

**AC 2008-603: UTILIZING INDUSTRY TRAINING AS RESEARCH, ENRICHMENT
AND REWARD IN TECHNOLOGY PROGRAMS**

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EXPERIENCES AND RELATIONSHIPS THAT INFLUENCE CONSTRUCTION MANAGEMENT STUDENTS' CAREER CHOICE

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The goal of this study was to explore the career influences in terms of experiences and relationships of students currently enrolled in accredited Construction Management (CM) programs in one Midwestern state. Numerous factors influence students who enter CM programs, however, insufficient information exists to explain the characteristics of these students. Obtaining a better understanding of students currently enrolled in construction management programs can reveal perceptions of the construction industry and enlighten CM programs for future marketing.

Four accredited CM programs in one Midwestern state were surveyed yielding 504 completed and usable survey instruments. This represents approximately 50% of students enrolled in CM programs in this state. This section of the instrument allowed the students to rank the level of influence of 18 predetermined people and experiences. Students reported that “hands-on type activities” and “interest in construction” were the largest influences. The high school counselor was the least influential person.

Key Words: Construction education, student recruitment, CM program marketing

Introduction

For many young adults, the choice of technical schools, universities, the military, or entering the workforce is a major turning point in their lives. Many studies have reported that individuals have different perceptions of themselves, the environment, or the decision-making process (Lent & Brown, 1996). Other theories have focused on the naturally occurring perceptions of occupations (Shivy, Rounds, & Jones, 1999). The general perception of construction is one of hard work, unsafe, and dirty conditions, therefore, it would seem logical that construction management (CM) is not a popular career choice. Research in career development has reported that students choosing a career are unlikely to select one that was not perceived as a valued job (Kimweli & Richards, 1999).

Numerous factors influence students who enter CM programs, however, insufficient information exists to explain the characteristics of these students. The construction industry is challenged to identify better ways to attract and retain those persons entering the construction management workforce (Johnson & Parker, 1987; Piper & Liska, 1999). Further, graduates in CM programs are in demand due to an aging workforce that are retiring and leaving management positions (Bilbo, Fetters, Burt, & Avant, 2000; Gasperow, 1992).

The purpose of this study was to examine the career influences in terms of experiences and relationships of students in construction management programs. This information may be used to enhance CM programs and align curriculum with students' preferences. The results could also be used to improve the recruitment and marketing of CM programs.

Methodology

This was an exploratory and descriptive study designed to examine students in construction management programs in one Midwestern state. According to McMillian and Schumacher (1997), descriptive research is a valuable way to collect data about a phenomenon, especially during an initial investigation. The purpose of this study was to generate accurate information on the career influences in terms of experiences and relationships of these students.

A rating scheme was used to identify the students' career influences in terms of people and situations. The students indicated a degree of influence on a five-point Likert-type scale. The list of eighteen influences were developed and solicited from the pilot study performed during the research. These influences were chosen from the most frequent responses of CM students in the pilot study. Twelve of the influences chosen were types of people while the remainder of the eighteen identified influences was related to situations associated with construction (e.g., hands-on activities, outside work).

Population and Sample

The population for the study was limited to students who were enrolled in accredited construction management programs in three universities in one Midwestern state, therefore, making it a homogenous sample. A convenience sample of students was selected in courses that were required by CM students in each of the accredited programs. A convenience sample is usually difficult to generalize, however, because of a high participation rate; the results should

reasonably generalize to CM students at least within this state (McMillian & Schumacher, 1997). A cross-section of courses was chosen to insure the representation of first year and last year students in all programs. Pre-authorization from instructors was attained prior to scheduling the distribution of the survey. Upon communication with the instructors, classes were scheduled in all departments except one. The instructors in the College of Engineering at one university did not agree to have the principle investigator administer the surveys during class time. Therefore, an electronic form was produced to forward the survey to students via email. Courses were chosen through analysis of each program curriculum. Instructors from each university were contacted for consultation. The goal was to distribute the survey in the required introductory and exiting courses, as well as a cross-section of courses that were required in the middle section of the programs. A representative from each program reviewed the courses chosen and assisted with the final scheduling.

