

Blended Learning: An Appropriate Strategy For The Future Development Of An Established International Distance Learning Course

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ABSTRACT

This paper outlines the experiences of the MSc Construction Management [CMDL] programme team at the University of Bath, UK in devising an effective strategy for the future development of an established distance learning programme. The term 'blended learning' in our case represents the combining of IT-based (Web and CD-ROM) delivery and problem-based learning [PBL] strategies with an existing paper-based programme of study.

The paper starts by outlining the pedagogical reasons for adopting a blended learning approach and then evaluates the driving forces external to the pure pedagogical aspects that have influenced the developmental ideas. Particular focus in the paper is also given to a discussion on how the courses two emerging markets (Southern Africa and China) are going to be accommodated by the blended learning approach.

The paper presents a case study which should be of interest to others running distance learning courses. It acts as an illustration of how distance learning courses need to change and adapt in a rapidly evolving global education market.

INTRODUCTION

The MSc Construction Management programme, run by the Department of Architecture and Civil Engineering is one of the largest postgraduate distance learning courses offered by the University of Bath (UK) maintaining an average of 350 registered students. 70% of the students study the course from outside the UK. Currently students come from 39 different countries with significant numbers from Hong Kong, the Gulf, Uganda and Canada. To facilitate the management of the programme worldwide the University of Bath have established collaborative agreements with The School of Professional and Continuing Education [SPACE], Hong Kong University, The British Columbia Institute of Technology [BCIT], Vancouver Canada and the Chartered Institute of Building – Africa [CIOB-AFRICA],

Johannesburg South Africa. These local centres provide administration and local tutoring.

The construction industry of today is a truly global operation. A building constructed in Hong Kong may be for example built for a Chinese client, designed by an American architect and constructed by a British/Hong Kong joint venture. This programme embraces this concept and recruits construction professionals from all backgrounds and from all corners of the world. The programme is promoted as being specifically relevant for:

- managers needing formal training to enhance their effectiveness
- individuals who have a significant management focus in their work but little or no training
- those moving from specialist or technical roles into management
- those wishing to develop their career potential by moving into management.

PROGRAMME'S RATIONALE

The success of the course to date may be attributed to the sound rationale on which it has been built. It is clearly recognised that today's international construction industry managers must strike a finely tuned balance between pragmatism and intellect if they are going to succeed. On the one hand, they need to know the 'nuts and bolts' of the building process. On the other, they need the creative skills and the vision to think, plan and act strategically within the uniquely demanding context of construction management. Thus the aim of the course has been to mirror the two twin-linked realisations of construction, namely, the intellectual reality and the practical realities. The latter provides the industry's output. The former determines the quality of that output.

CURRENT TEACHING AND LEARNING MODEL

The current programme uses a blend of conventional paper-based instructional materials with a range of multimedia delivery tools and may be considered to be what is categorised by Sumner (2000) as typical second generation distance education. Workbooks provide the main theoretical element of the course. They are designed for active learning rather than passive reading. By posing questions, exploring solutions and testing understanding, they help to develop knowledge and skill in the subject being studied. Textbooks, CD-ROMs and videos support the material that is taught through the workbooks. In addition, the learning experience is supported by workshops and summer schools which consist of a range of lectures, seminars and group activities. To complement their studies, all students are given

access to the University's student support systems, including a virtual learning environment [VLE] specifically set up for the programme. Throughout the course, the Blackboard™ VLE is used to engender the development of and participation in the distance learning student community. Areas include:

- student/student discussion groups
- student /tutor contact
- submission of assessments
- general course administration.

THE STRATEGY FOR THE FUTURE DEVELOPMENT OF THE PROGRAMME

During 2003, the CMDL management team spent considerable time consulting students to determine why they had undertaken the CMDL programme.

Their answers generally constituted a mix of the following three strands – i.e. that they wished to:

- improve their knowledge, understanding and skills in order to do their job better
- ultimately gain promotion and access to wider and more stimulating work
- enjoy a greater level of job satisfaction and a higher income.

The majority of students have a professional background in management and their jobs routinely involve them in the processes of problem-solving and decision-making. Against this background, all of these self-selecting, professional, often self-financing, mature students are essentially asking questions of the sort "How can I improve the quality of my practice?" Thus, the professional requirements and personal demands of the modern student imply an increasing need for improved process skills that comprise a mix of the higher order cognitive skills; it is not sufficient for the CMDL management team to respond to these needs and demands by simply offering new knowledge and understanding.

