ADA Code Education in the Construction Management (CM) Curriculum

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The Americans with Disabilities Act Standards for Accessible Design is becoming an integral part of construction. On many jobsites, recent graduates may not have enough knowledge to adequately catch and fix ADA compliance problems before they become a critical issue. With nearly all students and graduates going to work on projects governed by this code, knowledge of these codes, where to find them, and how to apply them is essential for graduates. Construction Management students believe this information would be very valuable to learn in school, and critical information to help them with their careers when they enter the industry. Some core lab courses do offer ADA code information, although nearly two thirds of students have never had any formal education on ADA design during their time at Cal Poly. Even those who have had formal education on ADA building codes find the curriculum in the Construction Management Department to be very ineffective in teaching it. This lack of information in the curriculum could be solved by either adding new information into the current core classes offered, or adding a dedicated special topics course to cover the lacking information. Due to only minor support for a special topics course, it would be most efficient to implement more ADA Code information into the current lab curriculum. Student's preference in information in the curriculum centered around knowing common, major code issues to look for in their careers.

Key Words: Construction Management, Curriculum, Education, Cal Poly SLO, Americans With Disabilities Act

Introduction

In addition to the local and federal building codes, all new construction is subject to the Americans With Disabilities Act Standards for Accessible Design. These guidelines lay out the standards to which buildings must be constructed to allow equal access to those with disabilities. As these building codes get more fleshed out, new construction must be built to a higher standard to accommodate these changes. Buildings not built to code are subjected to lawsuits, and the contractor will be required to go back and correct deficiencies in the project. In addition to the correction of these violations, the lawsuits can be very burdening to an owner, with penalties up to $55,000 for the first violation, and up to $110,000 for any violations following (United States, Department of Justice, Attorney General). Project engineers coming out of construction related university programs should know basic ADA codes to be able to spot flaws in drawings and construction on-site to provide relief for contractors working on increasingly litigious buildings. Without this knowledge of codes, and in turn their violations, deficiencies in construction and design are bound to occur. Increased ADA code knowledge by students and graduates of the Construction Management program will make them more hirable and better equipped to join the construction workforce.

This paper is purposed to research the level of education on the ADA Standards for Accessible Design Cal Poly Construction Management currently has in its curriculum, its effectiveness in teaching it, and explore options to increase this knowledge through supplementation of the curriculum. Through research, the following information will be gleaned: student knowledge of ADA codes, Cal Poly Construction Management's effectiveness at teaching ADA Code information, student interest levels in either introducing more ADA curriculum into current lab classes, or adding new special topics courses to the curriculum, and the type of information students would like to learn should the curriculum expand to include this information. This knowledge will be used to determine the best strategy to efficiently increase student knowledge.

Literature Review

ADA Standards for Accessible Design

The ADA Standards for Accessible Design are guidelines set forth by United States Access Board. These guidelines are regulations intended to ensure people with disabilities can access and use all the same buildings and features, private or public, that a non-handicapped person can. These guidelines, as set forth in the 2010 ADA Standards for Accessible Design, "set minimum requirements – both scoping and technical -- for newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities" (United States, 2010). These guidelines have been updated multiple times, with the most recent iteration coming in the 2010 guidelines. Updates will continue to the accessible design guidelines, each time requiring all buildings to retrofit applicable changes to accommodate the new code.

Construction Management Core Courses

Currently, there are seven core courses in the Construction management curriculum. These seven courses are:

1. Fundamentals of Construction Management
2. Residential Construction Management
3. Commercial Construction Management
4. Heavy Civil Construction Management
5. Jobsite Construction Management
6. Specialty Contracting Construction Management
7. Integrated Project Delivery

These core courses center around the major types of construction, aiming to teach students various Course Learning Objectives (CLO's). Each course's course learning objectives are laid out in their respective syllabus. While these course learning objectives are nearly comprehensive, all but Commercial Construction Management are lacking any course learning objectives pertaining to ADA code specifically.

