

The Development of a Flexible Learning Mode For the Final Year of the Bachelor of Construction

**Roger Birchmore
School of Construction
UNITEC Institute of Technology
Auckland New Zealand**

This paper describes the conversion of a conventional Lecture/Tutorial delivery mode of a final year Construction degree, to a mode comprising short, intensive blocks of Campus based delivery separated by long periods of student directed study.

The driving forces behind the conversion are discussed. The developmental procedures are described and an outline of the delivery format is presented. The potential advantages and disadvantages are considered from the student and the deliverers' perspectives. Experiences of delivering the course are given

Keywords : Construction Degree, Block Learning, Delivery Format

1. Background

1.1 The Previous Programmes

The School of Construction at UNITEC offered the Bachelor of Construction Management and Bachelor of Quantity Surveying 1992 to 1997. The previous programmes consisted of four full-time equivalent years of study. The second semester of the third year involved the students obtaining work experience. Honours could be awarded as a result of high achievement at level seven.

The programmes were primarily designed for students to study full time. The number of students studying did not warrant a dedicated part-time stream, so they picked up whatever selection of courses suited their work and personal circumstances from the full time programmes

The courses were largely delivered in a conventional lecture/tutorial format. However, students were introduced to aspects of problem based learning (PBL) in their first full-time year of study via the course 'Problem Solving Quality Improvement and Group Process'. Exposure to this method of learning increased as students progress through the delivery of gradually increasing numbers of courses employing PBL techniques.

1.2 Programme Development

As required by the New Zealand Qualifications Authority and by UNITEC's quality management systems the School of Construction carried out a five year review of these programmes in 1996 This review involved consultation with industry, staff and students.

As a result of the review processes the following changes were proposed:

1. The degrees were reduced to 360 credits (equivalent to three years of full time study).
2. The two previous programmes were merged to create one degree with majors in Construction Management and Quantity Surveying.
3. The delivery of Years two and three of the programme either in a conventional format or by block learning.
4. Years two and three of the programme to be delivered by UNITEC staff at locations other than the Mount Albert Campus.

This paper focuses on the third of these changes

2. Driving forces

The benefits of flexible learning are well documented and Knox (1996) provides some quantitative and qualitative results. Successful examples of programmes related to the Construction Industry include Quantity Surveying Programmes from the Central Queensland University, Australia and the Bachelor of Building Degree from the University of Newcastle, NSW, Australia.

The success of the above gave the development team confidence that a block mode would be feasible. In addition to this, there were a number of more local issues that caused the development team to consider a flexible learning format.

- ñ One of the primary driving forces behind the change of delivery format has been the New Zealand Institute of Quantity Surveyors. The Institute (NZIQS) has made a degree a pre-requisite of entry to professional membership and requested UNITEC to take steps to make this programme more accessible to student members of NZIQS who do not live in Auckland. It was initially perceived that a true distance learning programme would be prohibitively expensive in terms of development time and resources. It was hoped that a block learning mode with significant periods of conventional lecturer /student contact would prove less costly.
- ñ The construction industry in New Zealand is still relatively buoyant and large numbers of full time students have found work and converted to part-time study modes. Whilst these numbers still do warrant a special part-time timetable it is still desirable to consider their needs. Employers had specifically requested us to consider formatting courses to minimise disruption to their working patterns
- ñ The existing, compulsory, sixth month Work Experience component was not contributing to the programme in proportion to its credit value (equivalent to half a year of full time study) and was also expensive for the students. A block, part-time, learning mode would provide ample opportunity for students to integrate theoretical learning and industry practice. At the same time, it would provide the benefits of on-campus learning such as the interactions between students and between students and staff.

- ñ Further, the block learning mode would provide the opportunity of delivering the programme at different sites, again increasing the accessibility to students outside of Auckland.
- ñ One of UNITEC's visions is to have a student body comprising 15% Maori by the year 2000. The current number of students in the School of Construction sits at 4%. The School of Construction Maori Advisory committee, Taahuhu suggested that the proposed delivery mode, incorporating flexible study patterns and components of group work would prove more attractive to Maori students

The belief that these changes would also result in educational benefits are supported by Rowntree (1992) who summarises some of the characteristics of flexible learning :

- ñ more people are able to learn
- ñ the use of a variety of media appeals to different learning styles
- ñ learners can study, up to a point where and when they choose
- ñ learners can study at their own pace
- ñ activities may be set in the learners local environment or work place

3. Development

The consultation processes that underpinned this development have included the following:

- i. Interviewing recent past graduates.
- ii. Surveying and interviewing employers of recent graduates.
- iii. Discussions with the New Zealand Institute of Quantity Surveying.
- iv. Receiving feedback from current students on individual courses.
- v. Consultation with the Advisory Committee and Programme Committee.
- vi. Regular discussion with School of Construction staff and representatives of the School of Architecture.
- vii. Development workshops with the current lecturing staff.
- viii. Consultation with the School Maori Advisory Group, Taahuhu.