A simple picture of our view of skills ranking in the CMDL programme can be gained by considering the taxonomy of the cognitive domain suggested by Bloom *et al.* (1956). According to Bloom's classification, the level of cognitive skill increases in the order *knowledge-understanding-application-synthesis-evaluation*, as outlined below:

- Supply **knowledge** (information or rules), either from the previous text or from your own experience
- Demonstrate your **comprehension** (understanding) of information or rules

- Show your skill at **application** of information or rules to a new situation
- Carry out an **analysis** of information or rules
- Apply **synthesis** to existing information or rules to create something new
- Perform an **evaluation** to make judgments about information or rules.

In the light of this hierarchy, we acknowledge that problem-solving managers require a wide range of the higher-order skills that involve the ability to analyse, synthesise and evaluate. There are many other authorities subsequent to Bloom who have put forward their own classifications of the cognitive domain (e.g. Gagne 1985, Ennis 1987) but, whatever their nuanced differences, all distinguish memorising – the absorption and recall of facts – from the higher-order process skills involved in the making of judgments.

While the CMDL management team has always recognised the importance of the delivery of new knowledge and understanding, we now acknowledge that it is in the area of problem-solving skills that course content and pedagogy needs to be developed: i.e. by attending both to the course content per se and to the processes by which it is delivered and in which the students engage with it.

However, we recognised that much of the existing pedagogy works very effectively and so decided that there should be no necessity to start from scratch; it should be possible to meet our modified aims by developing the course from the state of good practice that we had already achieved. Thus, we decided to adopt a future strategy which aims to blend in two extra strands with the existing framework:

- the use of new technologies
- a process-driven methodology.

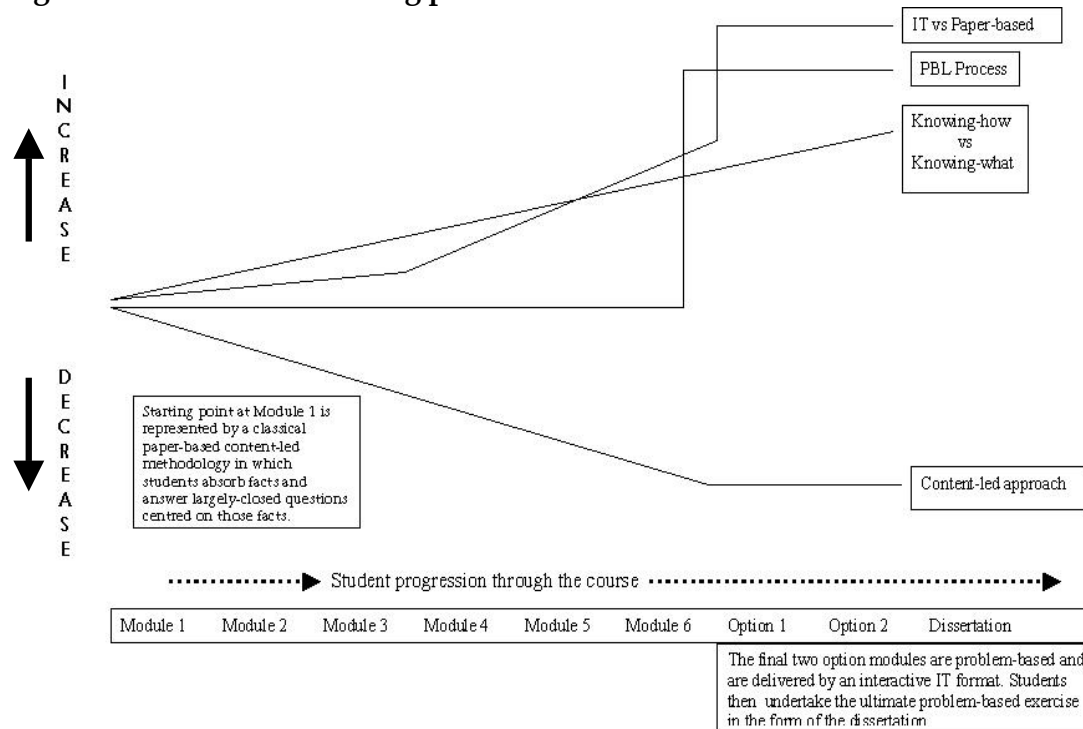
THE NEW PEDAGOGICAL MODEL

The aim of the CMDL programme, from the point of view of its process or pedagogical basis, is to start on ground with which students are familiar and then to progress through the eight taught modules to the point where the latter stages are delivered through problem-based learning approaches. As a parallel thread of development, course delivery moves from dependence on classical paper-based distance learning materials to the use of interactive IT-based formats designed for web or CD-ROM delivery.

