SUPERVISED WORK EXPERIENCE: THE LEARNING CLIMATE OF CONSTRUCTION COMPANIES AND THE FACTORS THAT INFLUENCE STUDENT EXPERIENCE

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Abstract

The benefits to students of an industrial placement or supervised work experience (SWE) as an integral part of undergraduate degree programmes have long been accepted. Employers use SWE as an opportunity to assess the capability of students prior to offering them permanent employment on completion of their studies. Likewise, students use SWE to review an employer's ability to provide them with the relevant post graduation experience to enable them to progress to professional qualification. Also, during SWE they assess the construction industry in terms of its working environment and as a long-term career.

The findings are presented of an 8-year study into the ability of organisations within the construction industry to provide appropriate learning environments during SWE. Construction organisations are perceived to be supportive in terms of personal and informal support provided by colleagues and to a lesser extent working practices but less supportive in terms of the more formal support given by managers, specifically in the use of appraisal systems. Construction organisations need to accurately assess their ability to provide an effective learning environment in order to attract potential employees to a career in construction and to retain students within the industry after SWE.

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Keywords: Construction; learning climate; learning organisations; supervised work experience

INTRODUCTION

The BSc in Commercial Management and Quantity Surveying (CM&QS) is a collaborative degree programme between the University of Manchester (formerly UMIST) and a consortium of the United Kingdom's leading construction companies. It aims to educate students in the fields of commercial management and quantity surveying and to prepare them for work in a contracting organisation. The ethos of the course is that such education is a blend of academic study and industry based training.

The inclusion of the longest possible period of industrial training was a specific requirement of the consortium. The programme, therefore, is of four-years duration and includes a compulsory year in industry as its third year. Described as Supervised Work Experience (SWE), students are required to complete 46 weeks of paid industrial work experience, which can count towards their experience for the RICS Assessment of Professional Competence. The SWE is not formally assessed for progression to the final year of the programme, however, students are required to submit a critical and detailed report on an aspect of their SWE and present the report to the student group and selected staff as part of their final year assessment. UMIST and the consortium designed the SWE to include a programme of experience and self-development for the student.

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While academics visit the students during the SWE, the sponsoring organisation is responsible for providing appropriate industrial training and learning environments.

This paper reports on a 8-year investigation into the learning environment experienced by students during SWE. Subsidiary objectives were to investigate:

- Students' perceptions of the learning climate of their organisation;
- Factors that influenced their SWE experience; and
- Changes in these perceptions over time (1996-2003).

BACKGROUND

According to Ashworth and Saxton (1992), the purpose of a work placement year is to develop maturity, enable the exploration of the theory-practice link, encourage the development of critical but pragmatic thinking, and facilitate systems thinking. Further, Davies (1990) advocates that the benefits of SWE are "… unique, identifiable and not achieved by other means". Additional benefits to students include the opportunity to: assess the construction industry as long-term career; assess a potential employer in terms of career prospects, working environment, structured training programmes, enabling them to achieve professional status etc.; and select a topic for their final year research project within the context of the employing organisation.

A recent report commissioned by the DfES concluded that:

- With guidance, students of all ages can learn from their experiences in the world of work to develop their key competencies and skills and enhance their employability.
- Employers value people who have undertaken work experience, been able to reflect upon that experience and then go on to articulate and apply what they have learnt.
- Partnerships between employers and Higher Education are valuable in promoting work-related learning and in improving the quality and quantity of such experiences (Work Experience Group, DfES, 2002)

The Quality Assurance Agency for Higher Education (QAA) has produced a Code of Practice on Placement Learning (QAA, 2001), which contains eight precepts for the quality assurance of placement learning.

The potential benefits for employers of SWE students include recruiting and training future employees, meeting current labour shortages, expanding a well-prepared labour pool, fostering a positive public image, cultivating business opportunities with universities, and receiving wage subsidies (Jackson and Wirt, 1996).

