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AN ANALYSIS OF THE UNICAFÉ EXPERIENCE AND ITS IMPLICATIONS FOR IT INDUCED BUSINESS TRANSFORMATION IN HIGHER EDUCATION

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ABSTRACT

This paper is concerned with the changes in higher education that may result from the introduction of IT enabled, either eLocalised or eDistributed, learning methods. It provides a framework based on the issues of commercial business transformation that can be linked to changes in the teaching and learning process and learner markets. Evidence from a case study of the UniCafé project based at the University of Surrey and other surrounding projects and initiatives is considered in the light of this matrix in order to highlight some of the key challenges facing future development.

1. INTRODUCTION

The purpose here is to explore the impact of the use of technology on a pure service operation – the provision of education – that has seen little technological development apart perhaps from a move from a blackboard to a whiteboard or the introduction of overhead projectors. The paper sets out to address through the consideration of specific case histories, the organisational implications of this change. It recognises that these changes will provide opportunities for the creation of new learning environments, but the efficacy of these environments is left for further research and not explicitly discussed here.

UniCafé is a project developed at the University of Surrey in response to new conditions in employment and education, in particular, life long learning. A key feature of the project was that it provided open supported learning at a variety of locations, including non-traditional educational settings such as a major supermarket, a local library, company premises and homes. It aimed to provide open access courses at undergraduate level by remote delivery, via the World Wide Web, to a broad range of beneficiaries identified by joint research undertaken by the University and the Surrey Training and Enterprise Council. The development of UniCafé

was supported by the European Social Fund under the ADAPT initiative. The project aimed to enhance personal and management development in particular for the retail and distributive trades, in response to the need to support the economic development of the South East region. UniCafé was created as a partnership between the University, involving the School of Management Studies for the Service Sector and the School of Education's Centre for Continuing Education, four Further Education Colleges, a Telecottage, the local library service and Tesco plc. The intention was that in this way the project would address some key emerging technological and educational concerns.

In 1997 the UK government announced their intention to establish a "National Grid for Learning" through a £1 billion investment which will connect every school, college and university to the Internet by the year 2002 (Selwyn, 1999). In 1999, the UK Government initiated a consultative process concerned with the future of IT enabled education and learning. The task force was charged to answer a number of questions of specific relevance here, namely the interrelationship between the learner and new technology, the impact on educational systems and structures and new roles for education professionals (DTI, 2000).

The continuing impact of the information revolution, the increasing emphasis placed on business performance objectives by education managers and government education departments alike is driving a major, yet ill defined, IT induced business transformation in higher education. Specifically, higher education institutions (HEIs) are aiming to leverage both information and communication technologies, particularly the Internet, to redefine and/or extend their business scope in increasingly competitive global/international learner markets. These new competitive and financial pressures, such as the globally competitive "ivy league" institutions in the US and the capping of HEFCE tuition fees in the UK respectively, are changing the way educationalists and learners perceive (a) teaching and learning processes, and (b) the concomitant teacher-learner relationship.

Organising for higher education across new IT enabled teacher-learner networks has introduced a new level complexity that requires the development of new core competencies - in other words a new strategic architecture (Hamel and Prahalad, 1994). This development of competencies is necessary if HEIs are going to be in a position to satisfy the needs of existing and new, IT enabled, teacher-learner markets, i.e. *eLocalised* and *eDistributed learning* (see Figure 1). Although it must be said, with reference to the University of Surrey's (UniS) UniCafé and UFI experience to date, that a process of iterative, incremental change based upon a collective stakeholder (lecturers, students, software suppliers, book publishers, in-house IT support, TLSU, corporate and other HEI collaborators, etc) negotiation, action and reflection appears to be the order of the day. Rather, a semi-structured, organisational approach (Earl, 1993) has emerged in place of some ingenious foresight or rigid management master plan. The UniCafé project continues to draw on a multiplicity of stakeholders' perspectives and expertise - a source of both knowledge and conflicts!

In this paper we explore the issues, conflicts and lessons learned from the UniCafé experience and make recommendations in the form of propositions to help decision makers involved with eLocalised and eDistributed learning strategies to avoid the pitfalls that can potentially harm the reputation and brand equity of HEIs who are increasingly operating in an unavoidable mix of academic and corporate environments. Moreover, the timely development of IT enabled core competencies becomes a strategic imperative in complex socio-technical teacher-learner networks.