The initial exploration of the need for changes to the programme was undertaken by interviewing recent past graduates. A written survey of the graduates employers followed. Feedback from this process indicated that the mode of study could be better matched to the requirements of the working environment. This survey was followed up with a focus group where employers responses were expanded and clarified. Further support for a flexible learning mode was obtained at this point. Employers were also consulted regarding the length of time and number of times staff could be spared to attend the campus based components

The results of these consultations have then been applied and addressed at a number of workshops involving members of the School of Construction and School of Architecture from which the revised programme evolved.

The workshops specifically addressed the content of the programme. Further workshops involving the teaching teams focused on the updating or re-writing, where needed, of course

prescriptions. The integration of content and progression of learning was examined and ensured at meetings of lecturers involved in individual Majors

The lecturers responsible for the final year subjects then explored the flexible learning modes and produced a suitable format.

4. Delivery Format

One of the underlying principles of the new format was to be that the content and quality of the courses would remain substantially the same. The total learning hours, that is lecture, tutorial and student-directed hours, would also remain largely unchanged as would the number of contact hours between staff and students. The final year courses worked on a ratio of four hours of student directed study to every hour of lecturer directed study

It was initially proposed that four, week long sessions per year would be acceptable. This was arrived at by a simple analysis of class based hours and student directed hours. Employers however had given mixed messages about the ability to release staff for long periods of study. Interestingly there appeared to be quite a clear division. Employers who fell into the consultant category felt that the block courses offered the potential to plan staff absence in advance. This ability would compensate for the quantum of absence. Employers that could be best described as contractors, felt that absences of a week at a time were too much. It was felt in a construction project, that too much could go wrong in this period. Analysis of the hours revealed that part-time study could be achieved by attending four blocks, consisting of three days each.

Further examination of the learning hours confirmed that the part time years could be combined satisfactorily into an equivalent full-time year. However the philosophical commitment to the combination of academic and work based learning drove the decision to recommend this mode of study to mature students who had already obtained work experience before joining the programme.

Investigation of the courses involved produced the arrangement below

Part-time Year 3 - Construction Management Major.

	02.750	Societal Context	12 credits
	(02.733	Negotiated Study	
one of	(02.751	Urban Economics	18 credits
	(02.703	Environment & Building 2	
	(02.787	Team Excellence	
	02.786	Construction Business. Mgnt	18 credits
	02.774	Tendering & Cost Control	18 credits
			<u>66 credits</u>

Part-time Year 4 - Construction Management Major.

	02.735	Construction Management 4	18 credits
one of (02.702	Construction Technology	18 credits
(02.784	Property Development	
	02.734	Research Project	18 credits
			<hr/>
			54 credits
		<i>Total</i>	<hr/>
			120credits

The courses have been time-tabled to concentrate the first part-time year courses at the front end of the attendance week, and the second part-time year courses at the end. This would enable those whose circumstances require them to study a full time programme, to do so. An attendance week comprises the first three days which are all ten hours long, followed by two and a half eight hour days. The duration of each course has been either half or full days. The four campus based sessions also lent themselves to being run during the three Semester breaks and over the break between academic years

This planning was further underpinned by a staff member attending a week long course on the development of flexible learning programmes

The development team quickly realised that 8 hour days of conventional lectures would not achieve the desired outcomes or provide the necessary stimulation. This resulted in delivery formats that involved workshops, problem solving exercises, groupwork, site visits, expert panels. It is felt by the development team that this continues to advance the programme further toward the problem based delivery mode

It was envisaged that periods between campus based study provides the opportunity for the development of satellite study groups. It was further proposed that tutorial support during these periods was to be provided by a selection of

- ñ telephone and teleconferencing
- ñ fax
- ñ email
- ñ use of the internet
- ñ use of locally based mentors and tutors from other institutions, construction companies or professional practices.

5. Perspectives

The following section describes some of the expected attitudes and perceptions before the course was run. Actual experiences are documented in the following section

5.1. Student Perspectives

As previously noted, past and existing students have been consulted as part of the development process.

The reactions to the changes in delivery mode proposed were largely positive. The periods between campus based blocks increase the flexibility with which students can plan their study time. This will be of great importance as it is anticipated that the majority of students will be

combining employment with study. This combination may however also prove to be a major barrier to successful completion of the programme. Research conducted in the Faculty of Architecture at Newcastle University, Australia (Plenty, Ostwald, Mackay, 1995) reported that 53% of the drop out from the distance learning Bachelor of Construction were due to work related commitments. In addition Willis (1993) cites the requirement of family support as being critical to a students chances of success.

Current students also jumped to conclusions that the block learning mode represents a shorter and therefore easier way of completing the programme. The principles outlined in Section 4 of this paper shows that this is not the case and attempts to study the programme in a combination of full time employment should not be undertaken without full appreciation of the total workload.

The advanced years of the programme comprise a significant proportion of students studying on a part-time basis, each student pursuing a potentially different combination of courses from each other. This does not produce an environment where students can interact freely or frequently and results in feelings of isolation. Focusing the campus based content into week long blocks will significantly improve the opportunities for interaction and hopefully contribute to the development of a 'cohort'.

