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John Mee

Edward Sweeney
Dublin Institute of Technology, edward.sweeney@dit.ie

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Recommended Citation
Mee, J., Sweeney, E.: Designing and Implementing a Blended Learning Approach to Executive SCM Education: a Case Study from Ireland. Proceedings of the Annual Conference of the Council for Logistics Management. Philadelphia PA, October, 2004.

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Designing and Implementing a Blended Learning Approach to SCM Executive Education – A Case Study From Ireland

John Mee
Learning Consultant
and
Edward Sweeney
Director of Learning
National Institute for Transport and Logistics (NITL)
Dublin Institute of Technology (DIT)
17 Herbert Street
Dublin 2
Ireland
Primary contact: John Mee
Tel: +353-1-6445717
Fax: +353-1-6611943
Email: john.mee@nitl.ie

ABSTRACT

The National Institute for Transport and Logistics (NITL) is Ireland's centre of excellence for supply chain management (SCM). As part of its mission to promote the development of supply chain expertise in Irish business, it designs and delivers executive modular learning programmes. In 2004, as part of a drive to create more flexible learning opportunities for course participants, NITL designed and implemented an eLearning programme, which involved converting traditionally tutored modules to online modules. This paper describes the rationale behind this initiative and the significance of technology as an enabling tool for executive education, as well as detailing the design and implementation processes for the pilot module. The paper concludes with a critique of the expected and actual benefits realised, as well as future development considerations.

INTRODUCTION

The National Institute for Transport and Logistics (NITL) is the Irish government-funded body set up for the purpose of improving the competitiveness of companies based in Ireland through the application supply chain management (SCM) practice. To assist in improving knowledge levels in this field, the primary objective of the Learning team within NITL is to build and deliver structured post-experience learning programmes

within supply chain management that allow for certification at a number of levels - from Certificate through Diploma, to Masters and Doctorate level.

Historically these programmes have been administered by way of tutored lecturing which has necessitated the use of a number of regional centres in which to deliver the programmes. NITL's Learning team have long been concerned that a single delivery method for its programmes was potentially limiting its ability to meet and counter a number of developing market considerations.

This paper describes the design, development and implementation of a "blended" learning approach to post-experience SCM development programmes. Such an approach attempts to combine the best elements of traditionally tutored and eLearning media. The paper concludes by formulating a number of recommendations regarding the effective use of the blended approach from an NITL, as well as a broader SCM, perspective.

SUPPLY CHAIN MANAGEMENT EXECUTIVE LEARNING

Supply chain management in Ireland

The effective application of SCM philosophy is central to the achievement of competitive advantage – "effective logistics management can cut costs, improve service and enhance revenues and that's just the beginning" (Metz, 1998). A recent MIT survey (Metz, 1998) indicated, that for those companies that had adopted a formal approach to implementing management of their supply chain, the following benefits had been recorded:

- 50% reduction in inventory
- 40% improvement in on-time deliveries
- 27% reduction in order cycle time
- Nine-fold reduction in out of stocks

SCM is of particular importance in an Irish context for a variety of reasons. The Irish economy is very open with both imports and exports representing a high proportion of gross domestic product (ESRI, 2002). In addition, Ireland has become part of the global supply chain as a result of direct foreign investment and the success of Irish companies in developing markets internationally. Furthermore, Ireland's relative geographic

peripherality means the companies based in Ireland need to excel at SCM to compensate for the in-built disadvantage. However, recent research indicates that whilst pockets of excellence undoubtedly exist, there is significant room for improvement in SCM practice in Ireland. For example, a recent survey of indigenous Irish companies (NITL, 2001) indicates that:

- Less than 20% have a formal logistics position and in less than 4% is it at Board Level
- Less than 50% measure customer service formally and those have very limited measurements
- Companies score low in relation to having the latest supply chain IT and having them integrated across the supply chain
- Few companies had clearly defined SCM KPI's (for example: 35% did not know their total supply chain costs; 60% had not reviewed their transport costs in the last 6 months; over 40% admitted holding obsolete inventory)

Supply chain improvement through re-engineering

Re-engineering of supply chain business processes is concerned with "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed" (Champy, 1996). There are several features of effective re-engineering which need to be highlighted. Firstly, there now exist many robust approaches to supply chain re-engineering, often based on business process-oriented methodologies, which can lend some structure to the overall change planning and implementation process. Secondly, a wide range of well documented examples of supply chain "best practice" has been developed in recent years. Detailed study of the supply chain processes whose outputs achieve high levels of customer satisfaction profitably provides guidance to companies. Much has been written about a diverse array of approaches from vendor-managed inventory to vehicle scheduling optimization and from supplier base rationalisation to customer relationship management. The "best practice" list is a long one; the learning possibilities are, therefore, extensive. Thirdly, there are numerous techniques which can be used to ensure that supply chain resources are more effectively and efficiently utilised.

