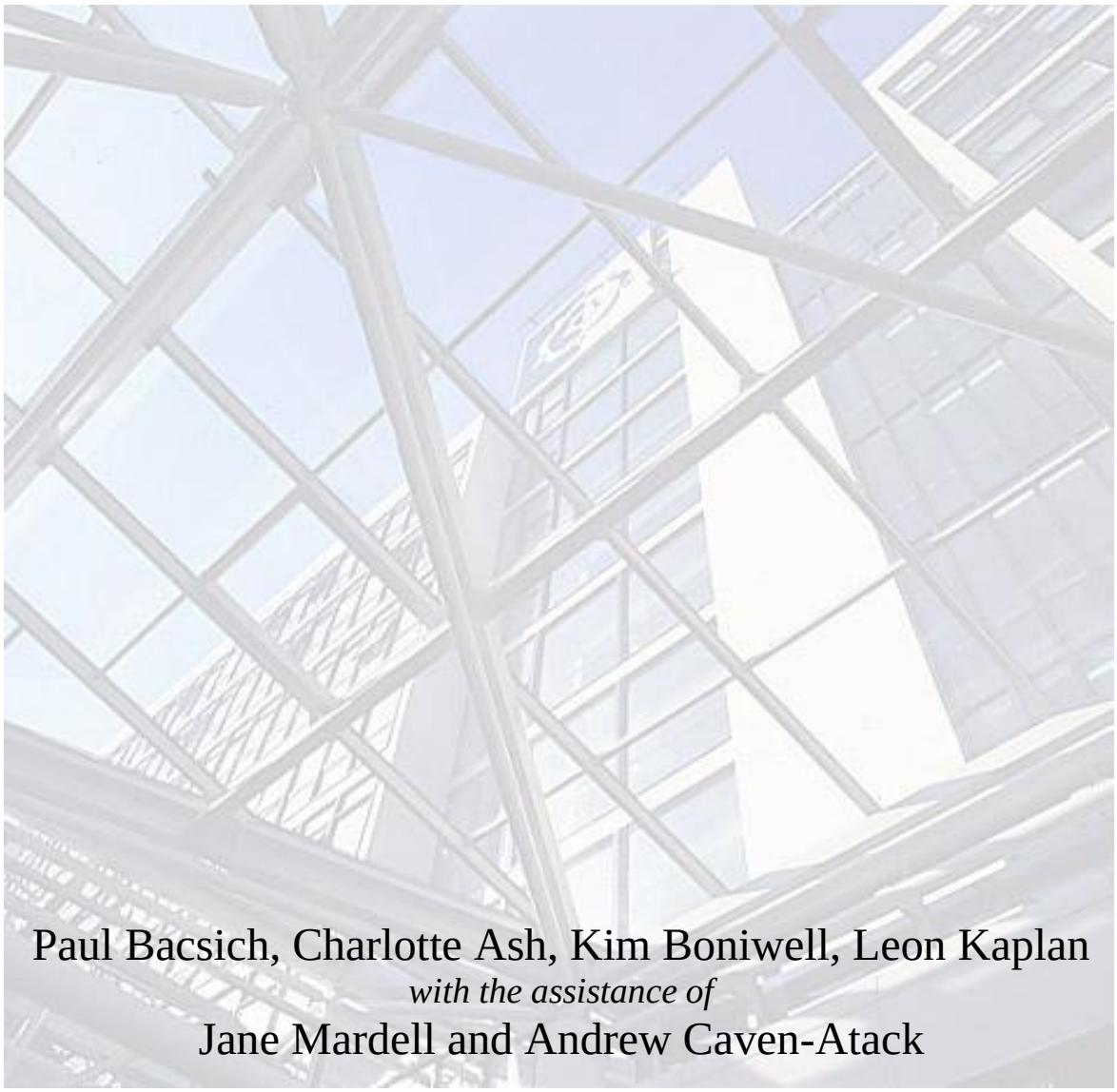
The Costs of Networked Learning



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Foreword

This study has been an exciting "six month" piece of work - even allowing for the fact that we managed to stop the clock and take just over 8 months from the official start date of 1 December 1998 till we delivered the final draft in early August.