5.2 The Deliverers

The initial intention for developing a block learning mode was the perception that this may prove simpler and faster than a full, distance learning approach. During the detailed planning stages it has been realised that delivery of week long blocks of learning require planning and writing almost from scratch. However the general movement towards PBL is supported by the staff. The result of having students available for complete days provides opportunities innovative delivery methods.

The ability for students to progress during off campus periods is seen as a major influence on the success of the delivery mode. A number of modes of tutorial support have been outlined but this must also be supported with access to Library resources.

However it is likely that this must be backed up by the more rigorous use of Required Texts(to be bought by the students) by the delivery staff.

The focusing of the campus based blocks outside the standard Semester timetable relieves pressure on the School's spatial resources. It also matches demand for student accommodation with the Hall of Residences quiet periods. Similar smoothing of resources applies to the Library services.

It is expected that the staff delivering the courses will also be involved in the delivery of other parts of the programme and other programmes that are based on the standard academic year. Moving the courses into the Semester break periods erodes further the ability for staff to have breaks, holidays, and conduct research. The impact of this is untested as yet but may in some way be addressed by the ability for staff to increase their areas of specialisation and eventually teach almost exclusively on the block courses.

The condensed periods of course delivery open up the opportunities to transport the programme to students based on other parts of the country depending upon numbers with the potential for adding local relevance and specialist input to the programme.

7 . Actual Experiences

7.1 Students

Student reaction to the mode of learning has been variable, but generally positive. A three question survey was conducted during the third attendance block which asked the students to identify :

- ñ the best things about the course
- ñ the worst things about the course
- ñ recommendations for improvement

Of 455 comments noted, only 39 referred to the block delivery mode of the course. 29 referred to the block mode as one of the best things, 10 noted the mode in the worst things. More consistency was observed regarding the duration of each course. Of 29 comments, 26 said the duration was one of the worst things and improvement responses suggested that the maximum duration for any course should be half a day. 25 out of 39 responses requested improved tutorial contact between the attendance blocks.

Withdrawal statistics are always flawed by students who disappear from the system without formal notification. However numbers so far seem low with only two officially pulling out of any of the courses. Two students have cited work pressures as reasons but both had enrolled in part time loads whilst attempting to maintain full time work positions, against advice.

There appears to be an underlying feeling by some students that the move to block delivery has been motivated by economy, perceiving the concentration of contact into blocks to result in an overall reduction of contact time thereby saving lecturers time whilst charging the same.

7.2 The Deliverers

Whilst requiring significant redevelopment, the delivery by block mode has not involved the development to delivery hour ratios of 40 : 1 anecdotally reported possible for full distance learning courses.

Current student progress performance seems similar to previous years. Formal analysis will take place at the end of the year. The staged attendance blocks has encouraged the staging of assignments. This progressive reporting of attainment has allowed students to identify their progress and focus on areas requiring improvement not normally possible when major assignments are handed in near the end of the year.

Students do not seem to have had trouble in accessing resource material, but having only one student from out of the Auckland area has not really tested the systems.

Interest has been shown by other institutions in running the block course at locations out of Auckland, and this is being investigated further

A major impact not anticipated was the affect of sick staff on the delivery programme. The impact of a lecturer being unwell during the attendance block has significantly increased. This could result in 25% of the staff /student contact being either lost, delivered by a stand in or being re-planned at another time. The ability to re-plan is severely limited when allowing for students to travel from out side of Auckland. The availability of replacement lecturers for half or full day sessions is also limited.

8. Further Development

In conclusion, the first year of the block course currently appears to be successful. An improved measure will be available on analysis of final results and outputs from the UNITEC's standard course evaluation process.

The following areas have currently been identified for further development

The encouragement of electronic communication employing email and listserves. It is envisaged that this may be introduced during the first week or as preparation for the first week by asking students to conduct some pre-reading and question preparation

Introductory sessions on self directed learning

Timetabling individual course sessions to no more than half a day

The work previously cited by (Plenty *et al* 1995) suggests that the motivation and ability for students to continue study in-between the campus based blocks needs detailed attention. The intention to provide some of the tutorial support by the employers themselves may begin to address the difficulties of balancing work with study. The development of a list of suitable and interested mentors deserves some effort.

The development of risk mitigation strategies to cover the illness of key lecturers

The development of the second year in the block mode format

9. REFERENCES

Knox, H., 1996, 'Do Students Value A Flexible Learning Experience?' *The Management of Independent Learning*. ed Tait, J. Knight, P., Staff and Educational Development Series, Kogan Page, London

Rowntree, D., 1992, '*Exploring Open and Distance Learning*' Kogan Page, London

Plenty, T.C., Ostwald, M.J., Mackay, A.D., 1995 'Charting Student Withdrawal In A Problem Based Course Through Distance Education'. *Research And Development in Problem Based Learning* eds Little, P. Ostwald, M. Ryan, G. Australian Problem Based Learning Network

Willis, B., 1993, '*Distance Education, A Practical Guide*', Educational Technology Publications, New Jersey