Methodology

Survey

This paper's intent is to fully understand how much information there is on the ADA Accessibility Guidelines in Cal Poly's Construction Management Program, how effective this information is at teaching students, and gauging interest in adding new information to the curriculum, either in the form of extra teaching in major labs, or the addition of a supplemental special topics course. The title of this survey is "ADA Code Education in the Construction Management (CM) Curriculum" and the prompt sent to students is "The purpose of this study is to determine CM student knowledge of ADA codes, as well as student interest in implementing ADA code education in the curriculum". This survey was sent out to all students in the Construction Management Department and received a total of 26 responses. This survey asked a total of 12 questions, and takes roughly 5 minutes to complete. While this response rate is low, the majority (84.6%) of students responding to the survey were either a 3rd year or greater. This is beneficial to the survey as they have taken more classes than their underclassmen counterparts, and are thus more exposed to the entire curriculum. The survey questions are listed as follows:

1. What is your current year at Cal Poly?
2. What lab classes have you taken or are currently enrolled in?
3. How important do you think ADA knowledge is to the construction industry?
4. Have you had any formal education on ADA codes in the CM department curriculum during your time here at Cal Poly?
5. How effective do you feel the current curriculum is at educating students about ADA codes?
6. Would you be interested in having more ADA code information added to each core lab course?
7. How many internships have you had relating to Construction during your time at Cal Poly?

8. Have you encountered ADA compliance problems during your internship(s)?
9. If you answered yes to the above question, please describe:
10. Would you be interested in a special topics course dedicated to ADA codes?
11. What type of information would you like to learn in this topics course?
12. Any additional comments on ADA codes?

Results

This survey was sent out to all students in the construction management department, and the following data was collected. Shown below are select questions from the survey.

How important do you think ADA knowledge is to the construction industry?
26 responses
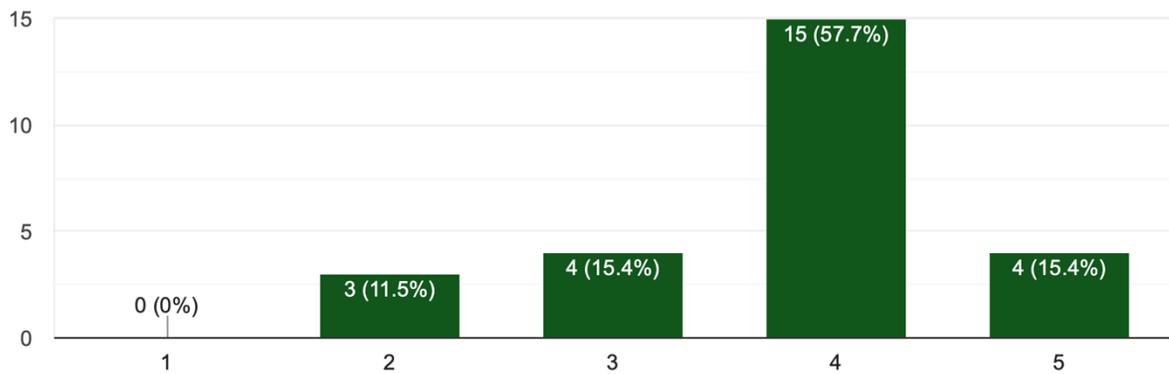
Figure 1: Importance of ADA Knowledge in Construction.

Have you had any formal education on ADA codes in the CM department curriculum during your time here at Cal Poly?
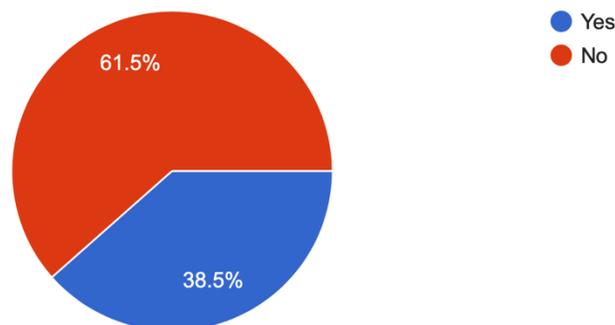26 responses

Figure 2: Student's Formal ADA Education.