We cannot deny that many of our professional colleagues around the world felt that it would be impossible to do the subject justice in such a short and modestly funded study, given the confusion in the field and lack of earlier authoritative (or, at least, generally accepted) work relevant to the UK HE sector. Whether we have done or not, you, the readers, must be the judge.

We could be criticised by those who say that much remains to be done, but we contend that what remains to be done is detail, consensus-building, and training, not fundamental theory.

If asked to distil our conclusions to the utter minimum, I would say that in order to understand the "true" costs of Networked Learning, the only way forward is to have a framework to understand the costs of teaching and learning, and in turn, the costs of universities, together with costs falling on the wider society of stakeholders. That may show what a tall order the task is.

The good news is that we believe that the problem can be analysed not by educators inventing a new vocabulary for finance and planning (as some have effectively tried to do over many years), nor by their denying the need for such tools (as others have often tried), but by using the tools that are (slowly) being used in universities to solve more general financial and management problems.

The key comes from the earlier (and still ongoing) debates about finance and planning for Information Technology. It is for educators (not planners or finance staff) to *imbue and enliven* financial and planning tools with a modern educational viewpoint, so as to facilitate the creative dialogue between pedagogues and planners that will be so necessary in universities in the next millennium.

Dr Paul Bacsich, Professor of Telematics
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0. Executive Summary

The main aim of this Joint Information Systems Committee (JISC) funded project was to identify the unrecorded or "hidden" costs involved in Networked Learning and to produce a Planning Document and Financial Schema using which a complete picture of the actual costs of Networked Learning can be reached.

This Final Report comprises 12 chapters plus a small number of Appendices. It details the activities of the Study Team during the six-month study. These activities ranged from a Sectoral Survey to gain an overview of the extent of Networked Learning in UK Higher Education Institutions (HEIs), a collection of in-depth studies based on interviews at seven Institutions, a literature review of over 100 sources and analysis of a survey which focused on the student perceived costs of Networked Learning.

0.1 Conclusions

1. The literature search established that the past literature is confinable, with a slow rate of accretion. The literature from the training field is relevant.

2. Earlier UK work on costing innovative learning systems in HE was of little use. More general costing work, such as the KPMG Costings Guidelines (1997), has been helpful. The Flashlight (Delinger et al., 1999) work on costing is likely to be of great relevance.

3. The Sectoral Survey established that the costs of Networked Learning are little considered at this stage, with problems of scope and inconsistent information.

4. The site visits confirmed that Networked Learning is prevalent in all types of HEI, but that cost analysis of Networked Learning is not currently on the agenda (although HEIs are aware that it is firmly on the Funding Councils' agenda).

5. The site visits also proved that student concerns and behaviour are neither well understood nor seen as being strategic.

6. Both the survey and the site visits confirmed that there are organisational barriers to accurate costing. The "cost of costing" issue was raised.

7. Institutions did identify a useful set of Hidden Costs to complement those uncovered in the literature.

8. Institutions felt that more compelling pedagogical evidence of the benefits of Networked Learning was needed. Organisational, quality and software issues were also considered as barriers.

9. The study has uncovered costs being absorbed by academic staff which were previously hidden. Staff overtime was highlighted as an issue.

10. The student survey showed that there is a disjunct between student beliefs - in essence, students believe that Networked Learning *increases* costs to them - and student behaviour - time has an opportunity cost to them.

0.2 Planning Document and Financial Schema

We propose a Planning Document and Financial Schema with the following features:

1. It can operate at the level of a whole Institution; a department or faculty; a course; or a unit (module) within a course.

2. It takes account of the costs incurred (or saved) by the additional stakeholders in the learning process other than the Institution. The most important of these additional stakeholders are Students and Staff (own time and resources).

3. It takes account of the division of academic time into Research, Teaching and Other (including administration).

4. It takes account of the activities *within* the course development process and proposes a three-phase model for these if there is no existing relevant model.

5. It is flexible in terms of the methods of allocation of overheads.

Though it is possible to propose the nucleus of a Planning Document and Financial Schema in six months, more development and testing is needed to prove its value.