In identifying competitive strategies for higher education, institutions can set new strategies designed to extend the reach of their instructional offerings geographically, or, to offer for sale new or repackaged products in different markets. The Internet is instrumental to the above activities as a powerful tool for delivering on-line education, though its potential benefits and limitations have not been explored fully. It is evident from the planning and implementation of the UniCafé project that, at least, equal emphasis should be placed on pursuing *collaborative* strategies, considering the extant and complex nexus of the project collaborators. Given the virtualness of the UniCafé organisational setting, it is impossible to conceive the adoption of surrogate core competencies without giving consideration to relational contractual arrangements (Reve, 1990) for the outsourcing, insourcing or cosourcing of ICT software and hardware infrastructure support. Clearly, the potential for messy issues and pitfalls are legion.

2. LEARNER AND TEACHING SCOPE

In this section we introduce our *UniCafé learner and teaching scope matrix* (Figure 1) - a classificatory schema developed as a result of the UniCafé action research. It will be used later in this paper together with the *Venkatraman (1994) framework*, shown in Figure 2, to position and explore the UniCafé project.

The matrix is deliberately process and market oriented. It facilitates the relative positioning of *traditional* and *IT enabled* teaching and learning processes for addressing either *local* (e.g. on campus) or *remote* (e.g. overseas) learner market segments. Whilst the matrix is not explicitly time based, it does offer the opportunity to specifically identify trajectories that result from the IT enabled transformation of teacher-learner processes. As a classificatory schema, the UniCafé Matrix is conveniently split into quadrants where it is possible for teacher-learner projects to straddle quadrant boundaries or occupy multiple positions on the same matrix. At this juncture, it is worthwhile to review briefly the developments in distance learning facilitation with reference to the matrix.

HEIs are now moving into a new era of distance learning that goes beyond the *traditional distance learning* scope characterised through correspondence, paper based assessment and tutor-student communication. The objective is to offer access to learning materials to students who are located geographically locally or remotely, facilitate support from their tutors/lecturers and also encourage participation in on-line activities while doing a course.

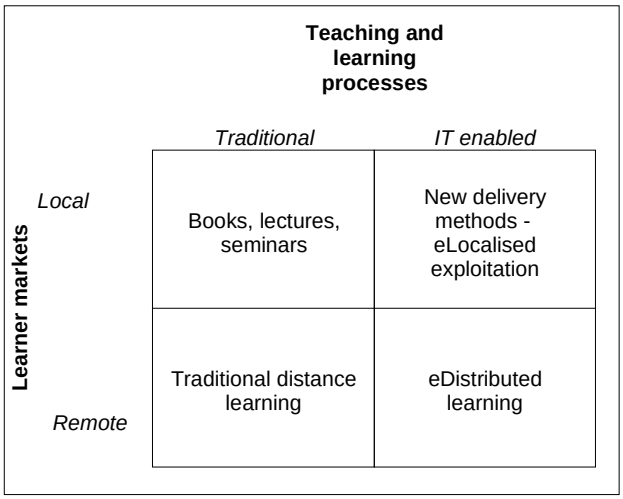

Figure 1: *UniCafé learner and teaching scope matrix*

Laurillard (1993) categorises HEIs as either campus or distance based ones (which fits well with our *learner market* categories as shown in Figure 1). The former institutions are lecture based and she describes traditional lectures as a “grossly inefficient way of engaging with academic knowledge” because they are “neither interactive or adaptive”. The latter use media-based learning, tutorials and correspondence or email contact with the tutors. However, a major drawback of distance learning is the lack of immediacy and adequate communication between the students themselves and with the lecturer. The use of ICT both for campus-based and distance-teaching universities can enrich teaching and learning.