How effective do you feel the current curriculum is at educating students about ADA codes?
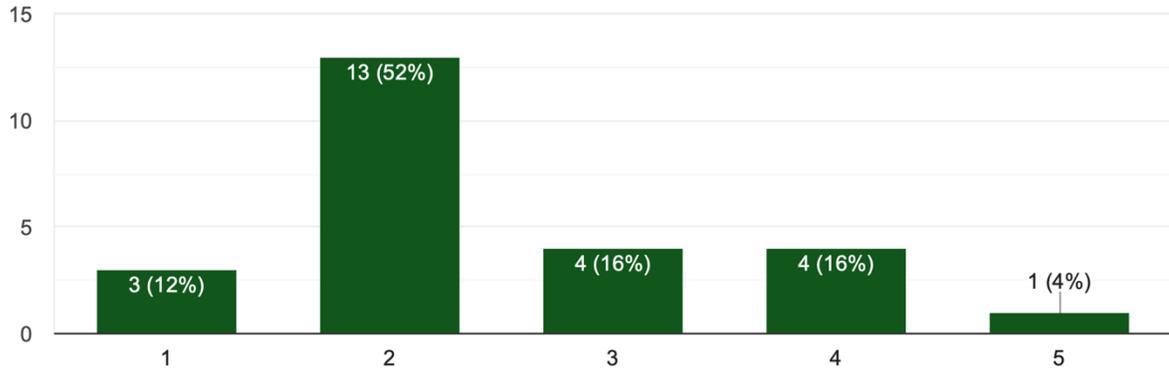
25 responses

Figure 3: Curriculum effectiveness.

Would you be interested in having more ADA code information added to each core lab course?
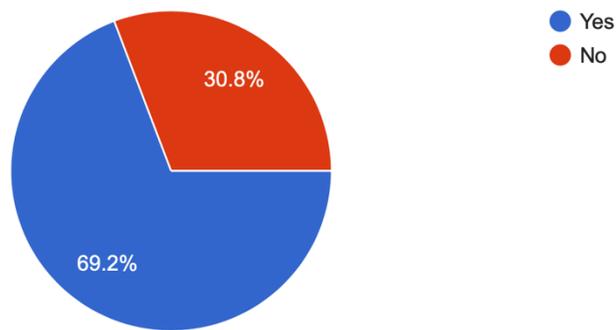
26 responses

Figure 4: Student Interest in Increased ADA Education.

How many internships have you had relating to Construction during your time at Cal Poly?
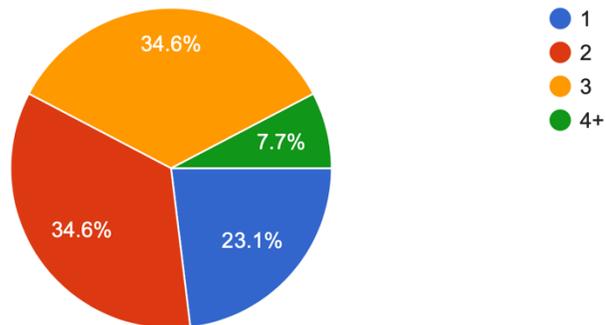
26 responses

Figure 5: Quantity of Internships

Have you encountered ADA compliance problems during your internship(s)?
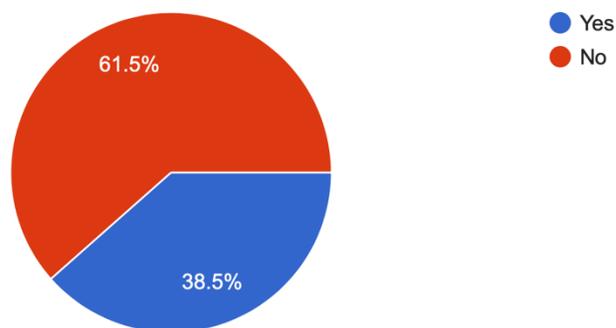
26 responses