Instrumentation

The initial draft survey instrument was developed and adapted from a study involving business students (Pearson, 1999). This initial instrument was designed to be administered in one construction program. The intent was to collect detailed data about CM students that would be used to develop a more focused research instrument to be used for more CM programs. The questions were designed to collect the most common responses that would make the final survey instrument entirely multiple-choice. Samples included questions asking, “Did anyone influence your decision to enter this program?” They were directed to circle yes or no, and if yes, write in the influential person. A pilot study was conducted with a small sample to validate the directions and items in the instrument. This survey was initially administered to 78 students in a senior level course in program C.

A second pilot study was conducted by administering the survey to 157 students with a combination of different levels (1st year through 4th year) of students at one university. As a further assessment of the face validity and readability of the instrument, semi-structured interviews with focus groups were conducted with 32 of the Junior and Senior level students. The focus group was intended to answer the following questions: a) What data is the instrument collecting? and b) What other information is important? The technique used was a “directed group discussion” where the primary investigator moderated organized discussions with the students (Salant & Dillman, 1994). In groups of eight to ten students, interviews were recorded and the data revealed information used to develop the final instrument.

A final pilot study was completed to insure readability, understandability, and clarity. The amount of time required for the students to complete the survey was also recorded for use in scheduling appointments for administering the survey. A small group of students at one campus utilized user testing by completing the actual survey and then editing the instrument or adding comments in the margins, when necessary. The results revealed a few typing errors and some word organization changes that enhanced readability and understanding of the items. The instrument was then considered to possess an adequate degree of content and face validity.

Data Collection

Student data were collected in a classroom by prearranged appointments with instructor approval. Cross-sections of courses were chosen within the requirements of each curriculum.

One group of students, program D, was emailed a survey that they could complete. The courses that were chosen from each program were all mandatory. A minimum of one entry-level, one exit-level, and two or three courses required by 2nd and 3rd year students were chosen from each program. There are approximately 1,000 students enrolled in CM programs in this Midwestern state, therefore, more than 50% of the total population responded to the survey.

Surveys were distributed at the beginning of the class period. The purpose of the study was explained and the students were informed that participation was voluntary and their responses would be strictly anonymous and confidential. The students were also informed that they must complete only one survey, in case they were in multiple-courses that were used in the study. The data were collected by spending one day at each program, except for program D. The students in program D were given a one-month period to respond to the emailed survey. Data collection was then completed.

Results

The career influence section of the instrument required the student to rank people or situations using a scale of 1 – 5 with 1 being equal to “no influence,” 3 being equal to “significant influence,” and 5 being equal to “greatest influence” (see Appendix A). These data were then ranked in order of high to low by the mean responses of all students to illustrate the greatest influence for a student in a CM program.

A Likert-type scale was used to rate the eighteen influences on people and situations that were identified in the study. Means (M) of the chosen influences were ranked in order from highest to lowest (see Table 1). The mean items were ranked from most influential to least influential. The columns, which follow, indicate the mean of the responses (M), percentage of frequency responses for each category in the rating scale, n, and standard deviation (SD).

The data illustrated in table 1 suggest that fathers had the highest mean of all persons (M=2.89, SD=1.5) but ranked fourth, overall. The lowest mean was the high school counselor (M=1.36, SD =0.78). The most influential aspect for choosing CM as a degree program was students’ interest in construction (M=4.13, SD =1.01). Hands-on activity (M=3.91, SD =1.15) and inside / outside work environment (M=3.33, SD =1.4) closely followed and were the only other items which obtained a mean above 3.0. There were no persons more influential than fathers. Students reported that other influential persons were work supervisors (M=2.11, SD =1.38), teachers (M=2.06, SD =1.31), college friends (M=2.05, SD =2.75), and mothers (M=2.02, SD =1.16).