Construction employers see the inclusion of SWE within degree programmes as essential: it affords them the opportunity to present a wide vision of the potential careers available within the industry (Mann, 2002). Moreover, as a result of the current and projected UK shortage of construction graduates (Dainty and Edwards, 2003), especially quantity surveying graduates (Cavill, 1999), employers accept that their

priority is to keep students studying on construction courses in the industry when they qualify. To support this the Construction Industry Council are developing a framework for employers when taking students on work experience (Hampton, 2001), while the CITB launched an industry-sponsored 'Design-a-job' website in 2001.

There are, however, financial implications to be considered by employers providing SWE placements. These include the cost of planning work-based learning; orienting and training staff; training, supervising, mentoring and evaluating students; student's salaries; and poaching (when other companies hire the best students after training) (Jackson and Wirt, 1996).

Learning within the workplace

Learning naturally occurs in the work environment (Binsted, 1980) in many situations: formal, informal or incidental. Informal learning within the workplace is predominantly experiential and non-institutional, including self-directed learning, networking, coaching, mentoring, performance planning and trial-and-error (Marsick and Watkins, 1990). Incidental learning, however, is unintentional, a by-product of another activity, examples include learning from mistakes, assumptions, beliefs, attributions and internalised meaning constructions about actions of others. New experiences or perceptions provide learning opportunities, usually unintended, which may be seized upon or passed over (Rogers, 1986). This natural learning is part of the process of living. In fact most individual development will occur 'on-the-job' and not through structured learning activities (Mumford, 1987).

The learning environment at work is more than just a physical area, it contains people and resources: ideas, knowledge and know how. Learners, however, often fail to draw upon the richness of opportunities to learning at work (Harri-Augustein and Thomas, 1991). Also, individuals can be helped or hindered by the organisation in which they work, the environment may not be absolutely fundamental but can be a powerful influence (Mumford, 1992).

The learning organisation

The learning organisation is a powerful and attractive idea (Salaman, 2001). The term has been defined as: "... an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insight" (Garvin, 1994); and as "an organisation which facilitates the learning of all its members and continually transforms itself" (Pedler *et. al.* (1991). Moreover, the learning organisation "... depends absolutely on the skills, approaches and commitment of individuals of their own learning" (Mumford, 1992). However, the learning organisation concept is vague, prescriptive and seems to have little foundation in practice (Gardiner, 1999), while Garratt (1999) explains that the learning organisation is more an aspiration "… a vision, which motivates, stretches and leverages the organisation for the long term". Elsewhere, it is seen as a brand (Padaki, 2002).

The term organisational learning, as defined by Tsang (1997), "… is a concept used to describe certain types of activity that take place in an organisation, while the learning

organisation refers to a particular type of organisation in and of itself. Nevertheless, there is a simple relationship between the two – a learning organisation is one which is good at organisational learning."

Love et al. (2000) provide several definitions of both the learning organisation and organisational learning. However, to summarise a successful learning organisation should: make a commitment to knowledge (Mills and Friesen, 1992); have a learning culture (McGill and Slocum, 1993); appreciating the significance and dynamics of the learning process (Easterby-Smith, 1990); have a mechanism for renewal within itself; possess an openness to the outside world so that it may respond to what is occurring there (Mills and Friesen, 1992); use systematic problem solving (Garvin, 1994; Senge, 1991); promote and continually experiment (Easterby-Smith, 1990; McGill and Slocum, 1993; Garvin, 1994); learn from their own experience and past history; learn from the experience and best practices of others; transfer knowledge quickly and efficiently throughout the organisation (Garvin, 1994); possess accurate information systems; have reward systems that recognise and reinforce learning; have human resource practices that select people for their ability to learn; possess a leader's mandate for unlearning and learning (McGill and Slocum, 1993); and effectively manage and use learning opportunities.

Hyland and Matlay (1997) assert that a learning organisation can be defined or measured in terms of the sum total of accumulated individual and collective learning. However, Wang and Ahmed (2003) contend that organisational learning is not simply a collectivity of individual learning processes, but encompasses interaction between

individuals within an organisation, between organisations and between the organisation and its contexts.