Thus, as students progress through the eight taught modules of the course, they will find that the focus of the learning process changes, as follows:

- Content-led process decreases
- PBL process increases
- IT-based delivery takes over from paper-based delivery
- The profile of the cognitive skills addressed moves to place less emphasis on knowing-what and more on knowing-how.

Figure 1: Focus of the learning process



The earlier modules in the CMDL programme are characterized by their emphasis on students acquiring knowledge and interacting with it as they answer exercise questions, self-assessment questions [SAQs], assignments and case studies; the latter two activities may require an element of application of existing knowledge to new scenarios. The later PBL modules require students to interact with a database and interrogate it to elicit appropriate information which they then apply to the central problem stated at the outset. Where modules are adapted from their existing paper-based format for IT-based delivery, it is important that full advantage is taken of the opportunities for interactive teaching and learning offered by the IT medium. RG Collingwood (1936) suggested that every statement is, in fact, an answer to a question and that it is important to understand the substance and implications of the questions that are implicit in any text. Thus, we are aware that an interactive IT-based package should be sensitive to the interplay of question and answer that is set up between the IT 'text' and the student: an appropriately interactive teaching and learning package will anticipate students' ancillary questions and explicate them through appropriate links and sub-routines.

In the context of extending the existing course materials into their future form, we have found it instructive to identify learning activities under the three (non-Bloom) headings of:

- **Information**
- **Interaction**
- **Application**

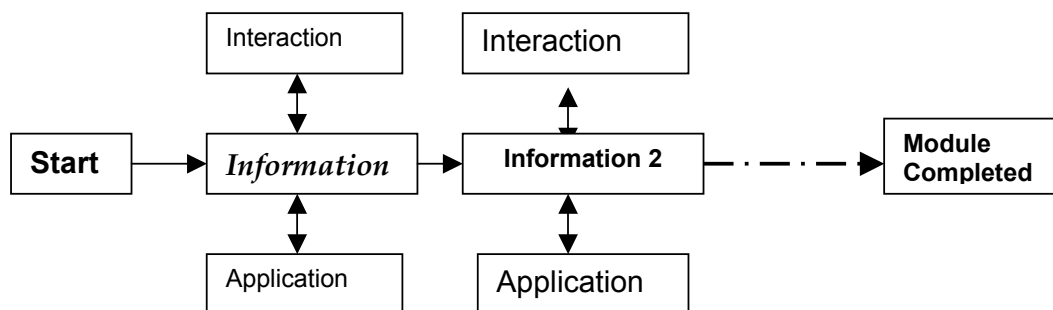
Information signifies factual data and rules. It is either given extant within the text and readings or is elicited as the result of responding to questions.

Interaction involves questioning and sorting information. In the context of the earlier modules, interaction takes place in response to direct questioning of the student by the text. Questions are generally closed.

Application denotes open forms of questioning that lead the student to make judgements about which sources of information to access and which appropriate strategies to select.

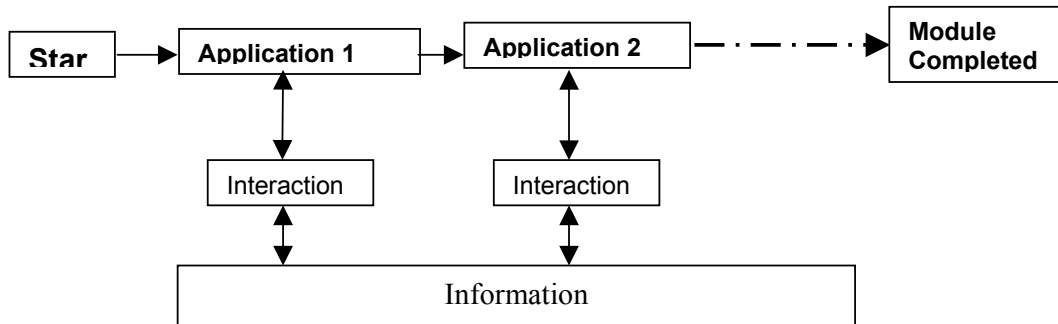
Schemes of study may be generated that have any one of these three categories as the central spine with the other two integrated as spiral cycles of engagement with Information-Application-Interaction activities. For example, a classical content-driven workbook-based programme of study may be represented as shown in figure 2.

