

AC 2008-817: EMPLOYER'S EXPECTATIONS REGARDING PERFORMANCE OF CM GRADUATES

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Employer's Expectations of the Performance of CM Graduates

Abstract

Graduates from professional courses are often described by employers as lacking in useful and instant fee-earning skills. This study explains the development and testing of a paired 'customer satisfaction' survey used to determine the development of general skills by graduates from professionally accredited construction management degree programs. This survey reveals the extent of differences in expectations and achievement of skills by graduates and their employers. Graduates are apparently not as ill-prepared for the workplace as anecdotal comments from employers would suggest. This survey is part of a program of quality assurance measures and provides useful information for curriculum design and revision.

Key Word: Construction, Education, Employer, Student Performance

Introduction

The objective of many degree professional programs is to prepare students for the workplace. Students of professional studies programs have what can be regarded as an additional benefit or hurdle they expect to join a particular profession and have a clearly identified career path in return, employers often expect students of such courses to be instantly able to fee-earn. Academics involved with such courses have to balance such demands of employers with broader educational aims that will prepare graduates for not just the immediate work-entry years but a life-long career with suitable skills that will allow them to be adaptable to changing work practices and market skills needs (Banik, 2007).

This paper discusses the ways in which construction management department addressed this balancing act when revising curricula and developing assessment surveys to measure the skills achievements of its graduates. The Construction Department at Southern Polytechnic State University offers construction management program in three concentrations-General, Development and Specialty. Construction Program is accredited by the professional bodies of ACCE. As part of the review of their curricula, the department wished to address the following concerns:

1. Do the abilities of the graduates match employer's expectations?
2. What other essential skills do graduates and employers feel are required from this education?
3. Do graduates feel they were well-equipped for the workplace by their education?

But what are the differences between expectations of employers and academics preparing students for the workplace in terms of a knowledge base which is useful? One difference is in the type of knowledge that is required. Mole (1997) has suggested that professional knowledge can be divided into three broad domains:

- Generic areas of knowledge (propositional knowledge as defined in curricula);
- Generic skills (process knowledge);

- Generic professional competencies.

The norms of higher education tend to favor scientific or propositional knowledge rather than professional competencies. The knowledge base is likely to be couched in technical/scientific terms rather than practical terms. Typically, technical knowledge is capable of written codification and could be regarded as a kind of propositional knowledge, commonly expressed in curricula (Eraut, 1997). Although construction management program is little different than other traditional professional programs.

Practical knowledge (as often required by employers) is learned only through experience with practice (Ashworth and Bridge, 1996). Thus learning takes place through using. Learning situations can occur from a range of situations reading publications, practical experience and people (mentors at work or tutors at university). Universities seek to broaden and academics the knowledge base and this may develop tensions between university and profession oriented perspectives on knowledge. Universities have a recognized independent role in the creation and validation of knowledge. Professions increasingly need university validation to confirm the status, worth and complexity of their knowledge base [Eraut,1997]. The provision of professional education has moved away from pupillage or qualifying examinations set by institutions to a system where recognized academic examinations, set by universities, exempt graduates from professional examinations. There is thus typically a two-tier route to professional qualification degree followed by a period of practical experience from work-based learning and some further test of professional competence is usually required. Technical and practical knowledge is thus divorced in a large number of professional routes to qualification.

This separation between theory and practice is becoming increasingly recognized as a potential problem (Mole, 1997). Academic institutions are criticized for not providing the right graduates for the industry (Banik, 2007; Gao and Chen, 1994). Practitioners claim that graduates have little practical knowledge whilst academic institutions will defend their right to set educational objectives. What are the typical attributes that employers of graduates seek? A number of surveys have elected to track students after graduation to gain feedback on their perceptions of college and its value in accomplishing transfer and employment goals [Frank, 1991; Brennan, 1993]. Other surveys have identified a range of useful attributes for graduates entering the workforce. For example the work by the Centre for Research into Quality , Birmingham, UK Harvey et al, 1997) which interviewed 258 strategic managers, line managers and recent graduate employees. This identified that employers want 'intelligent, flexible employees who are quick to learn, can deal with uncertainty and rapid change and are able to work on a range of tasks simultaneously'. Graduates are more likely than non-graduates to meet these criteria. Employers are looking for rounded people with a depth of understanding, and ability to take responsibility and develop their own role in the organization to be educated rather than trained. Higher education should continue to provide critical, reflective students. Employers need people who can work in teams, exhibit good interpersonal skills, communicate well and who have an understanding of work culture.