Measurement of learning organisations

The following learning organisation diagnostic instruments have been developed: the attributes of a learning organisation (Goh, 2001); an instrument of a learning organisation (Jashapara, 2003); and a Market-based Organisational Learning Measurement Model (Morgan and Turnell, 2003). Additionally, the Learning Diagnostic Questionnaire (LDQ) (Honey and Mumford, 1989); the Learning Climate Questionnaire (LCQ) (Pedler *et al.* 1991); the Learning Environment Questionnaire (Armstrong and Foley, 2003); and Hult *et al's*. (2002) 17-item learning climate measure has been developed to evaluate the learning climate of organisations.

Improving experiential learning at work

Learning organisations benefit from mechanisms that transfer learning from an individual to a group. Further, they must educate employees how to learn and reward them for success in learning (Mills and Friesen, 1992). Work-based learning opportunities are crucially dependent on the way in which work is organised and allocated (Eraut, 1994). While Freedman (1967) states that learners are more influenced by their peers than by any other factor within their learning environment. For example, those factors that hindered learning within organisations were: relations with other

people, other people's characteristics, organisational structures, the environment, and job characteristics (Vandenput, 1973).

Ideally, it is said that an organisational culture climate approach is needed, in which an organisation encourages learning by encouraging individuals to identify their own learning needs and setting challenging learning goals; encouraging individuals to experiment; providing opportunities for learning both on and off the job; giving on-the-spot feedback; allowing time for employees to review, conclude and plan learning activities, and tolerating some mistakes, provided they try to learn from them (Mumford, 1986).

An organisation's learning climate is associated with an employee's perception of the environment that is created by their organisation's practices, procedures and reward systems that support learning (Schneider and Reichers, 1993; Cunnigham and Iles, 2002). Learning environments should be both supportive and challenging (Knox, 1986), affording trust, mutual support, acceptance of the individual, warmth and respect, thereby, enabling the learner to take risks, admit to difficulties and problems, give and receive feedback and cope with the allied stresses (Boydell, 1976). The "ideal" working situation: "... has jobs that grow and expand; takes action to meet development needs; ... allows people to decide how to meet their objectives; has collaborative processes for setting objectives; diagnoses the causes of problems; encourages people to be open about their problems; ... welcomes new ideas; constantly changes; has top management who are actively involved in training and development activities; ... provides opportunities to use new skills; ... constantly strives to improve quality; encourages

people to aim high; uses task forces and project teams; encourages people to experiment with new ways of doing things; actively supports people's plans to implement something learned on a course" (Honey and Mumford, 1989).

EMPIRICAL FINDINGS

Sample

The sample investigated was students from the BSc in CM&QS programme at the University of Manchester/UMIST, who had completed at least 46 weeks of SWE with a UK construction company (the majority of whom were sponsored by a consortium member). The sample comprised the years 1996-2003. Table 1 indicates the total number of students in each year and the number of responses for each year. Ultimately, 165 students out of a possible 185 took part, representing a response rate of 85%.

<<< Insert Table 1 about here >>>

Questionnaire

The students were required to complete a learning climate questionnaire (LCQ), an inventory designed to elicit information on whether they considered their work placement organisation provided an appropriate climate. The LCQ required the students to rate fifteen pairs of statements on a five-point semantic differential scale. The chosen statements were derived from Pedler *et al's* (1991) measuring the quality of your

learning climate, Honey and Mumford's (1989) work situation items and Mumford's (1980) ways in which supervisors can improve the learning climate. Also, the students were asked to list five positive and five negative aspects of their year in industry. The questionnaires were all completed in week 1 semester 1 of the student's final year of study.