Figure 6: ADA Compliance Issues

Would you be interested in a special topics course dedicated to ADA codes?
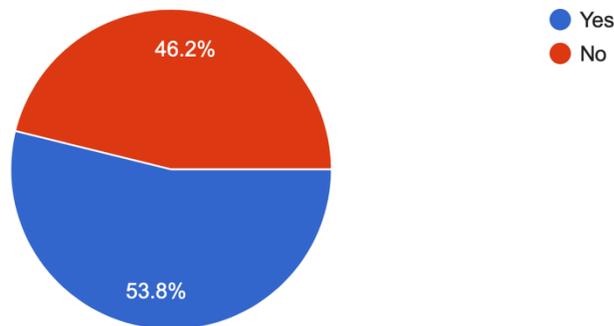26 responses

- ● Yes
- ● No

46.2%

53.8%

Figure 7: Student Interest in Special Topics Course

Conclusion

Current ADA Curriculum Effectiveness

When asked about the importance of ADA knowledge to the construction industry, 84.6% of survey respondents indicated that they believed it to be greater than 3 out of five, with five being most important. This would indicate the CM student body primarily believes they should have knowledge of ADA building when they leave school. However, only 38.5% of students reported having had any formal education on ADA building. You would believe that despite this being very important for students and in industry, the department would do a better job teaching this information in the curriculum. This is demonstrated in the students' response to the survey question show in Figure 3: Curriculum Effectiveness. The responses to this survey equals to a weighted average response of 2.38. This is showing the current curriculum is doing a poor job of teaching students these valuable skills they acknowledge they need for their careers.

If the current curriculum doesn't do an adequate job of teaching the students this information, what would be the best way to teach students?

Solutions to Increase effectiveness of ADA education

There are two main ways that ADA knowledge and education could be incorporated into the curriculum. The first method would be through the core student labs, and the second through a special topics course.

As mentioned previously, students acknowledged and understood that their education is lacking in ADA knowledge, with roughly half (53.8%) indicating they would be interested in a special topics course. While this would likely be enough students to fill a class, it would not be the most effective measure Cal Poly Construction Management could take to increase students' knowledge on these vital topics. Adding ADA code information to each of the core labs would be a very effective way to increase student knowledge, because these courses are mandatory for all students in the department.

Information to Add to Core Courses

The question on what material would be added to these courses is a difficult one. The Construction Management curriculum is already very dense and comprehensive as is, with the core classes taking up nearly 4 hours each day.

Even though there is likely not much room for ADA code education in the labs, simple skills could be taught that help students to not necessarily to learn the codes, but in their access and ease in finding the relevant ones in the literature. When asked about what information they would like to learn about ADA in their core course, most students' answers centered around the basic, common requirements of ADA. Out of the nine students who submitted an answer for the question regarding what type of information they would like to learn, six expressed their desire to learn the common issues typically found in construction. These are issues such as ramp slopes, bathroom fixture locations and clearances, and other basic issues commonly found in construction. When asked what issues they had faced in their internships relating to ADA, one anonymous student submitted "Mostly outlet location problems and countertop heights. Various other issues such as wheelchair approach as well." While these problems could be learned by teaching about most specific issues in building, there is a much more effective way. By teaching students to navigate the ADA accessible design documents and building code books, you could nearly eliminate the need to teach specific codes in the classroom, focusing only on the very commonplace items. This would allow code information currently taught to be replaced by this method. This allows students easy access to information not only about building codes, but also ADA accessible design codes, and other local building code or otherwise. Having such pertinent information in the curriculum would ensure Cal Poly Construction Management graduates are as prepared as possible when graduating from the program.

References

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