0.3 Recommendations

1. We support the centrally initiated drive towards coherence in university accounting procedures.

2. Conventional teaching and learning must be costed via the same methodology.

3. There is a need to locate and evaluate finance software suitable for the "new era" of Activity Based Costing in HEIs.

4. A co-ordinated "mega-survey" approach is needed, including recognised procedures by which figures are collated.

0.4 Recommendations for further work

1. The study should be extended to include the Further Education (FE) sector. The FE report should also include issues relevant to the University for Industry.

2. Collaboration with Australia may be profitable, especially in the light of the current CVCP/HEFCE research project "The Business of Borderless Education".

3. Evidence suggests that the next area ripe for treatment, in terms of costing education, is the UK schools sector.

4. The Study Team is happy to work with the HE and FE Funding Councils to look at specific issues relevant to the constituent countries of the UK.

5. We recommend a study into the benefits, overt and hidden, for all stakeholders, of Networked Learning. Without such a study, the cost issues are seen in isolation.

1. Introduction

"If we don't understand and measure the costs, how can we make informed decisions?"

Tony Bates, keynote address - Ed-Media99

This document is the Final Report for the "Costs of Networked Learning" project, funded by the Joint Information Systems Committee (JISC) and run by Sheffield Hallam University. The main aims of the project were to identify the unrecorded or Hidden Costs involved in Networked Learning for the benefit of policy makers, course providers and students, and to produce a Planning Document and Financial Schema which together would accurately record the costs of Networked Learning. Below is an excerpt taken from the original JISC circular:

> *"Many of the costs of developing and supporting Networked Learning are hidden; unrecorded academic staff time, increased demands on technical support, more complex administration, additional telephone costs, etc. CALT wishes to fund a study that will more accurately document the costs of a number of different approaches to Networked Learning. CALT wishes to see the study lead to a planning checklist for Networked Learning and a schema for estimating costs".*

JISC Circular 9/98

When Sheffield Hallam University reviewed previous work on costing innovative learning systems we concluded that no one body of work encompassed all of the issues or travelled sufficiently far towards reaching *operational* conclusions, especially in a manner convincing to Finance Departments.

Jef Moonen (1997) identified four reasons why costs are difficult to quantify:

- There is disagreement about which costs should be taken into account.
- Reliable data is unavailable because it is not collected in a systematic manner.
- Recorded costs are unstable and evolving.
- Some data is perceived as confidential and may not be made publicly available.

In order for the project to reach a useable conclusion, these barriers had to be surmounted. In addition, we found a larger barrier intrinsic to the UK Higher Education sector:

- Each previous costings approach used a different vocabulary, and these have to be "standardised" before they can be understood.

1.1 Networked Learning

The term 'Networked Learning' was used by JISC in the above-mentioned circular and is generally taken throughout this project to be synonymous with 'Online Learning', 'Technology Enhanced Learning' and such like terms. The actual definition used by the team is detailed overleaf:

> *"using a networked computer for the purposes of learning, blurring the boundaries between on-campus, distance and flexible learning"*

Networked Learning can be most successfully identified by the degree to which technology is used in place of, or to enhance, the tutor. The following scenarios illustrate the range of substitution possible.

Scenario One

A conventional lecture and tutorial-based undergraduate degree in English Literature encourages students to keep abreast of international news stories using the Internet in order to prepare a group presentation on the power of propaganda.

Scenario Two

A BEng in Materials Engineering posts lecture slides, notes and forthcoming assignments on the course Web site to allow students a continuous reference to the materials. The Web site is also a gateway to relevant Internet-based resources and is home to the electronic conferencing system through which students are encouraged to discuss their work.

Scenario Three

A three year course in Primary Education with QTS (Qualified Teaching Status) provides all of the above to aid students currently on placement. But it also provides completely online modules which are available to students who prefer not to attend the University during the short units between placements which form part of the otherwise conventional course. The learning material and environment can be either bought-in or internally developed, thus resulting in a mixed-mode delivery system.

Scenario Four

A fully online MBA in Business Studies which students can study locally or at a distance, with online learning materials, collaborative conferencing and the email submission of assignments. The learning material and environment can be either bought-in or internally developed.