Analysis

Data analyses were undertaken using the Statistical Package for the Social Sciences (SPSS for Windows, release 10.0.7). Descriptive statistics were calculated for each item of the LCQ. The items were ranked based on the mean score. A three ("k") factor analysis was performed for the LCQ and factor scores generated. Each item of the LCQ and the LCQ summary variable was analysed for differences between the total sample and the median score (2) using 't' tests and its comparable non-parametric test. They were further analysed together with the three factor scores for differences between subgroups based on the year of study (1996-2003) by means of one-way analysis of variance (ANOVA) and its comparable non-parametric test. Further, each item of the LCQ, the LCQ summary variable and the three factor scores were correlated with time (Year of study). Finally, the positive and negative factors that influenced the students' SWE were collated and ranked in order of importance.

Interviews

On completion of the analysis, unstructured interviews were conducted with six representatives (training/human resource managers) from five of the consortium of construction companies involved in the programme. These individuals were responsible for placing SWE students within their organisation and monitoring the students' progress during the SWE.

PERCEPTIONS OF THE LEARNING CLIMATE

LCQ summary variables

Initially, principal components extraction with varimax rotation was used to determine the underlying dimensions of the 15 items of the LCQ. The number of factors extracted dictated by Kaiser's criterion. This produced a three-factor solution, while a scree plot indicated that the true number of factors lay between two and four factors. Two, three and four factor solutions were carried out, and after inspecting the factor loadings matrices the three-factor solution was computed. The initial eigenvalues ranged from 5.71 for factor one to 1.13 for factor three and the solution accounted for 55.36% of the variance. The final solution was generated using principal factor extraction with an oblique (Oblimin) rotation. The three-factor solution accounts for 45.1% of the total variance in the LCQ. Variables were ordered and grouped by size and interpretive labels suggested.

Factor one 'Human Support' is associated with items the 8, 10, 4, 11, 5, 7, 6, and 9: 'People are very willing and supportive; pleasure is taken in the success of others'; 'The

organisation is an open and friendly place'; 'People are usually ready to give their views and pass on information'; 'Discussion of problems is actively encouraged'; 'People are recognised for good work and rewarded for effort and learning'; 'If people develop a new skill or technique there is plenty of opportunity to use it'; 'People manage themselves and their work; there is great emphasis on taking personal responsibility'; 'Constructive feedback is often provided about your performance'. Factor two 'Staff Development Systems' is associated with the items 3, 1 and 2: 'There is a systematic process for identifying individual development needs'; 'There are lots of resources; development facilities are very good'; 'People are encouraged to learn at all times and to extend themselves and their knowledge'. Factor three 'Working Practices' is associated with the items 14, 15, 13, and 12: 'Accepts that some forecasts will prove to be inadequate'; 'Explicitly deals with risk and uncertainty'; 'Working practices and structures are constantly under review'; 'High standards are a goal to be achieved'. Three factor scores were generated using the regression method. The validity of these dimensions is supported by Vandenput (1973), as discussed earlier.

Additionally, a weighted average LCQ summary variable (LCQ) was created.

Descriptive statistics

The alpha reliability estimate for the total scale was 0.86, while the split-half reliability estimate was 0.90. This suggests the inventory is internally consistent. Frequencies and summary statistics for the fifteen statements used in the LCQ are presented in Table 2,

ranked based on their mean scores. Further, the items were tested for differences against the median value (2) see Table 3.

<<< Insert Table 2 about here >>>

Those statements given a high rating: "People manage themselves and their work; there is great emphasis on taking personal responsibility" (HS); "People are usually ready to give their views and pass on information" (HS); "The organisation is an open and friendly place" (HS); “Discussion of problems is actively encouraged” (HS); “People are very willing and supportive; pleasure is taken in the success of others” (HS); “People are encouraged to learn at all times and to extend themselves and their knowledge” (SDS); "High standards are a goal to be achieved" (WP) and “Explicitly deals with risk and uncertainty” (WP). The t-test for independent samples also revealed a very highly significant difference at the 0.1% level in these items when tested against the median value.