Table

Career Influences Ranked by Mean of Influence

(Rank) Influences	M	Percentage of students responding to each					n	SD
		No Influen	2	3	4	5		
(1) Interest in construction	4.13	3%	4%	15%	33%	45%	501	1.01
(2) Hands-on type work activity	3.91	6%	4%	21%	30%	39%	459	1.15
(3) Inside/Outside work	3.33	18%	7%	25%	24%	26%	461	1.4
(4) Your Father	2.89	26%	17%	20%	15%	22%	461	1.5
(5) Career job placement	2.74	32%	12%	20%	20%	15%	458	1.47
(6) Work/Volunteer Experience	2.71	29%	16%	22%	19%	13%	444	1.4
(7) Work Supervisor	2.11	53%	12%	14%	13%	8%	459	1.38
(8) Teacher	2.06	51%	17%	16%	9%	8%	461	1.31
(9) College Friend	2.05	51%	14%	18%	12%	5%	461	2.75
(10) Your Mother	2.02	43%	29%	16%	7%	5%	461	1.16
(11) Family business	2.01	64%	7%	6%	8%	15%	460	1.53
(12) Co-worker	1.97	58%	11%	13%	10%	7%	461	1.33
(13) Your aunt, uncle or cousin	1.9	57%	14%	15%	8%	6%	459	1.25
(14) College Advisor	1.78	60%	16%	12%	9%	3%	461	1.13
(15) High School friend	1.75	58%	17%	17%	5%	2%	461	1.04
(16) Your brother or sister	1.66	66%	15%	10%	5%	4%	460	1.1
(17) Other relative	1.64	64%	6%	6%	4%	6%	399	1.23
(18) High School Counselor	1.36	78%	12%	7%	3%	1%	461	0.78

Figure 1 illustrates the frequencies for the major influences, hands-on activity, and interest in construction. The trend shows that as the level of influence increases, the frequency of response also increases.

