



The Influence of Internship Participation on Construction Industry Hiring Professionals When Selecting New Hires and Determining Starting Salaries for Construction Engineering Graduates

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The construction industry has experienced great change over the past twenty years due to economic conditions, the incorporation of innovative project delivery methods and an increased use of technology throughout the development of projects. In response to these changes, employers are beginning to place more emphasis on what recent graduates have to offer their companies including hands on experience within the construction industry.

Construction engineering education curricula are designed to help prepare students for open positions in the industry. Many of these curricula have little flexibility for courses that extend beyond the existing paradigm of the traditional classroom. Students must have an opportunity to apply classroom content in real world settings. Internship participation offers students an alternative way to learn as they construct their own knowledge by applying classroom content in real world applications. Some construction engineering academic programs require participation in an internship for program completion. Other construction engineering academic programs do not make participation in an internship mandatory and instead offer it as an option to the student experience.

This paper discusses findings from data collected in a survey administered to construction industry hiring professionals, including human resource personnel, company executives, project managers who field resumes at job fairs, and superintendents involved in the recruitment of new hires. The survey was created to provide a clear understanding of how internship participation is perceived within the industry, and how industry characterizes the factors that lead to a student's success. The survey collected both qualitative and quantitative data allowing participants to provide open responses as well as selection from multiple choice listings. The responses provided on the survey assisted with understanding the value industry places on the student internship experience as well as to determine the level of participation they desire within that relationship.

Introduction and Background

The construction industry has experienced great change over the past twenty years with many innovations in building materials, computer technology, project delivery and people management^{1,2}. Additionally, the state of the economy has created a more competitive employment environment in the construction industry. These conditions have made it important to maximize the amount of knowledge provided to students as well as enhancing additional skills that will help them gain a competitive advantage in the job market. The focus on relationship building and other soft skills, such as communication, have been shown to be an important quality for those entering the current workforce^{3,4}. As industry continues to grow globally there is an increased demand for graduates who possess the skills necessary to work in interdisciplinary and multi-cultural teams⁵.

Soft skills improve the development and maintenance of relationships among the diverse group of professionals necessary to complete projects. With the construction industry being nomadic in nature, the ability to develop and maintain relationships can be especially important. Students having these skills are becoming crucial in the tight economy so they can set themselves apart⁶. Along with these soft skills, employers are beginning to place more emphasis on what recent graduates have to offer their companies including hands on experience within the construction industry.

Construction engineering education curricula are designed to help prepare students for open positions in the industry. Many of these curricula have little flexibility for courses that extend beyond the existing paradigm of the traditional classroom. University construction management and construction engineering and management programs offer a curriculum primarily composed of classroom experiences, based in theory. Applying classroom knowledge to real world situations can be difficult for students as they have varying learning styles. Learning engages the entire physiology and teachers cannot simply address the intellect of students^{7,8}. Program curricula must find a way to produce students that offer more than just technical knowledge to employers.

Instructor control of the learning process is the most common teaching style of the traditional lecture classroom⁹. Students must have an opportunity to apply classroom content in real world settings. Internship participation offers students an alternative way to learn as they construct their own knowledge by applying classroom content in real world applications. Some construction engineering academic programs require participation in an internship for program completion, while others do not make participation in an internship mandatory and instead offer it as an option to the student experience.

By adjusting the pedagogy to focus the curriculum on the needs of students, educators can expose students to information determined to be essential for success, enabling students to develop a greater understanding of the material and of the significance of what is being taught. Knowledge presented in the classroom environment can be enhanced by hands on or real world experience. This is not always possible in courses, especially those without a lab component. Even where a lab component is available, the traditionally presented coursework is from the academic perspective, in a prescribed and safe environment. The research on teaching and learning strongly supports the use of experiential education such as an internship^{10,11}. The student benefits of exposure to practice as part of a curriculum are well documented^{12,13,14}. Experiential learning gives students exposure beyond the academic side of an industry, enabling a student to apply classroom material more effectively^{15,16}. Internships can help students enhance their technical skills as well as allow them to become acquainted with the profession's norms and values, processes and social dynamic contributing to the student's growing sense of identity as a professional¹⁷. While actively engaging in real work and being socialized into a community of practice while engaging in the work, learning tends to be viewed by the student as meaningful. Besides the professional self-identity that may develop through such contacts, interacting with practicing professionals helps to validate and ground concept learning in relevant ways¹⁸. Student evaluations of the internship experience have also mentioned a heightened sense of self-efficacy^{19,20,21}.

Employers benefit from student participation in the internship process, as well. Many companies have created a formal internship process, utilizing interns as active employees during their time with the company. This process offers employers an opportunity to field candidates that are a good fit within the company culture and build relationships with those candidates that can eventually become their regular, full time employees.