<<< Insert Table 3 about here >>>

The results indicate that the working environment within construction organisations is perceived by the students to be supportive in terms of human support and to a lesser extent in working practices. However, the human support items appear to be related to the personal and informal support from colleagues. This finding is important as learning within an environment requires a human communications network or society (Rogers, 1986), relates to the social context within which learning takes place (Lovell, 1980),

while Snell (1992) considers the main source of 'pain' in learning to be the prevailing organisational ethos of competitive individualism. Further, Freedman (1967) states that learners are more influenced by their peers than by any other factor within their learning environment.

Those items that were not significantly different from the median value were: "Constructive feedback is often provided about your performance" (HS); "People are recognised for good work and rewarded for effort and learning" (HS); "If people develop a new skill or technique there is plenty of opportunity to use it" (HS); and "There is a systematic process for identifying individual development needs" (SDS).

These results suggested that the working environment was considered to be less supportive in terms of the more formal support given by managers within the organisation and specifically in terms of the use of appraisal systems to identify development needs. This supports the findings of Scott and Harris (1998) who discovered that the majority of in place project feedback systems were informal and unstructured, which prohibited effective learning from taking place.

Differences in the students' perceptions of the learning climate of their organisation based on the year of study

The items of the LCQ and its summary variable were tested for differences between subgroups based on the students' year of study (See table 1 for sizes of subgroups). The results are presented in Table 3.

ANOVA revealed a very highly significant difference at the 0.1% level in the item: "Constructive feedback is often provided about your performance" (HS) and the Staff Development Systems factor score; a highly significant difference at the 1% level in the items: "There is a systematic process for identifying individual development needs" (SDS), and "Working practices and structures are constantly under review" (WP) and the LCQ summary variable; and a significant difference at the 5% level in the items: "People are encouraged to learn at all times and to extend themselves and their knowledge" (SDS), "People are very willing and supportive; pleasure is taken in the success of others" (HS) and "Discussion of problems is actively encouraged" (HS).

Closer examination using Bonferroni's multiple comparison test revealed that for the following items:

- "People are very willing and supportive; pleasure is taken in the success of others": there were no significant differences between subgroups at the 5% level.
- "There is a systematic process for identifying individual development needs": the mean score for the 1996 student group was significantly lower than that of the 2003 group (at the 5% level).
- "Discussion of problems is actively encouraged" and "People are encouraged to learn at all times and to extend themselves and their knowledge": the mean score for the 1996 student group was significantly lower than that of the 1998 group (both at the 5% level).

- "Working practices and structures are constantly under review": the mean score for the 1996 student group was significantly lower than those of the 1997, 1998 and 2002 groups (all at the 5% level).
- "Constructive feedback is often provided about your performance": the score for the 2001 student group was significantly higher than those of the 1996 and 1999 groups (both at the 1% level).
- The LCQ summary variable: the mean score for the 1996 student group was significantly lower than those of the 1997, 1998 and 2003 groups (all at the 5% level).
- The Staff Development Systems factor score: the mean score for the 1996 student group was significantly lower than those of the 1998 and the 2002 groups (both at the 5% level) and the 2001 and 2003 groups (both at the 1% level).

The findings indicate homogeneity in the students' responses to 10 out of the 15 LCQ items. Further, those items identified by ANOVA as being significant, with the exception of "Constructive feedback is often provided about your performance", appear to reflect the dissatisfaction of the 1996 group. However, the results for this item may reflect a trend indicating an improvement over time.

Relationships between the learning climate and time

To investigate this further the items of the LCQ questionnaire were correlated with time (1996-2003). Pearson's 's' (P's') and Spearman's 'rho' (S'r') correlation coefficients were

calculated and indicate that the following correlate significantly and positively with time:

- “Constructive feedback is often provided about your performance” (HS): at the 0.1% level (P’s’ = 0.260; S’r’ = 0.253);
- The Staff Development Systems factor score: at the 1% level (P’s’ = 0.245; S’r’ = 0.240);
- “There are lots of resources; development facilities are very good” (SDS): at the 1% level (P’s’ = 0.235; S’r’ = 0.232);
- “There is a systematic process for identifying individual development needs” (SDS): at the 1% level (P’s’ = 0.213; S’r’ = 0.220);
- The LCQ variable: at the 5% level (P’s’ = 0.171; S’r’ = 0.175); and
- "The organisation is an open and friendly place" (HS) at the 5% level (P’s’ = 0.166).