1.2 Hidden Costs

The issue of Hidden Costs is one that, although used quite extensively in other fields, has not yet been applied in an educational context. It encompasses costs which are both fundamentally unrecorded, such as academic staff overtime, and those which are generally absorbed into larger budgets, and therefore cannot then be attributed to an individual activity or even genre of activity. This project has identified that the main area of Hidden Costs not previously appreciated is that borne by academic staff; student Hidden Costs were covered in the 1996 NUS Hidden Course Costs survey.

Examples of Hidden Costs include: the time, inconvenience and extra costs incurred by staff away from home on business, such as presenting at a conference or attending a project meeting; student-purchased ink cartridges to use on their home PC to print tutorial notes or multiple copies of assignments to submit; or a networked PC in a

open access laboratory being used by students for social email and Internet surfing while students trying to do assignments are turned away.

1.3 Project overview

Chapter 2 describes our overall approach to the project during its various stages.

Chapter 3 covers our literature review. The information collected from the literature considered was used to form a structured list of currently considered costs. The next step was to allocate these identified costs in a structured way under headings, and then as new costs become apparent they too were added to the structure. This chapter therefore details the first iteration of the working model.

Chapter 4 reveals the conclusions of a sector-wide survey into the application of Networked Learning and the related costs. The survey questioned the IT capability and structure of the Institution, availability of student allocated machines, the permeation of Networked Learning into the Institution's teaching and learning and how the costs of these activities were recorded, if at all.

The data collected from the survey also helped the team to decide which Institutions to visit. These "Case Studies" are discussed in Chapter 5. Interviews were conducted at seven Institutions - members of the Study Team met top-level management through to course facilitators to discover what they perceive to be the Costs of Networked Learning.

Chapter 6 outlines the results of a student-centred survey, analysed in conjunction with a focus group meeting with the Student Union Executive Committee at Sheffield Hallam University and the 1996 National Union of Students study on "Hidden Course Costs". This was not foreseen in the early study plans but was embarked upon when it became clear that student views were very important and were not in our view being adequately represented via Universities' management. A similar study is needed which concentrates specifically on staff-related Hidden Costs but it was felt this was beyond the resources of the team within the project time scale.

Chapter 7 returns to the provisional model outlined at the end of Chapter 3 and documents the evolution of the model in light of the further research and consultation undertaken by the Study Team. This chapter animates the use of the model using worked examples.

Chapter 8 presents the analysis of existing models for costing innovative learning systems and illustrates how these methodologies, including the 1997 KPMG work and the more recent Flashlight economic model, were mapped onto our model, thus producing the Activity Based Costing approach adopted by the team for the Financial Schema.

Chapter 9 concludes the main body of the report with the Planning Document. This is based on recent "investment appraisal" work from HEFCE (1999) but rewritten in the language of course planning. This chapter ends with a brief illustration of how the Planning Document and Financial Schema work in tandem as the Planning Framework.

Chapter 10 covers dissemination, including a brief report on the conference "The Business Case for Online Learning" and the Study Team's plans for conference presentations during the remainder of 1999. The project Web site and forthcoming dissemination activities are also detailed here.

Chapter 11 outlines the project management approach, including how the Study Team surmounted problems, and the results of Advisory Group meetings.

Chapter 12 details the conclusions and recommendations, both for the project and in a wider context.

The main report is followed by a list of key references used in the text of the report, and a small number of Appendices.

There are planned to be three separate publicly available Annexes available on request from late Autumn 1999 onwards:

- a Hidden Costs Encyclopaedia
- full Versions of the Seven Case Study Reports
- the Planning Document and Financial Schema with worked examples.

1.4 Project financing

The project was funded by the Committee for Awareness, Liaison and Training (CALT) of the Joint Information Systems Committee (JISC), now known as JCALT, of the UK Higher Education and Research Funding Councils. Funding was for a six-month period ending in July 1999. Additional support was provided by the Sheffield Hallam University Virtual Campus Programme and the School of Computing and Management Sciences.

2. Methodology

"…research methodology aims to ensure that knowledge progresses."

Laurillard (1993).

2.1 Introduction

This study aims to accurately document the costs of Networked Learning for the benefit of policy makers, course providers and students. The study has two main objectives:

- to document the overall cost factors, with special reference to unrecorded or Hidden Costs
- to incorporate the cost analyses within a general planning framework which permits an estimate of the actual costs of different approaches to Networked Learning.