From a distance learner perspective, computer based delivery of learning materials depends upon affordable access through electronic communication channels, computers, IT applications and infrastructure support. The decreasing price of personal computers and telecommunication costs has made the possibility of on-line education to remote learner markets an affordable reality, presenting HEIs the prospect of targeting attractive market segments on an a truly international scale. But HEIs contemplating an Internet based market extension will need to address the significant resource and competencies implications of *eDistributed learning* development (discussed later in the paper). As more HEIs redesign their teaching and learning processes including their teacher-learner networks, then what may have been considered an innovative, strategic IT enabled business transformation may become standard practice eroding any previous differential

competitive advantage. Hence, the quality of lecture content may ultimately depend upon the products of the HEIs research and consultancy activities i.e. the quality of the HEIs knowledge base – its *intellectual capital* – becomes the source of sustainable competitive advantage.

New conditions in employment also point towards the innovative use of Internet technologies for delivering education to non-traditional settings i.e. facilitate learning where learning may not have taken place before. Non-traditional learning sites emerge as the alternative for accessibility to learning materials for students who otherwise might not have access to a computer or the Internet. With reference to our matrix, this is *eDistributed learning*, which is where the UniCafé project sits.

Whilst there may appear to be compelling business (and IT) arguments based upon demand for HEIs to invest in educational technology for the targeting of new learner markets, a number of key questions from the University of Surrey stakeholders were raised concerning the supply/ implementation of the UniCafé project; namely:

- How do we provide, support and manage the technical infrastructure for remote, asynchronous delivery of educational materials?
- How do we organise ourselves for the supply of courseware suitable for remote on-line delivery? Think carefully about the re-authoring and (re)design of courses - the digitisation of traditionally delivered local or remote courses in their existing format is not adequate in itself as on-line delivery dictates a different course format.
- What are the required core competencies to deliver the above? Consideration should be given to the identification and possible recruitment of the appropriate people with the necessary competencies set.
- How do we manage any emerging political and cultural issues/problems arising from the redefinition of job descriptions for existing HEI staff?

Clearly questions of the above type indicate some of the potential pitfalls and conflicts (the transformation disablers) that need to be addressed before any position on the UniCafé Matrix can be confirmed.

3. THE VENKATRAMAN FRAMEWORK

Analysing and discussing the strategic challenges and management implications facing HEIs involved with IT enabled business transformation, we believe, is best conducted within the context of the Venkatraman's framework established as a result of a seminal piece of research i.e. MIT's Management in the 1990s Research Program (Scott Morton, 1991).

The five levels of the framework (Figure 2) have been employed within the UniCafé learner and teaching scope matrix explicitly to identify and analyse the transformation trajectory. Particularly, the strategic and implementation issues that arise from the level of IT induced business transformation on the teaching and learning processes used to address both local and remote learner markets. A summary account of the five levels of IT enabled business transformation is presented in Table 1 below.

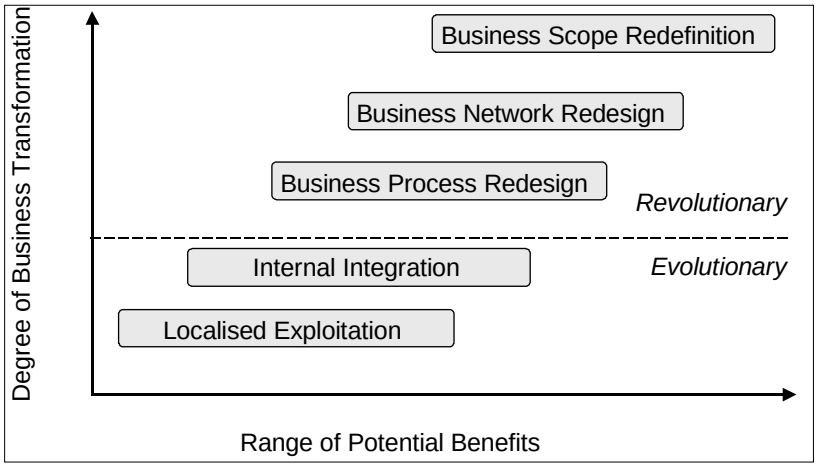

Figure 2: *The Venkatraman Framework*

Level of Transformation	**Distinctive Characteristics**
Localised Exploitation	Leveraging of IT functionality to redesign focused, high-value processes
Internal Integration	Leveraging of IT capability to create a seamless organisational process – reflecting both technical inter-connectivity and organisational interdependence
Business Process Redesign	Redesigning the key processes to derive organisational capabilities for competing (and collaborating) in the future as opposed to simply rectifying current weaknesses; use IT capability as an enabler for future organisational capability (core competencies)
Business Network Redesign	Articulating the strategic logic to leverage related participants in the business network to provide products and services in the market place; exploiting IT functionality for learning from the extended network as well as for co-ordination and control
Business Scope Redefinition	Redefining the corporate scope (e.g. what's done inside the firm, what's obtained through special partnerships and related arrangements, etc.) that is enabled and facilitated by IT functionality