To remove the effect of the 1996 student group Pearson's 's' (P’s’) and Spearman's 'rho' (S’r’) correlation coefficients were calculated for the years 1997-2003 and revealed that only the following item correlated significantly and positively with time:

- “Constructive feedback is often provided about your performance” (HS): at the 5% level (P’s’ = 0.178; S’r’ = 0.176);

while the following item correlated significantly and negatively with time:

- "Discussion of problems is actively encouraged" (HS): at the 5% level (S'r' = 0.174)

The results indicate that the students' scores for the item related to the provision of feedback has increased significantly over time. However, for the items relating to the provision of resources, support and identifying development needs; the Staff Development Systems factor score and the average of all the LCQ variables, again, the results would appear to indicate that the 1996 group were particularly dissatisfied with these items rather than demonstrating an improvement trend over time.

Positive and negative SWE factors

Table 4 presents positive and negative factors that influenced the students' SWE ranked in order of importance for two representative student groups 1998 and 2002. The responses of the two student groups are very similar. For example, level of responsibility, experience and variety of work and a friendly atmosphere were consistent positive factors. Likewise, lots of travel, long hours poor training and poor supervision were consistent negative factors. It is interesting to note that for the first time in 2002 the students perceived the salary they received to be a positive influence rather than a negative factor as indicated in 1998. Disturbing, however, is that students considered their tasks to be boring or less glamorous and that several comments were made regarding sexism encountered within construction organisations.

<<< Insert Table 4 about here >>>

Interviews

All the interviewees viewed sponsorship and SWE in particular as a key component of graduate recruitment, "… an opportunity to build a relationship with a prospective employee" with conversion rates of between 60 and 96% being reported for 2003. In an ideal world, most reported that they would not recruit a student who had not undertaken SWE.

Generally, SWE posts are driven by a business need with the placement paid through a contract not by the training budget, enabling the students to be integrated into a business area. However, for one organisation the SWE was funded equally through a project and the training budget enabling the SWE student to be controlled by the training department, thereby, allowing them greater control over what the SWE student does.

Within all the organisations SWE students were inducted onto structured training schemes during the SWE and received formal training, for example, in site safety and site supervision. Further, two organisations operated rotational placement schemes with student working in two or three different areas of the organisation. Others explained that they had embraced NVQ level 3, which is linked to a framework for the SWE with the intention that the student obtains a Construction Skills Certification (CSCS) card. However, one representative stated that his organisation had rejected NVQ as not being readily applicable to the construction industry, while another suggested several incentive for completing the NVQ, for example, it counted in lieu of a diary required by

professional institutions and completion of the NVQ during SWE meant that when the student returned to the sponsoring company on graduation they were deemed to have completed year one of the organisation's graduate scheme, therefore, they could be employed at a higher level.

Commonly, SWE students are allocated a learning advisor (a training or human resource function) and also a supervisor (line manager/mentor/coach). Jointly the learning advisor and supervisor are responsible for ensuring appropriate work experience. The learning advisor usually visits the students between two and five times during the SWE to monitor progress; this is in addition to various line management appraisal schemes. Culturally, many senior managers within the organisations had undertaken year out placements themselves; therefore, the majority are willing to supervise students. However, most interviewees suggested that they selected specific managers and projects to allocated students to. Additionally, two organisations provided supervisors with people skills training.

While most organisations used formal questionnaires to obtain information on how students had performed on the SWE, only one organisation used a formal questionnaire to elicit the students' views on their work placement, two organisations employed exit interviews, the others relying on informal feedback from the student.

'No surprise' was the general consensus over the results of the learning climate questionnaire, although it was suggested that by adopting the NVQ scheme the scores for working practices should improve. Likewise, personal development was held to be

the responsibility of the individual, although one interviewee thought that the identification of the students' learning needs was covered by their appraisal scheme. Surprisingly, some organisations excluded SWE students from their appraisal scheme.