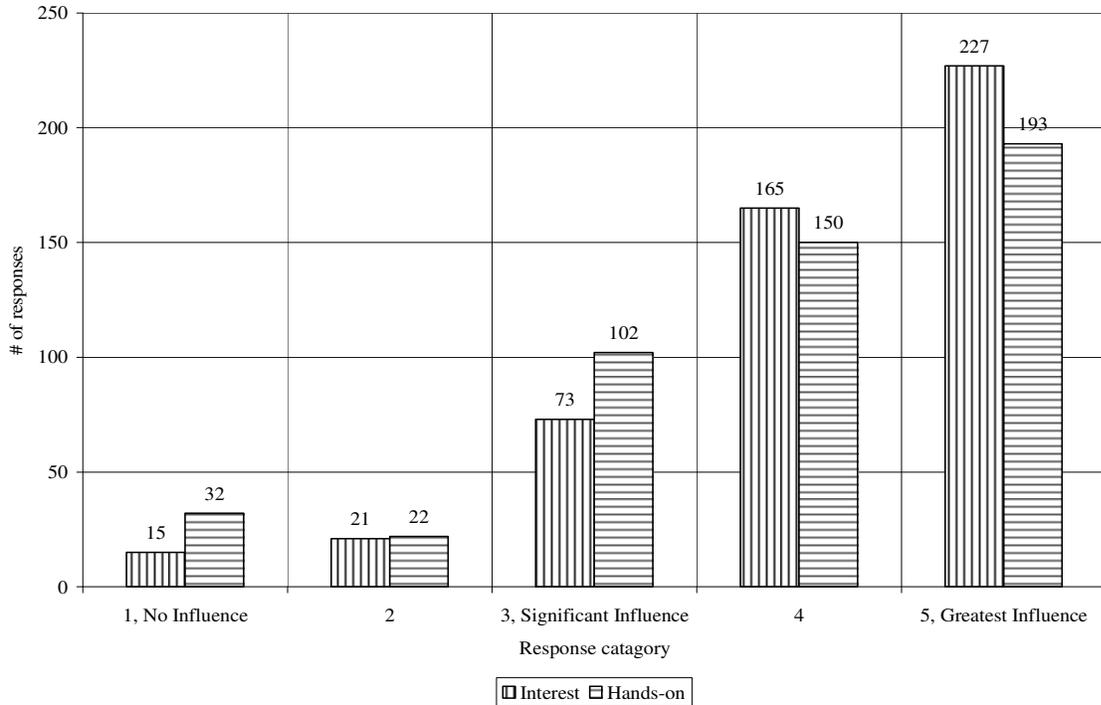


Figure 1. Response Frequency for Interest in Construction and Hands-on Activity

Figure 2 shows the frequency of responses as related to the father as an influence. The father had the highest mean for all people included in the instrument. The frequency of responses represents a different view because there are more responses to “no influence” than to the category of “greatest influence.” The responses indicate that students do not all share the belief that fathers have influence, but rather they are divided by the extreme categories of “no influence” and “greatest influence.”

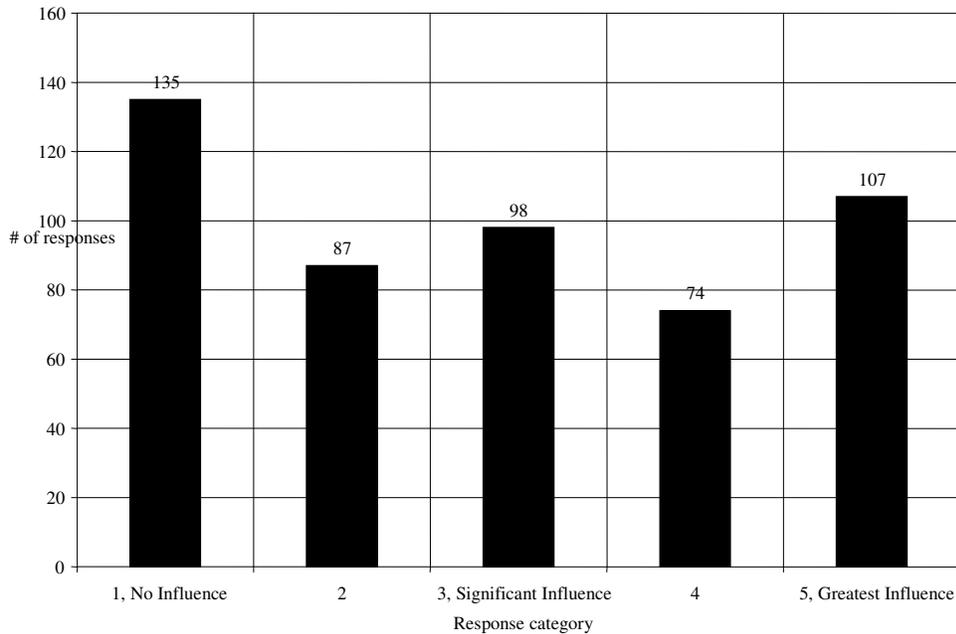


Figure 2. Response Frequency for Father's Influence

Discussion

The construction industry employs about 5.2 percent of all workers in the United States and the need for graduates in CM is growing each year (U. S. Department of Labor, 2004). The national needs have exceeded 8,000 however, only 2,500 graduates enter the workforce each year (Bilbo, Getters, Burt, & Avant, 2000). Numerous factors influence students who enter CM programs, however, insufficient information exists to explain the characteristics of these students.

Additionally, research has shown that many factors determine career choice. Family, peers, education, geographical location, occupational information, demand for jobs, and the difference in age, gender, and personal characteristics all influence career choice (Borg, 1996; Healy, O'Shea, & Crook, 1985; Larson, Butler, Wilson, Nilufer, & Allgood, 1994; Otto & Call, 1985; Splete & Freeman-George, 1985). The purpose of this study was, therefore, to investigate the career influences of students in four accredited CM programs in one Midwestern state.

Hands-on activities and inside/outside work experiences are also influences on students being interested in construction. Unfortunately, construction is sometimes rated as one of the worst occupations because of these characteristics. However, students who enrolled in CM programs perceive the characteristics common to the industry (i.e. outside work, hands-on activity) as being positive and greatly affecting their career choices.