These techniques include forecasting methods, optimisation models, process mapping, stock control models, and a lot more besides. Finally, and arguably most importantly, recent years have seen rapid developments in technology, particularly information technology, which provides the potential for potentially huge improvements in supply chain performance. Information is the "life-blood" of any supply chain, and recent IT developments can greatly enhance the way in which this information is managed.

The people dimension

However, there is one critical dimension glaringly conspicuous in its absence from all of the foregoing – the people dimension. Practical experience indicates that effective change can never be implemented without proper attention to detail in relation to the people dimension at every stage in the process. Methodologies, best practices, techniques and technologies all have a role to play but without the involvement of appropriately experienced, educated and trained people, their impact will be limited and possibly, negligible. Research indicates that there is a serious shortage of supply chain professionals in Ireland (FAS, 2003). In Ireland, the National Institute for Transport and Logistics (NITL, 2001) has developed a range of SCM education and training programmes aimed to meet the learning needs of a wide variety of sectors and individuals. The Executive Development Programme (EDP) is one such initiative (see section 4.1) and is the focus of the case study presented in this paper.

THE USE OF TECHNOLOGY IN LEARNING

eLearning

A recent report (The U.S Commission on Technology and Adult Learning Report, 2001) stated with reference to eLearning:

> "….instructional content or learning experiences delivered or enabled by electronic technology. Functionally, eLearning can include a wide variety of learning strategies and technologies, from CD-ROMs and computer based instruction to video-conferencing, satellite delivered learning and virtual learning networks."

The typography of "eLearning", which is denoted with a lower case "e" and an upper-case "L" is purposeful. The use of the lower case letter "e" in "eLearning", whether it is

representing the mode of delivery or the medium for discussion, is due to the fact that it is recognized as never being more important than the purpose of a developmental intervention, that of (L) "Learning" - hence the use of the upper case. Attributes commonly associated with online mode delivery of learning material that utilizes technologies such as intranets, extranets or the internet, would include:

- Development of learning material that is sufficiently robust to be viewed and absorbed by participants in a stand alone environment.
- Transforming traditionally tutored material into material that actually becomes more "engaging" in display and final configuration through the use of multimedia material.
- Material that is navigable, often with minimal time required to acquire the actual navigational skills.
- An easily accessible medium through which the material can be viewed.
- Development of learning processes which are interactive for module participants.
- Using relevant enabling technologies to allow for both asynchronous and synchronous communication.

"Blended" learning

Whilst there is learning material that allows for a redesign to be delivered wholly via electronic means, in which all traditionally face-to-face delivered elements are converted and linked with online components, such an approach therefore precludes many personal interactions. Between the two extremes of material delivered completely via electronic means or via traditional tutoring, lies a hybrid approach that combines both traditional training methods with electronic online delivery and mediation. Such an approach is commonly referred to as "Blended" learning.

A recent report in Ireland (CIPD, 2003) referred to blended learning as:

> "The integrated combination of traditional offline methods of learning (such as training-room based sessions, coaching, mentoring, practical on the job training, video, CD, or other forms of presentation) with intranet, extranet, or internet based online approaches. The online or eLearning elements include stand alone interactive learning modules learning objects), web based just in time information,

asynchronous communication (threaded discussions, e-mail based mentoring and tasks) and synchronous sessions, the virtual classroom or training room for ongoing briefings and updates, or, in some cases, to replace some of the more traditional training room elements."

Current uptake in of eLearning in Ireland

In researching the uptake of this learning medium in Ireland, a November 2003 study concluded the following:

- Forty four per cent of Irish companies surveyed are using eLearning in some shape or form – ranging from more general to executive education.
- Almost 10% of those companies surveyed spend more than 25% of their annual training budget on eLearning initiatives.
- A little over 40% of those companies surveyed spend just less than 10% of their annual training budget on eLearning initiatives.
- The uptake in U.S subsidiaries (approximately 60%) is higher than that in Irish owned organizations (approximately 40%).

This same survey identified a move towards eLearning being the preferred learning medium for "technical" subject training. This latter category clearly highlighted supply chain management as a subject.