Research Goals and Objectives

The end goal for the collection and evaluation of the original research data was to help determine if participation in at least one internship program should be considered as a mandatory component of program completion for construction education students. This original research sought to address several issues:

1. provide students with a competitive edge and offer insight into what characteristics industry felt were necessary for student success;
2. identify the role internships played in current accredited construction focused programs and whether student participation in internships had an influence on their recognition of the characteristics, as noted by industry hiring professionals, necessary for success in the construction industry; and
3. evaluate how employers view the importance of internship participation when selecting new hires and determining starting salaries of students recruited from an accredited four year construction program.

The information presented in this paper focuses on one aspect of the original research, specifically the industry survey results with a brief discussion on how the student responses for success characteristics compare with the responses for success characteristics provided by industry participants.

Methodology

The data collection process utilized a survey methodology with each of the survey components approved by the host university's Institutional Review Board (IRB). A 14 question survey was administered to industry hiring professionals to determine what factors they believed would determine student success in the industry. This survey contained nine multiple choice questions and five open response questions. Participants in the survey were selected during the consecutive spring 2012 and fall 2012 semesters at a university program offering an accredited four year construction program which did not require internship participation as a necessary part of curriculum fulfillment. The participants served as the main hiring source for these students. They attended career fairs, submitted job opportunities to the department for posting on the student list serve, spoke to students on campus during class sessions about their work, and held informal meet and greet sessions in the construction building on campus. The persons asked to participate were limited to those employees within the companies who are directly involved with the hiring process. These included human resource personnel, company executives, project managers who field resumes at job fairs, and superintendents involved in the recruitment of new hires. Participants represented a variety of areas of employment within the construction industry. A breakdown of the industry participant's current employer classification is shown in Figure 1.

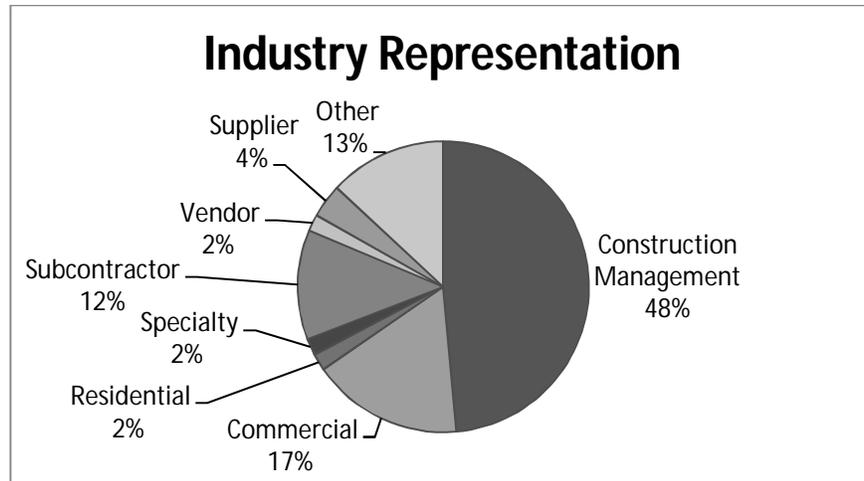


Figure 1: Industry Participant Current Employer Classification

The survey was provided in hard copy form and delivered personally to each potential participant, by the researcher. The researcher described the survey and purpose of the data collection to each of the potential participants and then left the survey with them to complete. It was the goal of the researcher to obtain as many completed surveys as possible and it was decided that a personal approach would produce the best results. During the career fairs, the researcher collected the surveys at the end of the fair. Those asked to complete the survey outside of the career fairs were provided with an envelope in which to place the completed survey and the envelope was collected prior to them leaving the university. Several of those who completed surveys noted their appreciation that the survey was not lengthy and expressed interest in the research. Many provided business cards and asked to be notified of the results. There were 110 fully completed surveys by industry participants. Data from all 110 surveys were used in the analysis.

Included in the survey were identifying questions asking about the participant's job title, years in the construction industry, number of employees at the participant's company and number of interns the company has worked with in the past. These questions were included to evaluate the validity of the responses provided. Eighty-five percent of the responses noted that more than 100 employees worked at their company. Seventy percent of the responses noted that more than 10 interns had worked with their company in the past. Based on these numbers, it was believed that the responses provided on the industry survey by the participants were valid as they had adequate experience working with and hiring interns.

The survey consisted of a mixed method approach to gather both quantitative and qualitative data from participants, using open and closed response questions. This allowed for collecting more comprehensive data. The non-experimental quantitative questions were used for descriptive and comparative purposes. The quantitative closed response questions on the survey were transferred to a Microsoft Excel sheet for analysis. The survey response sheet was set up with the number of the questionnaire placed along the left column of the sheet and the question numbers placed along the top row side of the sheet. Responses were then input into the appropriate corresponding cell. Once all information was input, the number of responses for each column were totaled and placed beneath the final row of responses. Some of the multiple choice

questions offered the participant an opportunity to select *Other* and provide an open response. These responses were not post coded and were placed in the spreadsheet verbatim.