Table 1*: Levels of IT enabled business transformation (Adapted from Table 4 A summary of IT-enabled Business Transformation in Venkatraman, 1994)*

It is important to note that the first two levels are perceived as evolutionary stages because the business processes are subject to incremental change, whereas the processes in the revolutionary levels are required to undergo radical change. Moreover, levels 3, 4 & 5 are not sequential stages of development. Greater strategic advantage should be gained, but not guaranteed, if IT induced business change is addressed at levels above where HEIs consider their competitors' teaching and learning processes to be located.

4. REAL WORLD TESTING: THE UNICAFÉ EXPERIENCE

The University of Surrey has a long history of involvement with using ICT in the development of learning and teaching approaches. As a technology based university, it is not surprising that many of these activities have been in the fields of science and engineering. These include the Centre for Educational Engineering Technology in the Department of Mechanical Engineering, involvement in the national Software Teaching of Modular Physics (STOMP) project, new approaches to the teaching of 'Virtual Chemistry', and the introduction of computerised assessment in the English Language Institute.

Funding for these projects has come from a number of internal and external sources. These have included the Continuing Vocational Education (CVE) Development Fund and the Teaching and Learning Innovations Group (TLIG). While the funds for the CVE projects were externally provided, TLIG was an internal university initiative. This latter fund made available £100,000pa over the five years from 1994 to support 16 projects in 12 departments to support innovations in teaching in learning in general and those in technology based learning in particular. This fund has now been replaced by a new Strategic Fund for the Development of Learning and Teaching. The fund for 1999/2000 will be £200,000 and a similar sum will be made available for each of the next four years.

Funds from these sources have led to a number of successful but largely discrete projects across a range of schools and disciplines within the University. These projects have tended to be discipline specific and there has been limited organisation wide learning. In an attempt to improve this position, the University invested initially in two staff to establish the Teaching and Learning Support Unit (TLSU). This has a university-wide role to disseminate learning about and encourage the development of innovative approaches to teaching and learning with an emphasis on technology based solutions.

Based on the success of computer based learning projects from both TLIG and CVE sources and the rapidly growing knowledge and expertise of the TLSU, the University was successful in bidding for an ESF funded project under the Adapt initiative. The aim of what became known as the UniCafé project was to drive demand for learning by providing access to groups not presently served by traditional delivery methods. Another aim of the project was to pilot the style of 'hub and spoke' organisation suggested for the University for Industry (UFI).

As a central plank of the project was to cover as wide a range of delivery centres as possible the recruitment of partners to the scheme was of prime importance. The partner infrastructure is shown in Figure 3.