BLENDED LEARNING IN SCM – A CASE STUDY FROM IRELAND

NITL's Executive Development Programme

Background and rationale

People at all levels in organisations require broader perspectives combined with the ability and motivation to manage change. Existing management must constantly develop their competencies to manage the business from strategy through implementation to competitive operation. The NITL's Senior Executive Programme addresses the requirements of top management and the Graduate Development Programme (GDP), which leads to an M.Sc. in Supply Chain Management, is aimed at the "high-flyers" who will be the world-class managers of the future. There is also a prime need for the best existing junior and middle managers to be developed. In support of this need the

Executive Development Programme (EDP) provides learning of a high academic standard and relevant to modern supply chain management. The programme is aimed at existing and emerging junior and middle managers who have extensive practical working experience but who do not necessarily hold formal academic qualifications. It has been operating successfully in Ireland since 1999.

Programme aims

The Executive Development Programme aims to:

- develop managerial staff from all functions to manage or contribute to multidiscipline teamwork aimed at radical business improvements;
- prepare managers for effective job mobility within the company;
- provide personal development opportunities for staff in parallel with their meeting job requirements; and
- provide participants with an understanding of the role of logistics and supply chain management in the overall business improvement process.

Admission, registration and assessment

Participants do not need formal qualifications to commence the programme, but normally have several years relevant work experience. Companies need to have the means to satisfy themselves that participants have the level of intellectual capability and personal drive required to meet the demands of the programme. Participants register for a Post-Experience Diploma or Post-Experience Certificate as appropriate. The normal registration period for both qualifications is two years, although participants registered for the Certificate would usually be expected to complete within 18 months.

Modules are scheduled in line with overall demand, so that each individual can formulate their chosen programme of study to meet personal needs. Attendance is typically at 6 to 8 week intervals and the typical class size is 18. Attendance on any one module running is booked on the basis of "first-come, first-served", irrespective of company or function, so that attendees will represent a mix of industrial sectors and supply chain functions.

Assessment is based on short post-module tests or assignments, which are aimed at assessing a participant's basic understanding of the module material, and in-company project assignments. As well as providing evidence of participants' understanding of a subject, the assessment process is designed to help them transfer learning back to the workplace, and to provide real benefits to the company. Participants who successfully complete a full 12-module programme and 2 projects within 24 months are eligible for a *Post -Experience Diploma in Supply Chain Management*. Alternatively, participants who complete a programme of at least 7 modules and 1 project may be considered for a *Post-Experience Certificate*.

Taught modules

All modules are categorised into logistics, technology, management skills and business awareness. The modules on *Logistics* provide a detailed understanding of all key aspects of logistics philosophy and operational practice. The "Supply Chain Re-engineering" module is in this category. The *Technology* modules address the role of technology, in particular IT, in facilitating business improvements. The modules on *Management Skills* cover all aspects of operational management including quality, project management, production planning and control as well as providing an understanding of the main issues involved in people management. It is imperative that participants appreciate the role of logistics and supply chain management in the context of the overall business. The programme modules on *Business Awareness* address this requirement.

Selection of pilot module

There were a number of vital initial considerations for selecting a module to develop into a blended learning format given that this would be first occasion to attempt to do so:

- It would be more appropriate if the module was skewed towards "technical" skills
- as opposed to "softer" skills. This would ensure that the blended human element was reduced but not completely redundant, which in turn would allow for predominant use and assessment of the internet as a communication medium.

- The material itself in its traditional format of presentation slides and back-up written material should be open to being enriched using varying forms of multimedia representation.
- Module material should already contain sufficient clarity to be understood in a stand alone learning environment. The eLearning development process should not be tasked with also attempting to provide further explanation of the subject material.
- The selected module should provide for an opportunity to regularly check the progress of participants in both accessing, and understanding the presented material. This was a significant module selection factor given this was a pilot module.

The module finally selected from NITL's Executive Development Programme (EDP) was "Supply Chain Re-Engineering". A module outline is included as Appendix A. Central to this module is an industrial case study involving the gradual release of material describing a company that requires its supply chain to be re-engineered in order to improve its competitive position in the marketplace. After each discrete section of case study material has been released, there are a series of tasks to be completed allowing participants to actually put into practice the learning that they are accumulating from the module material. The final task within this case study is to present back to the tutor an overall solution to the problem as outlined within the material.

