference of life and death. The point being made, if not evident already, is that a majority of hazards on a jobsite can potentially be prevented if all workers involved are communicating clearly, quickly, and efficiently. Furthermore, creating an overall safe environment requires communication amongst all workers, management, visitors, inspectors etc. In conclusion, communication is vital in daily hazard prevention and must not be overlooked.

### *A Shift in California*

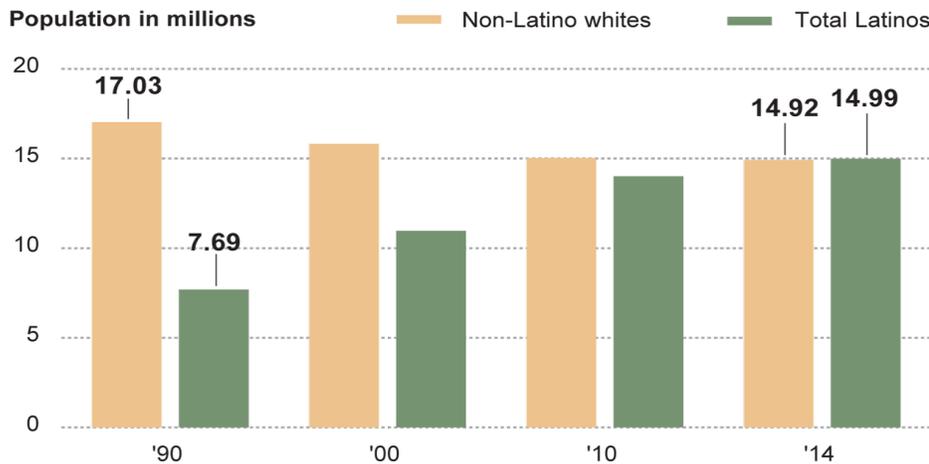


Figure 1 – Population of Non-Latino Whites and Latinos in the state of California from 1990-2014.

Source – LA Times and the Census Bureau (<http://www.latimes.com/local/california/la-me-census-latinos-20150708-story.html>)

It is clear that the growth of the Latino population has almost doubled from 1990 to 2014 while the white population has continuously decreased (see figure 1). Additionally, “State

demographers project Latinos will account for about 49% of Californians by 2060” (Panzar J. 2015) With the population of Hispanic people increasing, so does the commonality of the Spanish language that this group of people speak. In contrast, the use of the English language will become less and less common, even though it is the official language of the United States. One might ask, why doesn’t the Hispanic population learn English? One reason might be because they don’t need to in their lines of work or maybe they can’t afford schooling. Whatever it is, with such a massive and growing percentage of Hispanic people in the state of California, Spanish will never go away. In Figure 2 below, it is evident that more than a third (36.4%) of the workforce in California is Hispanic which also means, under the assumption that all Hispanics are fluent in Spanish, more than a third of the language spoken on job sites is Spanish.