Are there any differences between what employers expect and desire of any graduate (such as the surveys quoted above) and employer's graduates entering a profession? A number of surveys aimed specifically at the construction professions have sought to identify a range of generic knowledge areas and/or some professional knowledge requirements. For example ACCE identified some generic skills that were considered deficient in the areas of management skills and financial analysis. A further survey attempted to identify the skills, knowledge base and educational goals considered desirable by employers (Moohan, 1993). Davis identified that most employers target candidates with similar qualifications and those with transferable skills are the most sought after skills such as:

- strong interpersonal skills;
- team players who can also lead a team;
- IT and language ability;
- good commercial awareness;
- problem-solving skills.

ABET and ACCE targeted the knowledge base and generic skills and competencies for construction and engineering students, produced the following list of generic skills:

- gathering, interpreting and giving information;
- management of self and others;
- oral, written and graphical communication;
- teamwork and leadership;
- creativity;
- use of equipment and IT;
- analysis and problem solving.

So how well are professional degree programs fitting graduates for the workplace? Anecdotal reports from employers suggest that graduates' technical skills are deficient and that standards are falling. The survey developed for the Construction Management Department, and reported in this paper, attempted to remove this element of generalization by adopting a new element both graduates and their immediate supervisors were asked to comment on the development of a range of generic skills. This gave the opportunity for more focused and specific response about an individual's performance at work. This aspect of the survey is rarely done but vastly improves precision.

Csete and Davies (1997) in a review of international literature on the subject identified that few surveys adopted the approach of matching a specific graduate with their immediate supervisor. The comments received from employers were therefore informed and specific to their employee and not generalized judgments about the performance of any graduate from the institution or even more general impressions of all new employees. The comments from graduates on their perceptions of their achieved skills levels gained from the university program could be matched with the more objective judgments of those skills by their employer.

The following sections explain the development of the survey, its administration, analysis and discussion of the results.

Questionnaire Development

Some of the professional surveys (Banik, 2008; Moohan, 1993; Csete, 1997) proved useful sources for the typical attributes that employers might expect of graduates from the degree programs. Employer and graduate surveys were developed that assessed how well students were prepared for the workplace in the view of the graduates themselves and their employers. This was undertaken in a two-stage process involving job analysis and skills analysis.

Staff, working in course teams, were asked to develop a job analysis for graduates entering the current job market and to consider the implications of technology and process changes and work context for graduates in the year 2006. The subsequent stage skills analysis identified the key competencies needed to perform the duties and tasks identified through the job analysis.

The course teams generated a list of desired skills, competencies and values through a process of brainstorming that was refined over several weeks by voting and discussion. These were subsequently used to develop first drafts of the questionnaires for customer (i.e. employer and graduate) satisfaction and used for curriculum revision. The questionnaires were revised to accommodate suggestions from an advisory group of employers and two rounds of pilot testing. Employers value communication skills highly.

The final thirty five closed response items selected for the survey form were used for both groups- graduates and employers. The questions asked students and employers about how important they felt it was for graduates to have gained a series of skills and abilities, ranging from practical skills such as technical expertise and communication skills to value opinion areas such as the importance of ethical standards or an ability to exercise professional judgment. The graduates were then asked if they felt they possessed each attribute and additionally if they felt they had developed this competency during their studies at university. The employers were asked to rate the importance of the listed skills for any graduate and then to comment specifically on the ability of the graduate who had named them as their immediate supervisor who was familiar with their work.

Questionnaire Survey

The graduates from the department were identified from student records. These graduates were chosen because they would be new enough to the workplace to be able to comment on their personal achievement of skills, where they felt they had deficiencies, and how well these skills had been provided by their education. A survey form was posted to them together with a covering letter requesting them to complete the form and to advise the department of the name and fax number of their immediate supervisor. For those who did not immediately reply, two follow-up letters and a second questionnaire form were posted. The response rate was 17%- compared to the usual response rates from graduates usually reported in the literature.

A total of thirty five returns of which all were from graduates working in a relevant profession in Atlanta area. The employers were then faxed the corresponding questionnaire and a similar follow-up procedure was adopted. The response rate from the eligible employers was 23%. The largest number of graduates were employed by the large general contractors. The size of firms and number of employees was not part of the survey as the focus was on the comments of the nominated supervisor on an individual graduate. Quantitative analysis of the closed -questions and qualitative analysis of the open-ended questions was performed. The analysis helped to inform curriculum revision and identify the differences in expected skills and skills achievement by recent professional degree graduates and their employers.