Design and development of an eLearning environment

NITL is an integral part of the Dublin Ins titute of Technology (DIT), Ireland's largest third level education provider. Within DIT a unit aimed at supporting the effective use of technology across the Institute was established in 2002. This unit, the Learning Technology Team (LTT) has successfully transformed courses for delivery online using a medium known as "WebCT" (WebCT, 2002), a state of the art eLearning platform that facilitates the presentation of traditional static information for delivery in a more engaging fashion via the web. LTT supported NITL in all aspects of the module design, development and delivery process. The involvement of LTT meant that NITL's learning team did not have to use any external third party in the development of the finished product. Working with an internal specialized resource in turn provided other benefits:

- NITL would have direct control over the actual content produced by working through the current supply chain re-engineering module material with LTT.
- NITL would be able to customize the design of the course to its own specifications via LTT's use of the WebCT platform.

In converting the traditional material for online delivery, the following developmental issues, based on established good practice in eLearning, were progressed:

- Material was divided into "Core" and "Reference" with core material forming the body of the presented material and reference material being accessible only with the intervention of the participant through use of keystrokes.
- Online quizzes were introduced at salient points to test the knowledge of participants up to that point. Quizzes were multiple choice based, of a true or false nature, or of a style that demands the rearrangement of words / phrases.
- Facilities for online reservation of appropriate and recommended reading material within the library of DIT were incorporated.
- Relevant articles embedded in electronic journals within DIT libraries, or within archived 3rd party web sites, were made accessible.
- Access to relevant web sites was provided in an online manner.
- Where appropriate, the use of graphics and animation was used to enrich the delivery of the traditional tutored material.
- Definitions and "Hot words" were highlighted and full explanations provided by use of a keystroke within the main text of the presented material.
- All online material was presented with the option of printable copies direct from the main body of the text.
- The entire module was designed to be downloadable to compact disc (CD) and made available to participants as an archive of the module.

The IT resources that course participants required were limited to an internet browser and PDF reader.

Course delivery

As the delivery was blended, the actual module format alternated between delivery via formal lectures and access to material via the web. For all registered course participants the initial introductory section covered four key areas:

1. The expected learning outcomes and structure of the module, as per the module outline (Appendix A).
2. A demonstration of initial connection to the web site hosting the module, and navigation of this site.
3. An exploration of WebCT's functionality.
4. A traditional lecture by the module tutor that introduced participants to the context of the module, setting out the need for supply chain change and the role of re-engineering in identifying the form of this required change and its implementation.

After this initial introductory section, sections one and two of the module were wholly web based and conducted in an asynchronous manner without any module tutor involvement. In order to assist participants in progressing through module material, all web navigated sections of the module and any associated tasks were provided to participants via a programme of staged releases by use of a calendar function. This facility enabled sections of the module to be date stamped for selective release and also allowed for the staged completion of the tasks associated with the case study. As such, participants could view when material was due to be released and manage their time accordingly. All release dates were posted to the calendar initially and explained in the initial introductory session.

To maintain an element of synchronous contact, an online meeting between participants and tutor was organized via the calendar function to take place before the release of section three of the module. Such a meeting provided an opportunity for an assessment of both individual and group progress via tracking facilities, the resolution of any difficulties encountered, and any further required explanations on the material provided. The fourth and fifth sections of the module involved once more the staged release of material via the calendar function in a manner similar to sections two and three. These

sections were once again supported by one more online meeting between course participants and tutor. The final section of the module was concluded by a traditional face-to-face meeting between participants and tutor. At this meeting a final presentation was made by the group regarding their conclusions on the case study, thus allowing for tutor comments and debrief on group findings.

The last activity of the learning experience involved a formal review of the module in terms of both material relevance and the learning medium and tools utilized. The module review was conducted by NITL's Director of Learning and a representative from LTT, and the comments solicited form part of this paper's concluding remarks. On completion of the module, the necessary module assignment that forms part of the accreditation process was posted to the eLearning discussion board for course participants to complete. Assignment submissions were posted back via the discussion board within six weeks. Access to the course material on the host site was permitted via web browser with relevant username / password configurations for the six weeks necessary to complete the assignment. Post module assignment grades and feedback comments were delivered back to course participants via e-mail in order to close the "e" loop.

DISCUSSION

Expected benefits of blended learning approach

Prior to embarking on this project a number of expected benefits of the blended learning approach were identified. These are summarised in Table 1. All are consistent with NITL overall strategic approach to SCM learning.