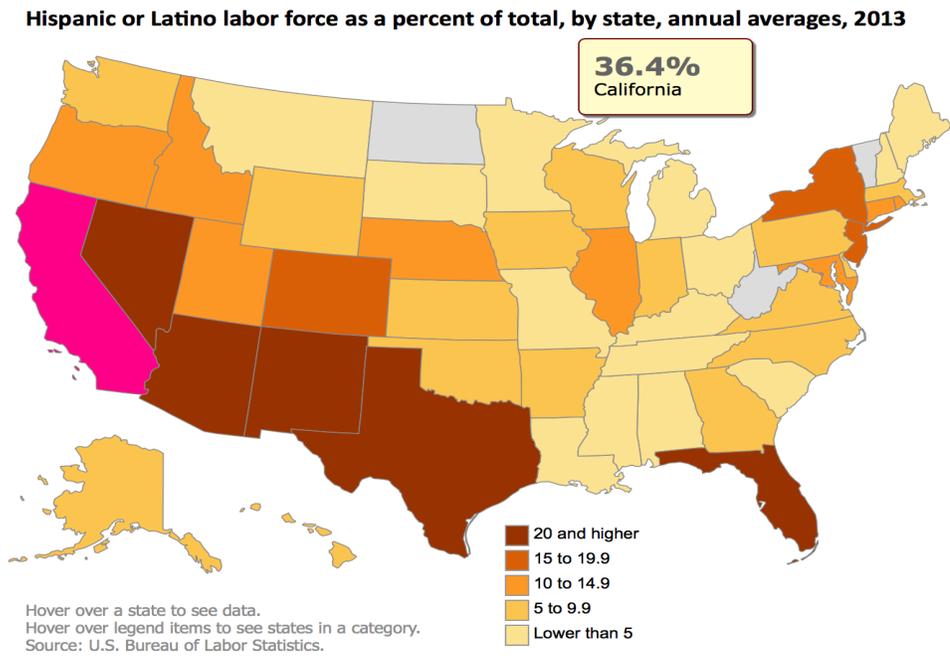


Figure 2 – Percentage of Latinos in each state’s workforce for the year of 2013

Sources – Dimer, B. (2017). A Recommendation to Implement *Spanish in Construction* Topics Course. 1. – Bureau of Labor Statistics ([https://www.bls.gov/opub/ted/2014/ted\\_20141001.htm](https://www.bls.gov/opub/ted/2014/ted_20141001.htm))

### *Language Barrier Risk*

Now it is time to talk about the other two thirds of the workforce that speak English and how that affects the occupational realm of everyday life. People often overlook the simplicity of a common language between their peers whether that is at work, in school, or even at home. A language barrier brings unwanted complications and uncertainty to any situation. These complications and uncertainty have no place on a dangerous construction site. Any type of management of a company needs optimum productivity to be successful which only comes from the entire team working hand in hand with one another. Also, the safety and well being of its employees and those that a company works

with should also be a top priority. Everyone wants to make it home at the end of the day and a language barrier between workers puts that in jeopardy. As seen in Figure 3 below, unfortunately the language barrier heavily affects the Hispanic worker population, especially foreign-born workers. According to the Bureau of Labor Statistics, “Hispanic or Latino workers accounted for 19 percent of all fatal occupational injuries in the United States in 2015” and of the 903 Hispanic or Latino deaths in 2015, 605 of the fatal injuries were foreign born Hispanic or Latinos. Clearly, the language barrier and unfamiliar environment for these foreign people’s put them at a huge disadvantage not only to succeed, but also to stay safe.

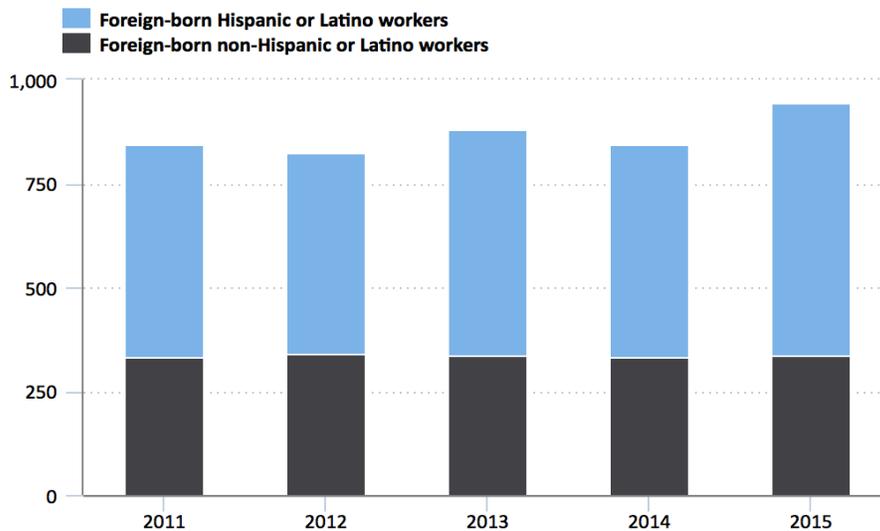


Figure 3 – Fatal injuries involving foreign-born workers by Hispanic or Latino Ethnicity, 2015

Source – Bureau of Labor Statistics (<https://www.bls.gov/iif/oshwc/cfoi/hispanic-or-latino-fatal-injuries.htm>)

### Methodology

Once again, the purpose of this senior project is to analyze whether implementing a Spanish course with an emphasis on construction safety would be beneficial for Cal Poly’s Construction Management program. Along with research previously discussed, two different surveys were conducted in order to find the voids in the industry and schooling. One survey was created for industry professionals to give their opinions on the subject and as will be explained, was very insightful due to the many combined years of experience. The other survey was directed to current construction management students because they are the ones in the position to actually take the proposed class. Lastly, my partner George Healy is developing a class syllabus along with other requirements to go hand in hand with my research. Together we will be able to provide the reason and structure for this exciting new course.