Figure 2: Content-driven module - Information-Application-Interaction activities



In a similar manner, a PBL-driven module based on the development of a case study might be represented as shown in figure 3.

Figure 3: PBL-driven module - Information-Application-Interaction activities



Influential external factors

In developing the new pedagogical model three external factors have shaped some of the decisions made. They are:

- Cost in terms of development, production and delivery
- Technical accessibility and the extent of e-learning integration
- Cultural appropriateness of approaches to learning and subject material.

COST

Costs, while not dictating pedagogical ideas certainly requires close attention. Budgets for development, production and delivery have had to be closely adhered to.

Any illusion that e-learning is cheaper than a paper-based course where quickly dismissed. In respect to delivering materials in electronic form to the students, computers do bring down the cost of delivery sharply as packing and postage costs are eliminated. This does rebound directly on the student who is used to being given their course material, is now required to print out material themselves. Development costs may, however, be more than paper-based material development. Costs escalate rapidly as soon as developments move beyond text to the incorporation of audio, video, simulations and virtual reality. On-line tutoring is also considered to be more expensive. The consensus seems to be that online teaching is more labour intensive than traditional distance learning tutoring (Rumble 2001).

In moving forward with the new pedagogical model it is considered that the programme has the potential to make delivery costs savings by using some electronic delivery but we are conversely, also mindful of the reality of the potential high development costs of new electronic modules.

TECHNICAL ACCESSIBILITY AND THE EXTENT OF E-LEARNING INTEGRATION

Concern over the extent to which e-learning should be integrated into the CMDL programme has been largely driven by the limited technological accessibility some students currently endure. This concern has been drawn from a survey of current and past students of the programme who were asked to express their views on e-learning. 61 respondents answered the survey. The key findings are shown in tables 1 and 2.

TABLE 1: KEY OUTCOMES – AVAILABLE TECHNOLOGY

- Most respondents considered themselves technically competent at using computers. Age did not influence the competency.
 - Over two thirds said they would be prepared to pay for an upgrade or buy a new computer in order to be able to study electronically. The exception being African students who said that they would find the cost too great.
 - 26% of respondents have ISDN/cable access to the Internet at home, 57% have modem access, while 17% had no access at home. Students from Hong Kong and the UK are most likely to have ISDN/cable access while respondents from Africa are the least likely.
 - The majority of respondents have more powerful (or at least newer) computers at home rather than at work.
 - The majority of respondents check their e-mail at work most frequently, 36% compared to 26% who check their e-mail daily at home.
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TABLE 2: KEY OUTCOMES – STUDYING ELECTRONICALLY

- The majority of respondents spend between one and five hours per week using a computer.
 - Electronic submission of coursework was selected as being the most favoured electronic facility, while the least supported was video conferencing.
 - 89% of respondents support the predominance of electronic material to be delivered off line
 - 90% of respondents said they would print out material before studying it. 55% said they would print all material before reading.
 - 72% of respondents indicated that they would still prefer to attend residential sessions rather than to receive virtual teaching
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In summary, the overall view is that although the majority feel competent at using computers they seem rather cautious as to the extent of the involvement of e-learning in the programme. This view is accompanied by the particular issues of the limited access to broadband technology (ISDN/cable access) and the cost of purchasing suitable computers, specifically amongst those students from Africa.

The CMDL management team considered carefully the results of this survey before agreeing that elements of e-learning presented too effective a learning medium to ignore completely. This decision prompted a change of requirements for applicants. Students will now be required to possess or have access to a suitable computer with Internet access rather than it being an option. However, for a period of four years paper-based material will be made available for students in Africa if requested.

The entire academic profession has been excited to the point of exhaustion by the advent of e-learning, the great enabler and the answer to everybody's dream (Pailing 2002). So what can e-learning potentially provide? (Weller 2000) details that a full e-learning system will include:

- Making learning material available to students in electronic form
- Teaching and supporting students online
- Providing online administrative services, e.g. enrolment, billing, information and advice.