TABLE 1: EXPECTED BENEFITS OF BLENDED LEARNING

COST REDUCTIONS
TIMELY CONTENT
FOCUS ON THE INDIVIDUAL
SCALABILITY
REDUCED FAMILIARITY TIMES
DEVELOPMENT OF A LEARNING COMMUNITY
PERPETUAL ACCESSIBILITY
CONSISTENCY AND FLEXIBILITY
IMPROVED RESPONSIVENESS

Reduced travelling time for tutors and students as well as reduced accommodation and subsistence for both were expected to result in significant *cost reductions*. Any such reduction, however, must be offset against the initial development costs. As material is deli vered across the web, course material can be updated in virtual real time thus ensuring *timely content*. The environment allows for an individual to focus on the specific areas of learning that they feel would benefit them, without delaying the learning of the overall group. If mechanisms are used to track individual student access to the course, then the possibility exists for NITL to build future learning interventions that *focus on the individual* and are tailored to meet his/her specific requirements. *Scalability* offers potential benefits. Once the initial investment in the infrastructure (course / module structure) has been made, then there is little or no impact in terms of cost or time in supporting increased numbers of course participants. Joining instructions to this method of delivery can seek assurances that potential participants are familiar with, for example, the internet and web browsers. Such familiarity essentially ensures that participants can immediately log on and commence the course. *Reduced familiarity times* have the potential to enhance both the quality and speed of the learning process. Through the use of group / participant specific tasks, and tutor facilitated meeting rooms, ideas and experiences can be shared. *Development of a learning community* in this way assists in creating a rich learning environment. As the majority of the delivery is via the web, individual participants have *perpetual access* to module material as and when they feel suited. This ensures that they can integrate their personal learning programmes with

domestic and work commitments. Delivery via the web ensures *consistency* of course material delivery, yet also provides the *flexibility* to allow for easy customisation via WebCT based upon target market requirements. Fina lly, *improved responsiveness* to participant needs was expected as extended groups of participants can be reached simultaneously on a national basis via the web, thus ensuring a rapid learning uptake.

Positive aspects and benefits

Table 2 summarises the main areas in which the positive aspects and benefits of converting face-to-face learning programmes to the blended medium were evident. This is based on:

Written feedback from participants

- Oral feedback from participants during the module review process
- Consultancy project presentations by participants
- Tutor feedback
- Feedback from Learning Technology Team

TABLE 2: POSITIVE ASPECTS OF BLENDED LEARNING

LEARNING LOCATION
ALLOCATION OF TIME
EXPANDED NATIONAL CONNECTIVITY
CONTINUAL ONLINE FEEDBACK
MONITORING OF PARTICIPANT PROGRESS
MATERIAL EMBEDDED
DIVERSE LEARNING INTERACTIONS

The *learning location* has become completely flexible. Participants have been able to access course material from work, home and elsewhere. International travel, for example, has not caused undue interruption of learning. The *allocation of time* has been both synchronous, with both participants and tutors online at the same time, and asynchronous, with participants engaging with the module material at a time that has been most convenient to themselves. Delivery via the web has ensured that there has been *expanded national connectivity* in respect of course participants from a variety of companies and

industry sectors, across a range of national regions. Participant feedback has led us to believe that this has in turn improved online collaborative interaction and effort. Course tutors and administrators have been able to receive *continual online feedback* on the suitability of the material converted to delivery via the web. Discrete *monitoring of participant progress* has also been possible through the use of meeting rooms, online assessments and quizzes. Feedback to date suggest that the *material embedded* within the module is rich in terms of content, graphics, animation, pictures, relevant links to web sites, links to presentations, access to online articles and library facilities. This suggests that the design principles were correctly followed. There have been a number of *diverse learning interactions* that are important strengths in a traditional tutored environment but which have been retained in the blended medium. These interactions include:

- tutor-course participant;
- course participant-course participant;
- course participant-course material; and
- course participant-peer group.

Future developments and improvements

Table 3 summarises the main areas in which new developments and improvements are required if the potential of eLearning as a SCM learning medium is to be further exploited. This is again based on feedback from a variety of sources.