Similarly, there was general acceptance of the positive and negative aspects of SWE. For example, long hours were accepted as being industry-wide and a cultural issue, while 'boring tasks' were seen as a feature of all jobs, although one interviewee commented that this response was possibly liked to high student expectations. Finally, sexism was held to be unacceptable, although one interviewee suggested that it was necessary to distinguish between 'banter' and harassment, with a need to set a balance between the comfort of the student and not alienating existing staff.

CONCLUSIONS

The following conclusions have been drawn from the investigation.

The learning climate within construction organisations (working environment)

- The working environment is perceived to be supportive in terms of human support and to a lesser extent working practices. These human support items appear to be related to the personal and informal support from colleagues.
- It is considered to be less supportive in terms of the more formal support given by managers within the organisation and specifically in terms of the use of appraisal systems.

- There is a high degree of homogeneity in the responses of the students to the items of the LCQ questionnaire.
- There has been a significant improvement over time in the students' perception of the provision of feedback on individual performance within construction organisations, however this item is still ranked 12th out of 15 LCQ items.

Construction organisations should consider either introducing, or applying more effectively, formal appraisal systems, as a mechanism for identifying individual development needs. Likewise, they should critically examine how managers of SWE students provide formal support. For example, they should consider introducing effective feedback mechanisms that require both the individual to critically reflect on their own performance and the organisation to provide effective constructive feedback on an individual's performance.

Factors influencing the supervised work experience

- Level of responsibility, experience and variety of work, and a friendly atmosphere were consistently considered to be positive factors.
- Lots of travel, long hours, poor training and poor supervision were consistently considered to be negative factors.
- For the first time in 2002 the students perceived the salary they received to be a positive influence rather than a negative one as indicated in 1998.
- Current negative influences were: students considered their tasks to be boring or less glamorous, and the sexism encountered within construction organisations.

The implication of these findings is that construction companies need to accurately assess their ability to provide an effective learning environment and to address any deficiencies. This would appear crucial if they are to attract potential employees to a career in construction and to retain students within the industry after SWE.

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Table 1. Number of responses, total number of students, % response and number of female students (per year and in total)

	1996	1997	1998	1999	2000	2001	2002	2003	Total
No. (responses)	18	21	20	20	19	29	22	16	165
Total in cohort	22	22	24	24	23	36	26	17	194
% Response	82	95	83	83	83	81	85	94	85
No. of females	2	5	5	4	8	9	7	2	42

Table 2. Frequencies, means and standard deviations of individual items of the Learning Climate Questionnaire (LCQ) [n = 165]

Five-point semantic differential scale									
	4	**3**	**2**	**1**	**0**		**Median**	**Mean**	**SD**
People manage themselves and their work; there is great emphasis on taking personal responsibility	37	**79**	42	5	2	People conform to rules and standards at all times - no personal responsibility is taken or given	3	2.87	0.83
People are usually ready to give their views and pass on information	40	**77**	30	11	7	People tend to keep their feelings to themselves; are secretive and information is hoarded	3	2.80	1.02
The organisation is an open and friendly place	49	**61**	35	9	11	There is little openness and support; the organisation is cold and insular	3	2.78	1.13
Discussion of problems is actively encouraged	27	**59**	56	20	3	'People don't have problems'	3	2.53	0.97
People are encouraged to learn at all times and to extend themselves and their knowledge	26	**67**	39	25	8	There is little encouragement to learn; there are low expectations of people in terms of new skills and abilities	3	2.47	1.08
People are very willing and supportive; pleasure is taken in the success of others	24	**63**	51	19	8	People don't support each other; there is an unwillingness to pool or share information	3	2.46	1.03
High standards are a goal to be achieved	25	53	**59**	23	5	High standards are compulsory	2	2.42	1.01
Explicitly deals with risk and uncertainty	16	50	**74**	16	9	Avoids risk and uncertainty	2	2.29	0.96
There are lots of resources; development facilities are very good	23	**52**	49	30	11	Training packages, resources and equipment are limited	2	2.28	1.12
Working practices and structures are constantly under review	29	40	**48**	36	12	Working practices and structures are static	2	2.23	1.19
Accepts that some forecasts will prove to be inadequate	5	43	**90**	20	6	Does not accept inadequate forecasts	2	2.13	0.80
Constructive feedback is often provided about your performance	22	41	45	**46**	11	Constructive feedback is rarely provided about your performance	2	2.10	1.15
People are recognised for good work and rewarded for effort and learning	10	49	**64**	28	14	People's successes are ignored but blame is readily attributed	2	2.08	1.02
If people develop a new skill or technique there is plenty of opportunity to use it	8	50	**65**	30	12	If people develop a new skill or technique there are few opportunities to use it	2	2.07	0.99
There is a systematic process for identifying	13	37	**51**	41	23	The identification of development needs is left	2	1.85	1.15