Questionnaire Analysis and Results

The significant questions that this research wished to explore are:

1. Do the abilities of the graduates match employer's expectations?
2. What other essential skills do graduates and employers feel are required from degree education?
3. Do graduates feel they were well-equipped for the workplace by their education?

Each item will be examined in the following analysis.

Q.1 Do the abilities of graduates match employer's expectations?

This question was explored through two processes. Paired samples t-tests (two tailed) were run on the twenty items. Written comments of the two groups were also qualitatively analyzed and compared. The results of the paired samples t-tests are reported in Table 1. At significance level of $p < 0:05$, there were no significant differences between employers' and graduates' opinions of the levels of achievement of twelve skills. Of the remaining eight skills, employers rated graduate achievement higher in extensive practical experience, work independently, recognize and respond sustainable issues; while graduates felt they were better equipped than employers did in the areas of written skills, defining and solving problems lead others effectively and conflict resolutions. These results are gratifying, given that ongoing discussions with employers and the advisory panel had led to the expectation that employers would rate graduates significantly lower in most skill areas than graduates would rank themselves. Graduates are not as ill-prepared for the workplace as anecdotal evidence would suggest.

A particularly useful way of interpreting the data was to graphically present the results comparing the relative importance and achievement of each of the skills areas. Figure 1 is a general description of how to interpret the results 'Quadrants of effectiveness in teaching important skills for graduates'. The graphs could be divided into a greater number of quadrants. In Fig. 1 an arbitrary midpoint of 2.5 on the 4-point response scale has been selected for creating the quadrants. These axes could be adjusted and the results interpreted accordingly. Figure 2 visually represents the employers' estimates of importance and achievement of essential skills for graduates in the present study. The university at the time of the survey did not provide language classes in this subject, so this result is not surprising. Figure 3 is a summary of graduates' views on the importance and achievement of essential skills.

Table 1: Ability to Identify, Formulate and Solve Construction Problems

Skill	Achievement higher according to the employers	Achievement higher according to the graduates	No significant difference
Extensive Practical Experience	X		
Reading Skills			X
Written Skills		X	
Presentation Skills			X
Computer Skills			X
Able to communicate Spanish			X
Gather and interpret information			X
Identify Problems			X
Define and solve problems		X	
Work independently	X		
Work as a team member			X
Lead others effectively		X	
Work effectively with diverse group of people			X
Posses ethical standard			X
Exercise professional judgment			
Recognize and respond to sustainability	X		
Accept responsibility			X
Provide importance of continuous education			X
Be creative			X
Ability to resolve conflicts		X	

4.0

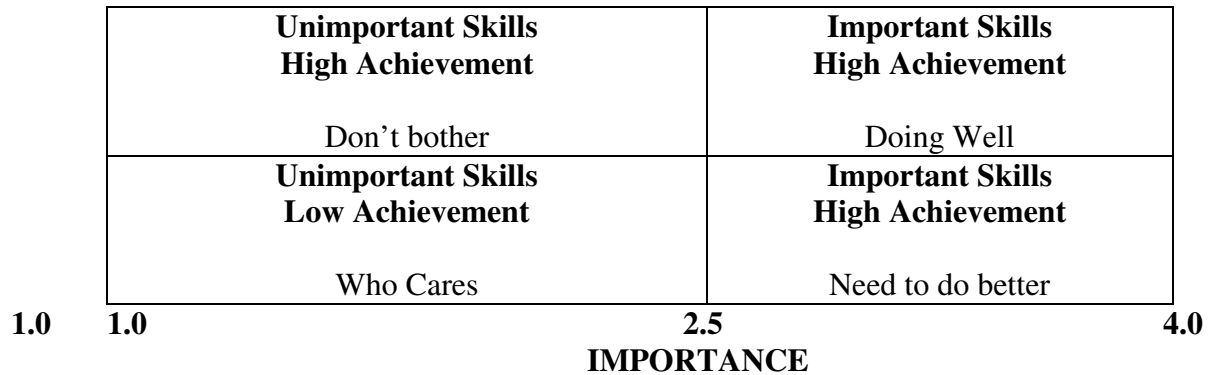


Figure 1. Quadrants of effectiveness in teaching important skills for graduates

Q.2 What other essential skills do graduates and employers feel are required from education?