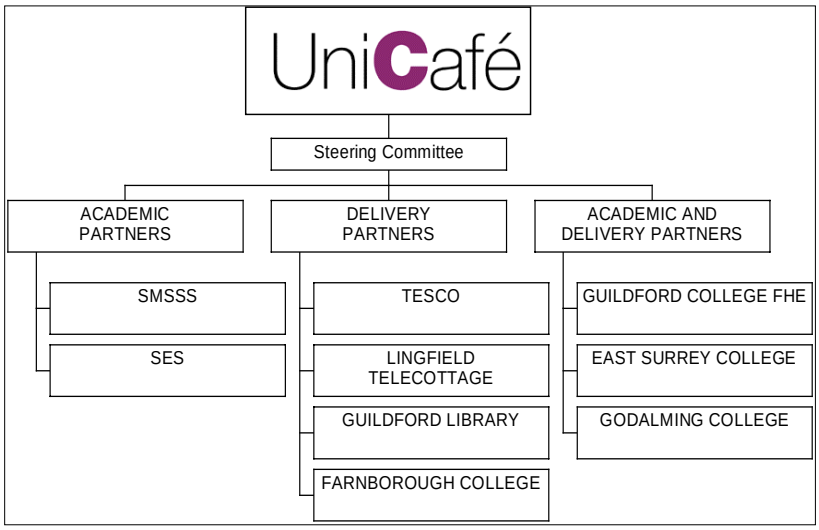

Figure 3: *UniCafé partner infrastructure*

The figure shows three different types of partners: academic partners, delivery partners and joint academic-delivery partners. As well as providing the administrative and technical centre for the project, the Schools of Management Studies for the Service Sector (SMSSS) and the School of Educational Studies of the University provide the academic leadership. These two schools are responsible for developing learning material for Internet delivery at the undergraduate level, particularly in the areas of retail management and work based learning. These schools will not, however, be acting as delivery centres for the modules. The delivery centres will take on this task. These centres, based in Guildford (and soon Godalming) library, Lingfield Telecottage, Farnborough College and a large Tesco Superstore in Sandhurst, will simply provide access to computers with limited technical support. Educational support will be provided from the academic partner that developed the learning material, normally via email and a discussion forum. The third group of partners will be acting both as providers of learning materials, either existing or created specifically form this

project, and as learning delivery centres. These partners include Guildford College of Further and Higher Education, East Surrey College and Godalming College. The material developed at these centres will be at the further education level and will either be hosted on the main UniCafé server or locally, but not ideally, for delivery in a single centre. In this way the pilot course participants will be able to access a wide range of material ranging from basic and computer skills to first level degree work on study skills, accounting or aspects of retail management.

There was a limited amount of funding available through the project to develop learning materials and another sum for the purchase of a small number of computers for the delivery centres. The majority of the other costs of the partners' involvement with the project has been borne by the partners themselves, as a contribution in kind, on the understanding that the project has implications of some strategic importance. Given the lack of financial incentive, all the partners have remained remarkably committed to the success of the project. A steering committee consisting largely of University members but with a partner representative is responsible for overseeing the direction and achievement of the project and for sorting out many of the management issues that have emerged.

The technical infrastructure, shown in Figure 4 below, was based around a combination of Lotus LearningSpace and HTML based learning materials accessed through the Internet from a Domino server hosting the materials. LearningSpace offered a purpose built off-the-shelf solution that had been successfully tested in other projects. It allows learning activities to be scheduled, provides access to learning resources in a wide variety of formats, facilitates computer mediated discussions, email and group assignments, as well as providing personal profiles of all participants and some restricted on-line computer assessment. The comparison was to be made with a simpler set up for HTML based courses, which would use a Lotus Notes discussion forum and email to allow learner to learner and learner to tutor interaction. The Domino server provided the host for the materials and for the UniCafé web site at www.unicafe.org.uk. This web site would allow on-line registration for learners and would also then control open access to a range of taster courses and password protected access to the 'live' courses. The courses would be accessed through a web browser from one of the distributed learning centres on the partners' premises.

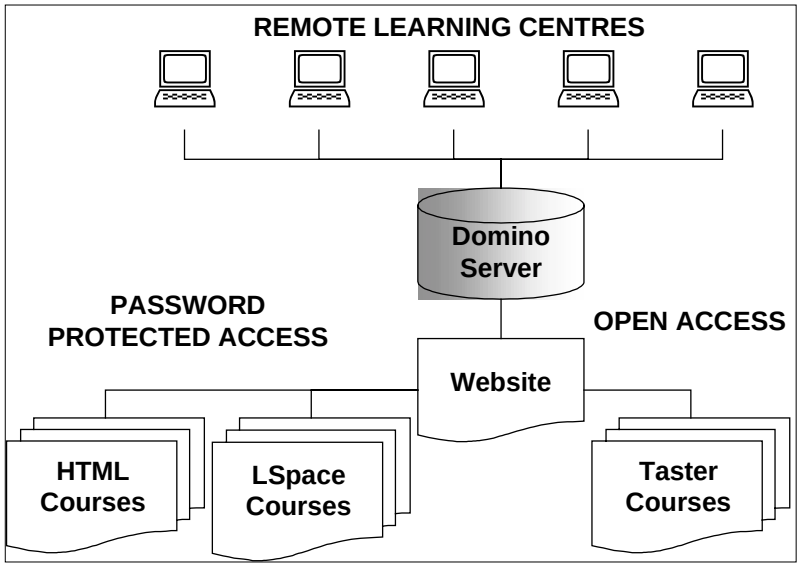

Figure 4: *UniCafé technical infrastructure*

Although this seems to be a relatively straightforward set up, it is apparently the first time that this particular configuration has been tried in the UK. Overcoming the problems that emerged needed a much higher level of technical expertise than expected, which had to be bought in from an external consultant, and took much longer to establish, so delaying the first phase of the project by a matter of months.