Clearly, technology has always had an intimate relationship with distance education because it mediates the separation between teacher and learner through the use of print, radio, telephone, television, audio, and videotapes and computers. This relationship is taking on a heightened importance because of technology's growing range and accessibility, lower costs, greater ease of use, expanding pedagogical power and increasing political and social cachet (Sumner 2000). In the past the CMDL programme has not been shy in integrating suitable technology when it has made an appropriate contribution to the teaching and learning pedagogy and this is the philosophy that the CMDL management team wishes to maintain - that e-learning should be used as a complement to traditional teaching and learning and not as a replacement.

The undisputed ability that e-learning provides educators is the ease of interactivity between tutor and students and for the opportunity for asynchronous learning networks which has not been possible in first and second generation distance learning models. It is this aspect of e-learning that the programme specifically wishes to exploit.

By the adoption of the CMDL Virtual Learning Environment this has given the CMDL management team the opportunity to start to offer some electronic facilities

and provides the framework to introduce further elements of asynchronous learning as well as electronic study materials.

Cultural appropriateness of approaches to learning and subject material

Culture is a very complex subject that is challenging to address in any medium. The CMDL programme has been written by British academics and practitioners and therefore is set in a western educational philosophical framework. While to some extent all students are expected to adjust to the style of the learning presented, cultural issues relating to the use of language, terminology and the use of case study examples are carefully composed and checked.

Different cultures have different learning styles and learning motivations (Stewart 2002). Student participants from far eastern cultures, for example, tend not to like open-ended questions; they wish to absorb the necessary facts and then to regurgitate the required selection of the facts in order to answer assessment questions. The introduction of problem-based learning for students from such cultures may prove to be an uncomfortable learning experience for some. The CMDL management team have attempted to pre-empt this by producing explicit and detailed guidelines to explain why a PBL approach is to be adopted and how to undertake the learning experience effectively.

In respect to the cultural appropriateness of the materials, local centres are used to advise and when necessary to create additional local material to complement the generic material.

REACHING WIDER AUDIENCES

The CMDL programme receives enquires of interest from all corners of the world. A review of the enquiry database revealed, however, that the conversion between enquirers and those commencing the programme was lowest in two specific areas: Southern Africa and China. The CMDL management team have sought to understand the reasons behind this in order to try and draw students from these previously unsuccessfully tapped markets.

For enquires from Southern Africa it is considered that the key inhibiting factor is the cost of the programme. For reasons of conformity the course fee is constant for students throughout the world. Some African students have been fortunate enough to receive sponsorship funding from their employer or local government. In 2003 the programme won 21 scholarships for students from South Africa from the Commonwealth Commission. This has provided a wonderful opportunity for students, previously unable to afford the programme fees, to commence the

programme and for the programme to set-up a local centre in Johannesburg from which it can be marketed locally.

The situation in China remains a little more complex. The Chinese market presents a huge and bewildering range of opportunities. With a population of 1.2 billion and a landmass of 9.5 million square kilometres it is truly unique in terms of geography, culture and political environment.

There is initially the problem that distance education does not seem to be respected as a medium of learning for higher-level courses (although there is some evidence that this is now starting to change). The largest distributor of distance education courses in China – the Radio and Television University offers a staggering 17,076 distance learning courses all at sub-degree level. Each, through a complex network of local centres has a face-to-face teaching element (Zhang & Shin 2002). So there-in lies the second problem - that distance learning courses in China appear to all have a large face-to-face teaching component. Future problems of the general low level of English spoken, the cost of the programme, technological accessibility and cultural appropriateness can be added to the complexity of the Chinese market.

The CMDL management team is seeking advice from its local partner in Hong Kong as to how to proceed with the promotion of the programme in China.

CONCLUSIONS

In an increasingly competitive global market it is hoped that the blended learning approach of the new pedagogical model will enable the programme to move forward successfully. It is considered that the increased PBL process and IT-based delivery complements the existing state of good practice that we had already achieved in the programme.

For the CMDL management team it has proved a very beneficial exercise. Questioning our existing practices, reviewing the existing teaching and learning model, and eliciting the views and needs of past and present students has drawn together a clear understanding and appreciation of the professional requirements and personal demands of the modern student.

With the ever present pressure of cost constraints we now face the challenge of implementing the new pedagogy into the programme, while at the same time maintaining the quality expected of a University of Bath postgraduate programme.

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