For the qualitative data questions, responses were thematically post coded by the researcher to create primary codes used in the analysis. The most important open response question asked the participant to list the top five characteristics students needed to be successful in the construction industry. Each of the five responses were post coded and then placed under a theme within the spreadsheet. Students were also surveyed, during the same time frame as the industry participants, to determine their understanding of what characteristics were necessary to be successful in the construction industry. There were 127 students who fully completed surveys and all were used in the results. The student survey was designed differently from the industry survey design due to a more detailed data collection on the success characteristics. It also collected both quantitative and qualitative data. The qualitative responses were also thematically coded to create primary codes used in the analysis and comparison. Student responses were thematically coded first, creating 24 primary codes. Once the industry responses were thematically coded, two additional codes were added to provide representation for all the responses resulting in a total of 26 primary codes.

With the goal of improving the validity of the responses, two considerations were made during the development of the surveys. First, the use of open responses allowed participants to provide individualized responses without being guided. The goal was to collect genuine thought and understanding without limiting responses. Secondly, both the industry and student surveys collected limited identifying data which allowed for some anonymity.

Results

Industry participants were asked to identify which of the following four choices was considered the most important qualification for new hires. Responses provided were education, experience, communication skills, and having previously worked with their company. All 110 participants provided an answer to this question, however one person selected two responses. This person's response to the question was not included in the final analysis leaving 109 total responses for this question.



Figure 2: Industry Results for Most Important Qualification for New Hires

Communication skills, which is a soft skill, and work experience were the top choices, accounting for 91% of the total responses. This is indicative of the importance industry places on these two areas. Both of these qualifications can be obtained or enhanced by students participating in the internship experience. The breakdown of responses is shown in Figure 2.

Three questions were included in the industry survey which addressed the industry view on education and experience with regard to starting salary. The first asked the participant if they consider participation in an internship as work experience and offered two choices, either *yes* or *no*. A total of 110 responses were received for this question. *Yes* was selected by 109 participants, meaning they did consider participation in an internship as work experience while one person selected *no* as the response. This result indicates participation in an internship is beneficial to students in that they earn work experience. This is important since experience was selected by almost half of the industry participants as one of the most important qualifications for new hires.

The second question asked the participant if new employee hires with a college degree would be offered a higher salary than those without a college degree. This question was also closed response offering three choices: *yes*, *no*, *it would depend on (please specify)*. Those persons who selected the third option were offered a space to specify what the conditions would be for consideration. All 110 participants responded to this question. One participant selected more than one answer and therefore, their responses were not included in the analysis leaving a total of 109 responses. The majority of participants, 71, selected *yes* as the response. Three participants selected *no* as their response. *It would depend on* was selected by 35 participants with the majority of the follow up write in responses listing experience as the condition that would influence the salary. This is in alignment with the responses to the earlier question which noted experience considerably favored over education.

A third question asked participants if new employee hires with industry experience would be offered a higher starting salary than someone without industry experience. This question offered three response choices: *yes*, *no*, *it would depend on (please specify)*. All 110 participants responded to this question. One participant selected more than one answer and therefore, their responses were not included in the analysis leaving a total of 109 responses. The majority of participants, 78, selected *yes* as their response. Thirteen participants selected *no* as their response. Eighteen participants selected *it would depend on* as their response with 15 of those writing in the follow up section responses relating to the “type of experience” and “level of experience” as the condition dependent on the salary. These write in responses indicate an agreement that experience was a strong indicator of new hire starting salaries. Responses for this question were in alignment with the previous question noting experience heavily favored as one of the most important qualifications for new hires. A breakdown of these three questions is shown in Table 1.

All but one of the industry representatives surveyed agreed that participation in an internship would be considered work experience. Seventy-eight participants agreed that experience would get a new employee a higher starting salary with an additional 15 participants noting other conditions along with experience would be a consideration.

Table 1: Industry Response for Salary Determinants

	Yes	No	Depends On
Internship = Work Experience	99%	1%	-----
Degree = Higher Starting Salary	65%	3%	32% (most wrote experience)
Experience= Higher Starting Salary	72%	12%	16% (type or level of experience)

Industry participants were also asked to identify the top five characteristics they felt students needed to be successful in the construction industry. Responses were open, allowing participants to provide any unguided response they desired. There were no examples provided and included five lined spaces for participants to complete their answers. Some participants completed less than five while some participants added additional answers at the bottom of the last response area. All answers provided were included in the analysis and results of the data. Each response was thematically coded by the researcher, developing 26 primary codes under which the results would then be categorized. Once categorizing was completed, the columns were totaled to obtain the top 5 themes. The decision was made by the researcher to include the sixth top theme because only one point separated it from the theme ranking in fifth place.