Family role is a significant influence in career choice (Roe, 1956) and is revealed through the father's high level of influence in this study. Mother is ranked below work supervisor, teacher, and college friend, but that is logical due to the low percentage of females employed by the construction industry. Additionally, high school counselors were overwhelmingly the least influential persons for the students. Ironically, CM program leaders usually rely on high school counselors for marketing programs to high school students. These persons are usually responsible for distributing and exhibiting program brochures and marketing videos to attract

highly qualified students. The only variable that revealed a significant influence was paid work experience.

Implications

It was also evident that experiences before entering CM programs were significant factors in their overall influence. Many CM programs require students to participate in service projects such as Habitat for Humanity. These hands-on activities related to construction would be a successful endeavor for programs to use for recruitment. Also, a service-learning component can be added into the curriculum and be connected to engagement in the community. Most students are from this Midwestern state, so perhaps using current students to develop these activities would enhance interest.

If the largest influences of students were “hands-on” and “outside” work, then CM programs should consider community-service type activities as an intervention to increase interest in programs. The youth of today are very focused on immediate success. However, the influence of good job placement was not the most important aspect of construction when ranking influences. This aligns with research suggesting that students are more connected to the performance-oriented aspects of careers than monetary remuneration (Hatzios, 1999). Also, these students are aware of the high job placement and overwhelming need for construction professionals in the current job market. Students were not fearful of getting a job. Therefore, it would not seem beneficial to expend inordinate resources on marketing information about high levels of job placement to potential CM students.

Conclusions

Hands-on activities and inside/outside work experiences are also influences on students being interested in construction. Unfortunately, construction is sometimes rated as one of the worst occupations because of these characteristics. However, students who enrolled in CM programs perceive these characteristics of the industry as being positive and greatly affecting their career choices.

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Recommendations

The data collected were only from one state; therefore, it does not readily generalize to the entire population of CM students in the U.S. Additionally, the survey instrument was limited because it did not include open-ended items to allow students to include other influences that might have lead them to select careers in construction. However, these are perceived as practical limitations and do not necessarily inhibit the methods used nor the findings and conclusions reported.

Therefore, based on the results and limitations of this study, several recommendations for practice and future research are offered:

1. Future research should examine the characteristics of CM students' parents and their connections with the construction industry.
2. CM programs should re-think marketing strategies to minimize dependence on high school counselors.
3. Research should further investigate hands-on, construction related programs which students can become involved with at an early age to explore their interests in CM careers.
4. CM programs should incorporate service-learning components of community outreach that include K – 12 student interactions as a recruiting tool.

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Appendix A: Final Survey

Construction Student Survey (This is one section of a larger survey)

IV. Career Influence: Please answer the following questions by circling the number as it relates to the individuals or situations that may have influenced your decision to choose construction as a career path. Please circle the rank of following individuals or situations from 1, being that there was NO influence to a level 5 being the greatest influence (this was the reason why construction was picked as a career).

	Person or Situation	No Influence		Significant Influence		Greatest Influence
	Circle one for each in the list below	1	2	3	4	5
13	Your mother	1	2	3	4	5
14	Your father	1	2	3	4	5
15	Your brother or sister	1	2	3	4	5
16	Your aunt or uncle or cousin	1	2	3	4	5
17	Other relative, please write below	1	2	3	4	5
18	High school friend	1	2	3	4	5
19	College friend	1	2	3	4	5
20	Teacher	1	2	3	4	5
21	High school counselor	1	2	3	4	5
22	College advisor	1	2	3	4	5
23	Work supervisor	1	2	3	4	5
24	Co-worker	1	2	3	4	5
25	Career job placement (That there are many jobs available when you have completed your degree.)	1	2	3	4	5
26	Family business	1	2	3	4	5
27	Work or volunteer experience	1	2	3	4	5
28	The opportunity of working in an office and / or outside in the construction industry	1	2	3	4	5
29	Hands-on type work activity	1	2	3	4	5
30	Interest in construction as an industry	1	2	3	4	5