### Survey

The most reliable resource that could have been used for this project was to go directly to the people who are in the industry and studying to eventually enter the construction industry. In regards to the industry professionals, they were first asked what position they held in their respective companies in order to gauge what their everyday tasks and experiences might be. The next question ranked factors of safety on a jobsite and being only the second question, they were not exposed to anything about Spanish, which removed any bias for that particular question. The next two questions were to gain a sense of their experience with the Spanish Language. To finish up the survey, they were asked if they think this proposed Spanish course would be beneficial for the industry and current students. Also, an optional comment box was available for any comments or concerns and this turned out to be very insightful.

Now for the student survey, a background question was posed to gain a sense of what year in school everyone was. In order to be able to compare parts of both surveys, students were asked to rank factors of safety on a jobsite. Again, the students were asked about their knowledge and experiences with the Spanish language. Next, the students were asked a few questions more directly about their interest in taking a Spanish course, the material they would want to focus on, and how beneficial they think the course might be. Something to add, the student survey questions were aimed more for the class itself and would benefit my partner George since he is developing the curriculum. The industry questions were directed toward finding the reasons why the class would be beneficial for the greater scope of the industry.

### Results

There were 45 responses to the industry survey and 37 to the student survey. Lets first take a look at the industry survey and later compare student to these results. To gain a sense of who actually took the survey, of the 45 responses, 14 were project managers, 5 superintendents, 5 project engineers, 4 vice presidents, 5 presidents/CEO's, and the rest random positions. When asked what the most important factors of site safety were out of a scale of four, communication scored 3.16/4 and training 3.13/4 while proper equipment and site logistics scored 2.07/4 or less. Following that, when asked about their familiarization of the Spanish language, 22.22% were pretty or very familiar, 60% were kind of familiar, and 17.78% were not familiar at all. The succeeding question was about how often these people experience a language barrier in the workplace and these answers were crucial for the purpose of this project, please see Figure 4 below.

ANSWER CHOICES	RESPONSES	
Yes, at least once a day	13.33%	6
Yes, at least once a week	17.78%	8
Yes, at least once a month	40.00%	18
No, never	28.89%	13
<b>TOTAL</b>		<b>45</b>

Figure 4 – 45 Industry survey responses to the frequency of language barriers experienced in the workplace (Survey Monkey Survey Analysis)

As seen in Figure 4 above, almost 70% of the participants experience some frequency of a language barrier in the workplace. Diving deeper into this question to figure out what positions are experiencing the language barrier daily, one was a superintendent, two were project managers, and three were project engineers. On the contrary, of the 13 responses that answered “No, never”, all 13 were persons higher up in management except for one superintendent. The next question deals with the opinions of the proposed curriculum itself and whether or not it might be beneficial for students and the industry. Of the 45 responses, 26 thought it would benefit students and the industry, five for only the students, three for only the industry, and 11 for neither. The opposing responses in fact gave some great insight that will later be explained. However, of those 11 responses, five never experience a language barrier and the other six only experience the issue once a month.

Moving on to the student survey and again there were 37 responses and of those there were nine first years, five second years, 12 third years and 11 fourth/fifth years who participated. The first question, which was duplicated from the industry survey, was about their thoughts on the most important factors of safety on a construction site. The results were almost identical to industry responses with training and communication being the two most important aspects of site safety. Again like the industry, students were asked about their familiarity with the Spanish Language and 37.83% were pretty or very familiar, 48.65% were kind of familiar, and 13.51% were not familiar at all. Likewise, the following question was geared toward the frequency of language barriers while at school or the workplace. Compared to the industry results, there was a higher percentage of about 84% of students who experienced a variety of occurrences of language barriers while working or at school, see Figure 5 below.