Employers and graduates were asked an open-ended question about any other essential skills that they felt were essential for a vocational degree. The comments were listed and reviewed for common themes. Both graduates and employers identified the same three categories as being the most important. These three categories which account for more than half the comments on each list are detailed in Table 2. A need for more people, intellectual and analytical skills was cited most often as an additional essential skill. Other requests were for stronger technical skills and for more practical or 'hands-on' training. As the target population had a maximum of about 5 years experience on the job, it was no surprise that they and their employers wished for more practical 'hands-on' training and specific technical knowledge. Students are given opportunities to develop problem solving skills in their university degree programs. However, it would seem necessary to increase student exposure to learning situations that would encourage further development.

Table 2. Employers' and graduates' written comments on other essential skills

	Graduates (34)	Employers (35)
Most Frequently Comment Category	Needs people, analytical and problem solving skills (19)	In addition, they can work independently and has leadership qualities (18)
Second Most Frequently Comment Category	Needs Stronger skills in scheduling and estimating (17)	Graduates need scheduling, estimating and safety skills (16)
Third Most Frequently Comment Category	Needs more hands on or practical training (14)	Same (11)

Q.3 Do graduates feel they were well-equipped for the workplace by their education?

This final question is answered by the results from Fig. 2, which represents graduates' estimation of their achievement of essential skills and the effectiveness of university teaching to achieve those skills. These include an ability to work effectively in diverse teams and projects, an ability to lead others effectively, creativity adaptability & flexibility and an ability to exercise professional judgment.

All these abilities are likely to be developed over a period of time through practical experience and recent graduates therefore do not feel they have gained sufficient experience. It could be argued that these skills are perhaps more suited to 'on-the job' experiential learning. Academic programs can attempt to introduce learning situations where these skills can be practiced, but until students perceive the need to develop these attributes, they may not take advantage of the opportunities for self-development offered by the university.

Of more concern is graduates' underestimation of their practical knowledge in at least one area. This could reflect their modesty and uncertainties about their own knowledge and skills in a new job environment. Staff, however, feel it is important to ensure that graduates have the ability to apply principles and know where to find information rather than memorize current technical details that may have only a short period of use. Proficiency in general skills will take them further in their career.

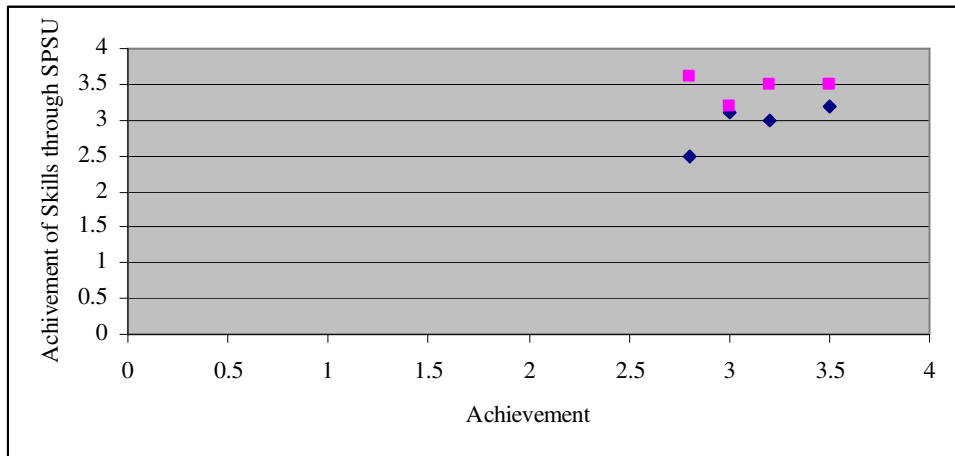


Fig 2: Scattered Means of Graduates View of their Achievement of Skills and Effectiveness of Teaching at SPSU

Conclusions

This study describes the development and testing of a paired graduate and employer 'customer satisfaction' survey used to determine the development of general skills by graduates from professionally accredited construction degree programs. The combination of items on general skill areas and open-ended questions can serve as a flexible design for surveys of this type.

Graduates from professional courses are often described by employers as lacking in useful immediately fee-earning skills. This survey reveals that graduates and employers from the population surveyed, largely agree on the importance of a set of general skills required by graduates. Comments from employers and graduates on the need for additional skills recommend the development of three main categories a need for general intellectual and analytical skills (e.g. problem-solving), particular specialist technical skills, and more practical 'hands-on' training. Statistical analysis of responses indicates that there are few differences between graduates and employers assessment of levels of achievement of skills by named graduates.

Graduates are apparently not as ill-prepared for the workplace as anecdotal evidence from employers would suggest. The survey provides feedback for those areas of skills development that the programs need to revise or emphasize and thus acts as a mechanism for curriculum design and revision.

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