During the life of the UniCafé project, the University for Industry announced that it was seeking to certify a range of learning materials under the UFI banner and to establish a number of regional and sectoral hubs and

spoke networks. The UniCafé materials that have already been produced have been submitted for approval. The UniCafé partnership has submitted a bid to become a regional hub with a much-extended range of learning centres and access points throughout the local area. It is understood that this bid has been well received.

5. POSITIONING THE UNICAFÉ PROJECT

By combining the learner and teaching scope matrix with the Venkatraman framework introduced earlier, it is possible to position the UniCafé and other University initiatives in order to highlight some of the key issues and concerns. The diagram below (Figure 5) shows the stages of the Venkatraman framework set into the learner-teaching matrix with a number of University of Surrey ICT projects shown. The arrow from localised exploitation shows the main historic trajectory of development passing through the key stages to business scope redefinition and then on to an additional stage of 'speculation'. It also shows an abortive trajectory moving toward the Sear's project.

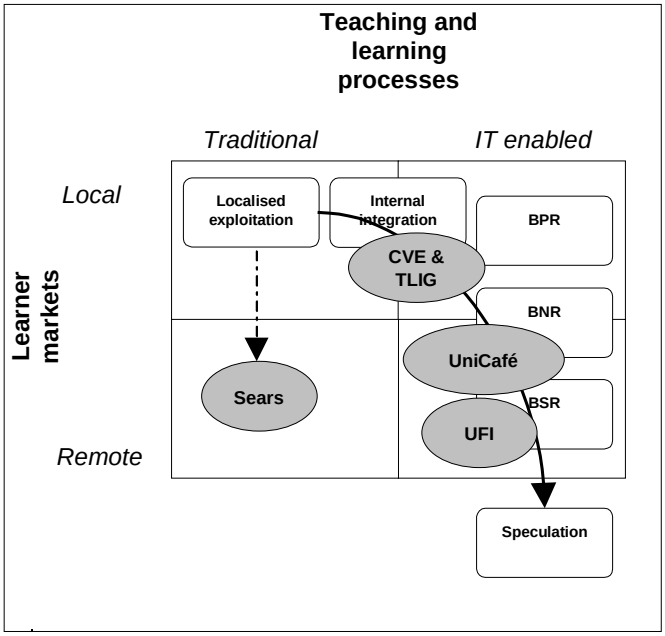

Figure 5: *A comparison of stages and projects*

5.1. The Sear's Project

This project, which started some six years ago in the School of Management Studies for the Service Sector, involved working closely with a major retail company, the Sears organisation, to develop a distance learning programme to lead to a BSc (Hons) in Retail Management, based on an existing full time programme. Following an introductory module delivered as a short course (clearly in the local/traditional quadrant), students took a number of traditional paper based distance learning modules as well as providing a portfolio of evidence for accreditation of prior learning.

As a national chain, students were middle managers from different parts of the country and from different parts of the company and would have benefited from more interactions than the induction course could provide. Telephone calls between students were common but could not provide long term contact. Access to library materials also proved problematic. The initial intention had been to negotiate access for each student to the university library with the appropriate books and journals nearest to their place of work. In the event, getting agreement from other university libraries was at that time practically impossible, although such arrangements are becoming increasingly common. In the end, the programme faltered not on the quality of

the learning material itself but on the fluid nature of employment in the company as managers were moved from job to job at short intervals. It is possible that a less passive learning method may have maintained the students' involvement, but would still have been unlikely to cope with the eventual downsizing of the company.

This project shows a non-sustainable trajectory that was unable to respond adequately to the changing needs and requirements of the sponsoring company and did not have the flexibility to attract other company interest. The material that was prepared, comprising some seven modules, now exists in electronic document format and in the future with updating and amendment could be incorporated into other delivery platforms.