ANSWER CHOICES	RESPONSES	
Yes, at least once a day	27.03%	10
Yes, at least once a week	13.51%	5
Yes, at least once a month	43.24%	16
No, never	16.22%	6
<b>TOTAL</b>		<b>37</b>

Figure 5 – 37 Student survey responses to the frequency of language barriers experienced in the workplace or at school (Survey Monkey Survey Analysis)

Again to get away from experiences and shift to opinions and desires of the students, they were simply asked if they would take a Spanish course with an emphasis on construction safety and 67.57% said they would take the course. Lastly, students were asked to give their opinion on how beneficial the proposed course might be for students and 30 of the 37 thought it would benefit CM students.

1. Safety communication is the most important thing done every day. Being able to understand key words and phrases to bridge that gap would be a huge help to companies and individuals. – Project Director
2. A large portion of our workforce is made up of Spanish speaking individuals. Many are scared to say they can't speak English and therefore do not get the proper training. – Sr. Vice President
3. Proper communication is most important element of safety and if there is a language barrier, full understanding of safety requirements is incomplete. – Project Executive
4. The construction team always benefits from a deeper appreciation of the people performing the work. This includes language, culture, economic demographic, etc. We manage risk. Labor may be the most risky part of the equation. – Project Manager
5. To be employed in America, English should be the most important tool. If I wanted to be employed in Mexico, they wouldn't accommodate my lack of Spanish. They simply wouldn't hire me. - Principal
6. From someone who is a native Spanish speaker, there is a huge difference between Jobsite Spanish and regular Spanish. Spanish that is thrown around on the jobsite is a mix of slang and fueled by foul language. – Second Year Student

### **Conclusion**

Through all the research on the issues with Hispanic Speaking workers, language barriers and the responses from the surveys, it is clear that there is almost a void, a missing piece, which affects the lives of millions of people in the construction industry. The growing number of Hispanics in California is something that the industry cannot get away from and adapting to that fact is necessary in order for construction to keep thriving in the future. Looking at these issues through a humanitarian lens, it is not fair for one group of people to be suffering more than any other group just because there are different languages spoken. Free response number six shown above discusses how someone would not be hired in foreign country if they did not speak the native language. This statement holds validity to the extent that there are enough native workers to perform the work. Recall Figure 2 where over 36% of California's labor force is Hispanic or Latino. This is a huge portion of the labor force that is constantly in greater danger and would be unemployed if they only spoke Spanish. Another argument against the purpose of this project is how the curriculum would not be sufficient to attain the end goal of becoming more bilingual and using that knowledge to increase the safety of a jobsite. Free response number seven and eight discuss one the lack of time permitted would be insufficient and two, the material wouldn't pertain to the reality of a jobsite. These two facts may be true but this project is just the first step to bridge the gap of the language barrier. Every solution starts as an idea and the implantation of this course is purely the first attempt here at Cal Poly.

Furthermore are the results of the surveys and significant takeaways from them. The survey did a fantastic job at showing the majority of both sets of participants running into

some frequency of language barriers. One of the biggest comparisons between the industry and the students was indeed the frequency of dealing with language constraints. Almost 70% of industry experienced language barriers while the student's responses came to 85%. All other questions resulted in similar percentages on similar question except this one. Here we can see a greater difference in the age groups. To further highlight the issue, there were five project engineers who took part in the industry survey. The project engineer position is known to be an almost entry-level position right out of college, especially for Construction Management students who graduate from Cal Poly. All five project engineers said they experience language barriers at work and three of those five deal with it on a daily basis. There seems to be a correlation with the younger participants and the higher frequency of language barriers. Pairing this with the growing number of Latino and Hispanic populations over the years, the gap between the Spanish and English language is evidently growing.

For older generations in the industry the Spanish language barrier has possibly not been as much as a factor or has been worked around. Today and in the future, especially in California, the language barrier is only going to continue to grow and if not dealt with, will become a grander issue in the construction world. This proposed course is one way to combat this language roadblock and will hopefully be the stepping-stone in encouraging students to become bilingual. Acknowledging a problem is the first step to a solution. Given the inherent risk faulty communication creates on any jobsite and the potential consequences to both human life and company success, it is incumbent upon those currently in the industry and those who are joining to resolve the issue quickly and not "kick the can down the road" any longer.

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