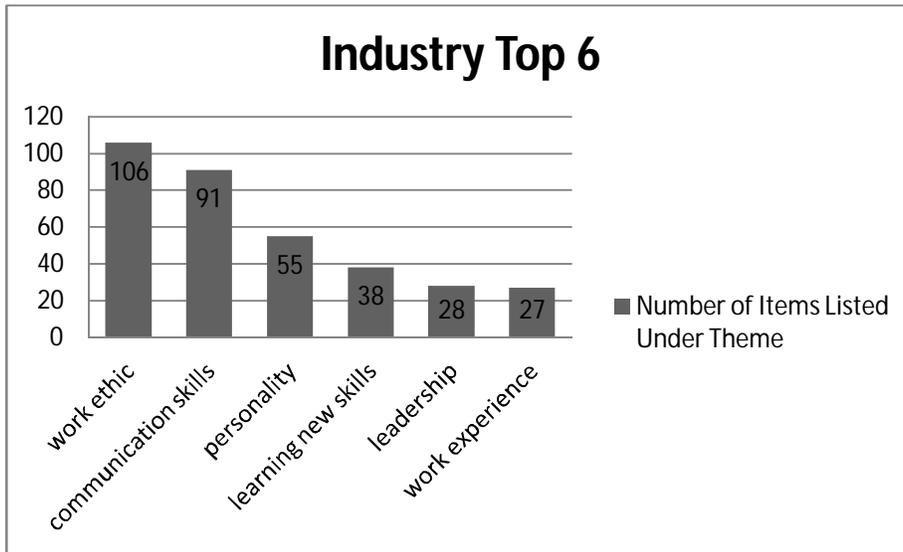


Figure 3: Industry Top 6 Success Characteristics Themes

The top 6 themes, in rank order, are shown in Figure 3 along with the number of times the theme was listed as a response. The industries top 6 themes accounted for 60% of the total responses.

The theme most often represented was Work Ethic followed closely by Communication Skills. These open responses are in agreement with the responses provided in the closed response questions discussed earlier. While a person's work ethic may be considered relative to their work experience, it is considered a soft skill. Potential employers may see a student's work experience as an indicator of their work ethic. Work Experience theme ranked sixth, behind five soft skills.

Summary

The industry professionals participating in this research identified what they felt students need to gain a competitive edge in the marketplace and obtain higher starting salaries. Great emphasis was placed on both work experience and soft skills. The soft skills of most importance were communication skills, personality and leadership. Experience and communication skills were selected by a total of 91% of the industry participants as the most important qualification of new hires, over education and previous employment with the company.

Effective communication and personality are the basis for creating and maintaining relationships, something that is very important in the construction industry. This skill is especially important in an industry that is dynamic in nature and necessitates a group of diverse persons cooperatively working together to complete projects. Both the literature and this research showed the importance industry places on soft skills for new hires. Constraints to curriculum content have left many programs with little flexibility to incorporate formal opportunities for developing and enhancing student soft skills. One solution to this issue is utilizing experiential learning opportunities, specifically participation in an internship program. Internship participation would also help the students gain a competitive edge as industry participants almost exclusively considered internship participation to be work experience. Participating in the internship experience also allows students the opportunity to work among the ranks of those they will be working with upon graduation, allowing opportunities for improving self efficacy.

Based on the results of the analysis of the data presented here, participation in an internship program should be considered a pertinent part of the academic requirements for students enrolled in construction education programs. Participation in internship experiences can help students apply classroom theoretical information in real world settings, enhance soft skill development, build relationships among those who will be their working peers, obtain employment upon graduation, and earn a higher starting salary.

Areas of Future Research

This research was conducted at a single university using students enrolled in either the building construction program or the construction engineering and management program. The industry members recruited for participation served as the main hiring source for these students and the results are applicable only for the people included in this survey. Many of the industry participants also recruit students enrolled in construction focused programs at other universities in the United States which may allow for some generalizability of the results. This research could be duplicated within other university construction focused programs which could provide a better understanding of how the construction industry as a whole considers internship participation when considering hiring students and determining their starting salaries.

Further evaluation of the data could compare each of the student participants by academic year and chronological age to determine if progress through the program or maturity affects responses. A closer look comparing the female and male responses as well as research on how each of the genders define themes such as work experience, personality and work ethic might be beneficial in retention of female students enrolled in construction based programs.

This research could also be duplicated within other university majors to determine how industry as a whole considers internship participation when evaluating students as potential new hires and in determining their starting salaries. The survey tools created for the original research data collection are easily adaptable for use in other university programs and other university majors.

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