5.2. CVE and TLIG projects

These funds provided support for many excellent projects that brought high levels of innovations and ingenuity to the learning and teaching process within their own discipline areas. Many of these have been of national significance. Not all of these projects were based on the innovative use of ICT. It is interesting, however, that in a recent round of awards from the new Strategic Fund for the Development of Teaching and Learning, which replaced the TLIG funds, all the projects were firmly rooted in ICT.

All the projects funded under these schemes were disseminated across the University so allowing for some internal integration and certainly many radically changed the way that a particular subject was taught, for example replacing potentially dangerous laboratory based experimentation with the 'virtual chemist'. These innovations could lead to clear avenues for business process reengineering as highly space and resource hungry facilities, such as laboratories could be reduced or removed without affecting the quality of the students' learning. The majority of these projects did, however, remain firmly rooted in their sponsoring discipline.

5.3. TLSU

The creation of the Teaching and Learning Support Unit was an insightful move to encourage organisation wide learning from these projects and to provide support for academics who were encouraged to move down the ICT path. This provides an obvious focus for internal integration, but has also led to new business processes and new business networks perhaps even more successfully than the Unit had originally envisaged.

An example will illustrate this issue. Under the CVE banner, the School of Management Studies for the Service Sector undertook a project to put together an integrated framework for the delivery of learning material via the web and including on-line discussion etc. Working in conjunction with TLSU, Lotus LearningSpace was identified as a product that might fit the bill. Further evaluation followed and a decision was taken to pursue LearningSpace as a platform, basing it on a new server managed by TLSU. The first module in Business Strategy was piloted with full time masters students and proved very effective. Further modules in the School have been developed for use with undergraduates. Other Schools have also found LearningSpace an effective tool, are setting up their own projects to exploit it, and at the same time informed the bid for the UniCafé project. In effect this has created a new business process - the management of Learning Space course and has meant that TLSU have had to spend more time than they would have liked operating a now successful venture rather than developing new opportunities. This problem has now been recognised and a new unit is being established to look after established learning technologies on a day-to-day basis.

5.4. The UniCafé Project

The UniCafé project is firmly based on the use of existing expertise in the preparation and use of learning materials using web technology, either through Lotus LearningSpace or HTML. In themselves these methods represent a significant change in the business process of teaching and would allow for interactive learning to be delivered off site. The enabling technology to support this provides a hard system, in the form of an

appropriately configured Domino server, and a soft system of teams and individuals working on material development and student administration tasks. Indeed one issue that has exercised the team has been how to integrate the registration of UniCafé students into existing University systems. The result, in the first instance, has been to resort to the manual transfer of data until such time as existing systems can be updated.

One feature that makes the UniCafé project different is the development of a network of external partners. There is no doubt that the University could have set out to provide and manage for itself a number of learning centres across the region each with a small number of internet access points from scratch. The complexity and financial implications of this task would have been such that the project would never have seen the light of day. The only way in which this could have been completed successfully was through the collaboration and commitment of a range of partners each with their own reasons for taking part. This has meant a significant change in the business network. The partners involved include a number of existing partners to the University, the colleges of further and higher education, with whom a number of relationships existed but where a strengthening of the link was seen as a positive move. There is no doubt that there is some element of competition between these partners but for the purposes of this project the spirit was very firmly one of collaboration. Other members of the partnership are new. The link with the Surrey Library Service has proved particularly rewarding for both parties and has supported a number of other initiatives. The link with the Lingfield Telecottage has established a community centre in an area of Surrey that is remote from the University and where other educational provision is comparatively limited. The link with Tesco is based on existing contact with the School of Management Studies for the Service Sector and its retail undergraduate programme. It is interesting to note that as news of the project has spread a number of other organisations have approached the steering group to ask if they could be admitted to the network. Although this has not been possible for the relatively small scale of the pilot project the links will be taken forward for future initiatives.

5.5. The UFI Project

The UniCafé project was designed to test out the proposed UFI hub and spoke organisation structure, with electronic learning material being held centrally but delivered through a network of learning centres and access points. However, before any results of the project could be reported, UFI announced their plans and asked for proposals for regional and sectoral hubs.