individual development needs	to the individual

Bold = Mode

Table 3. ANOVA and tests for differences in the Learning Climate Questionnaire items (n = 165)

Item		**Median (2)**		**Year of study**	
		T	Z	**F**	**x^2**
Personal Responsibility	HS	13.427***	-8.959***	0.719	4.782
People – Information	HS	10.081***	-7.589***	1.135	8.832
Organisation	HS	8.791***	-6.799***	2.011	12.630
Problems	HS	7.009***	-6.096***	2.101*	15.690*
Support	HS	5.728***	-5.062***	2.300*	15.687*
Encouragement to learn	SDS	5.625***	-5.038***	2.370*	18.690**
High Standards	WP	5.412***	-4.949***	1.616	10.116
Risk and Uncertainty	WP	3.881***	-3.527***	1.529	11.845
Resources	SDS	3.202**	-3.048**	1.922	13.777
Working Practices	WP	2.491*	-2.554*	2.768**	19.000**
Forecasts	WP	2.050*	-1.951	0.698	4.036
Feedback	HS	1.150	-1.275	4.144***	25.000***
Recognition of Work	HS	0.988	-0.829	1.764	12.392
New Skills	HS	0.948	-0.825	1.278	9.095
Identification of Needs	SDS	-1.619	-1.661	2.971**	19.677**
LCQ summary variable	LCQ	10.216***	-8.268***	3.290**	22.265**
Human Support	FS	-	-	1.958	16.046*
Staff Development systems	FS	-	-	3.681***	23.017**
Working Practices	FS	-	-	1.406	10.448

*** = p≤ 0.001 ** = p≤ 0.01 *= p≤ 0.05; 't' = t-test – One-sample test, 'z' = Wilcoxon Signed Ranks Test, F = F Ratio Oneway Analysis of Variance, x^2 = Chi-Square Kurskal-Wallis 1-Way ANOVA; HS = Human Support, SDS = Staff Development Systems; WP = Working Practices

Table 4. Factors influencing the students' perception of supervised work experience

	Positive factors		
	1998		**2002**
1	Level of responsibility	1	Level of responsibility
2	Experience of work	2	Variety of work
3	Friendly atmosphere	3	Experience of work
4	Working relationships	4	Friendly atmosphere
5	Training opportunities	5	Good/regular salary
6	Variety of work	6	Working in teams
7	Social life	7	Link between studies and work
8	Involvement in prestigious project	8	People pass on information
9	Dealing with people	9	Training opportunities
		10	Working relationships
	Negative factors		
	1998		**2002**
1	Lots of travel/being away from home	1	Long hours
2	Poor site management	2	Boring/less glamorous tasks
3	Lack of money	3	Lots of travel
4	Long hours	4	Poor supervision
5	Poor training	5	Poor training
6	Poor supervision	6	Lack of cooperation/trust
7	Lack of variety of work	7	Weather conditions/working on site
8	Lack of understanding of your ability	8	Sexism
9	Supervisors ill prepared	9	Being the student
10	Poor working conditions	10	Uncertainty/lack of choice of job location