TABLE 3: REQUIRED DEVELOPMENTS AND IMPROVEMENTS

DEVELOPMENT TEAMS
SHIFT IN ROLE
SPONSORING COMPANIES
HIGHER ELEMENT OF SYNCHRONOUS CONTACT
PARTICIPANT-PARTICIPANT INTERACTION
TRACKING FACILITIES
TIME MANAGEMENT

Development teams, comprising a mix of module tutors and previous course participants, need to be established. The primary responsibility of these teams will be to assess the

effectiveness of transforming discrete modules into a format for delivery online. Determining the appropriate balance between making the content engaging, yet not cluttering the course with unnecessary animations, quizzes etc., will be a key issue. Tutors who are tasked with transforming current modules for online delivery will have to be skilled in appreciating the differences that exist between online tutoring and more traditional methods of training. The difference here primarily revolves around the *shift in role* from a largely tutorial one to a more facilitative one. There is a need to ensure that *sponsoring companies* are aware of the need to provide an element of time and space to enable participants to undertake study whilst on company time. Blended learning facilitates access to learning – it does not however reduce significantly the time needed to fully achieve learning outcomes. The dynamic of modules can be improved by having a *higher element of synchronous contact* that provides for an increased level of real-time tutor-participant interaction. Various technologies exist which can facilitate this. Related to this is the need for a more substantial level of *participant-participant interaction* which also needs to be encouraged and fostered, through the use of mail and discussion rooms, in order to develop a more rounded understanding of course material and encourage the sharing of different "real life" perspectives. *Tracking facilities*, which should serve to prompt course tutors and administrators to contact individual participants regarding their progress can to be utilised in a pro-active manner. This helps to ensure that all participants use the medium in the most effective way possible. Finally, there is the issue of *time management*. Online learning requires discipline and effective management of time to be successful. This can be achieved either through short training sessions conducted before an online module commences, or by providing guidance on effective time management in the resources section of online modules. Furthermore, there needs to be clarity from the outset in relation to the time required for participants to successfully achieve the learning outcomes of a module.

CONCLUSIONS

As a learning medium for SCM, eLearning will not replace traditional tutored methods, but rather will complement them. For example, in the area of soft skill development (in areas such as teamwork, communication and change management) a high level of

participant-tutor and participant-participant interaction is essential. There is a danger therefore that delivery via eLearning as a single medium would compromise module effectiveness. Indeed, NITL's experience is that a participative style greatly enhances the learning process in all SCM constituent areas. Blended learning attempts to get the best of both worlds by combining the advantages of direct face-to-face contact and interaction with the increased accessibility and flexibility offered by eLearning. The transition from the traditional to the technological will continue but the process needs to be evolutionary rather than a revolutionary. If this evolution learns from experiences such as those described in this paper, then the blended approach will play a pivotal role in SCM learning in coming years.

References

- Champy, J. (1996), *"Re-engineering Management: The Mandate for New Leadership",* London:Harper.
- Chartered Institute of Personnel and Development in Ireland (CIPD) (2003), "*eLearning in Irish Organizations*", Research Report, Limerick: CIPD.
- Commission on Technology and Adult Learning (2001), "*A Vision of e-Learning for America's Workforce*", US: ASTD / NGA.
- Economic and Social Research Institute (ESRI), (2002) "*Quarterly Economic Commentary December 2002"*, Ireland: ESRI.
- FAS (Irish Training and Employment Authority), (2003), "*Human Resource Requirements of the Transport and Logistics Sector in Ireland*", Dublin:Ireland.
- Metz, P. (December 1998), "Demystifying Supply Chain Management," *Supply Chain Management Review,* Cambridge MA: MIT.
- National Institute for Transport and Logistics (NITL), (2001) *"Logistics Capabilities Study - 2001*", Dublin: NITL.
- WebCT (2002), "*Leveraging Technology to Transform the Educational Experience*", Whitepaper, Lynnfield MA: WebCT.

Appendix A

SUPPLY CHAIN RE-ENGINEERING

Introduction

Companies have long realised the need for company-wide approaches to organization design and redesign. The development of systems engineering approaches to manufacturing system re-design in the 1970s and 1980s was followed in the 1980s and 1990s by the focus on organisational re-engineering, often based on business processes. NITL'S Supply Chain Re-Engineering module extends this systematic thinking beyond the individual company to the complete supply chain. This module focuses on a systematic approach to analysing supply chains and improving their performance.

Course objectives and learning outcomes

On completion of this module participants will:

a) appreciate the importance of a systematic approach to analysing supply chains and improving their performance;

b) describe the main constituent elements of a re-engineering approach to supply chain design;

c) understand the supply chain design process in respect of appropriate tools and techniques.

Contents

Introduction : Why the need for change.

Section 1 : Principles and methodology.

Section 2 : Task force and operational audit.

Section 3 : Guidelines for good working practice.

Section 4 : Analytical tools and techniques.

Section 5 : Working in focussed groups.

Section 6 : Final presentation on industrial case study.

Recommended reading material

1. Supply Chain Re-Engineering – WebCT.