Without the UniCafé partnership network in place and the trust in each other that this had engendered, it is unlikely that, in the face of a completely different schema for education and the continuing uncertainty of how this would actually be achieved, the University would have been able to co-ordinate a UFI proposal or indeed would have ever chosen to be involved at all. At this stage the rewards for this change of business scope are uncertain but the redefined business network based on existing IT connectivity allows for possible developments to take place that would otherwise not have been available.

This reinforces the issue raised in Figure 5 above that there is a stage beyond business scope redefinition that allows for speculation to be enabled once the technical and cultural infrastructure is in place.

6. CONCLUSIONS

The experiences and frameworks discussed in this paper raise more questions than can be answered within the scope of this forum. However, this experience has contributed to answering some of the questions highlighted in the DTI Foresight document as illustrated below. These are worthy of further research and elaboration.

Technology and the learner

- The recognition that despite the introduction of sophisticated technology, the quality of the student learning experience will still rely on an observance of good education practice and employing good teachers.

Systems and structures

- The need for a support infrastructure that can provide technical, legal, and administrative resources. While some of this can be outsourced there is a danger that useful organisational learning can be lost.
- The need to identify and tackle those existing systems that will lag behind and hinder the effectiveness of new developments.
- The awareness that, if the business process and networks are redesigned to be more flexible and involving, there is still a need to protect the HEI's core brand equity in terms of its reputation and ability to award qualifications.
- A change in the definition of who is a potential competitor and who is a potential collaborator. The model of competencies shown above provides opportunities for involving more organisations within a reengineered network.

New roles for education professionals

- A change in the nature of teaching competencies and further opportunities for business process redesign. Figure 6 below shows a change in the teaching and learning process which sees the traditional whole task role of the teacher deconstructed into a series of separate individual capabilities supported by an IT infrastructure. Rather than relying on one individual capable of handling all tasks the process can be redesigned to use different 'best-in-class' experts at each stage of the process allowing increasing opportunities for specialisation, networking and outsourcing.

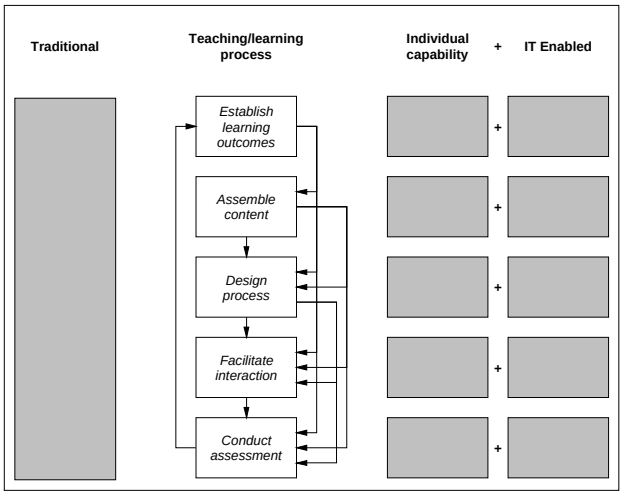

Figure 6: *Teaching & learning process competencies*

The model posited above has serious implications both for the teacher and for the learner. While the model suggests that the use of 'best in class' experts would improve the effectiveness of the learning environment, it ignores the response of lecturers and students to this change. Lecturers may feel disconnected from their students and be demotivated by the lack of 'whole task' completion. Students may again be concerned by the implied fragementation of service.

The learning environment will see an increasing pace of technological change, which will provide opportunities for consequent pedagogical change. At the same time HEIs face increasing complexity and low stability in the configuration of learning processes and the learning networks that support them. It is important therefore to acknowledge that in the eDistributed learning quadrant of the learner and teaching scope matrix (Figure 1) in which these new approaches lie, the key characteristic will be one of continuing redefinition of the teacher-learner system. This will in turn lead to a dynamic organisational form, which will continue to evolve as a living entity (Beynon-Davies et al., 1999).

Future research in eLocalised and eDistributed learning environments will need to determine whether teacher and learner benefit expectations are effectively anticipated, identified, prioritised, evaluated and realised. Moreover, the development of a validated benefits management process model (Ward et al, 1996) to guide investment decisions that can consistently deliver benefits improvements for HEIs, i.e. a *benefits chain*, is necessary for the effective ongoing management of IT induced business transformation in higher education.

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