The methodology used in this study was varied. It began with a detailed literature review, continuing throughout the project. This was followed by a Sectoral Survey to the 173 UK Higher Education Institutions, to establish their approach to developing materials, dissemination and recording costs. After this the study narrowed to focus in-depth on seven Case Study Institutions to allow for a more precise level of information to be extracted.

Initial investigations revealed that many of the Hidden Costs of Networked Learning were being absorbed by students. To address this issue a focus group activity was set up between members of the Study Team and the Executive Committee at the Sheffield Hallam University Union of Students. This was followed by an extensive questionnaire to students at the University.

Consultation with experts formed a major part of this study. These discussions were ongoing, but focused specifically on the Experts Workshop, held at Sheffield Hallam University in April 1999, and the Flexible Learning on the Information SuperHighway conference (FLISH99) held at the University in May 1999.

2.2 Literature review

The literature search and review constituted an important element of this project. The search aimed to build a resource base of previous writings on the subject from which methodologies, cost categories and approaches could be extracted and used to guide the team towards producing a schema to determine the Costs of Networked Learning.

Resources were identified using a number of different methods which varied in their effectiveness. At first, searches were undertaken, using defined keywords, of both the University OPAC system and resident electronic catalogues. To widen the investigation, a series of Internet searches took place using a variety of search engines but the same set of keywords. The International Centre for Distance Learning at the Open University was also visited and a large number of sources gathered. Using the bibliographies provided by the initial sources, a number of further references were identified. Various conference proceedings were also collected where papers claiming

to be about costs were presented. Through this extensive process, a large number of possible sources were revealed, but many were not followed up due to the short time span of this project. The main difficulty encountered during this exercise was one of deciding which sources were relevant, worthwhile, or academically sound, and those which were not. Therefore the data was prioritised through the presence of keywords and the authority of the author.

In total, 110 sources from books, journals, conference proceedings, previous project reports, unpublished material and Web sites were selected. Each source was summarised and reviewed and its review entered into an MS Access database which also contains all the bibliographic information. Each review paid particular attention to the models currently suggested for planning and costing innovative learning systems and whether the author mentions the subject of Hidden Costs.

2.3 Sectoral survey

The aim of the Sectoral Survey was firstly to establish a representative view of the approach to and extent of Networked Learning activity in the UK Higher Education sector and secondly to assess how the costs of these activities are recorded, if at all. The list of Institutions was taken from the Higher Education Statistics Agency Web site at http://www.hesa.ac.uk. These numbered 173 in total, a mixture of traditional and new universities, and university colleges.

The survey was written within the first few weeks of the study and was based on work in progress. The team consulted a number of stakeholders to ensure the validity and clarity of the survey: these included the Sheffield Hallam University Virtual Campus Team, which comprises staff from several academic disciplines and Institutional support services. The survey was addressed to the Vice-Chancellor or equivalent at each Institution with a request for it to be passed on to whoever would be most appropriate to complete it. The Study Team recognised that each Institution has a different structure and therefore it would be difficult, if not impossible, to identify the most appropriate person externally; by addressing the letter to the Vice-Chancellor or equivalent, the team not only had more of a chance of reaching the right person but also raised the profile of the project. The accompanying letter also contained a full definition of Networked Learning and a description of what the study hoped to achieve.

Due to time pressures, the team commissioned a third party to lay out, post and collate the results of the survey. The data was then checked by our own team and analysed with further figures taken from the Universities and Colleges Information Systems Association (UCISA) Statistical Returns, plus Noble's Higher Education Financial Yearbook. It should be kept in mind that with self-completion questionnaires a margin of error is always possible due to respondents misinterpreting questions or instructions, or the data sources not being individually reliable or consistent across the sample group. In this instance two returns were discounted due to the inconsistency of data given and the misinterpretation of questions.

2.4 Student questionnaire

The objective of the student questionnaire was to investigate student views about the Costs of Networked Learning. Early research showed that student activities were little documented; this included their attitude towards Networked Learning and the associated costs. Our research also identified the existing view held by some that costs are being passed onto the students; indeed the 1996 NUS survey found that students were paying an average of £571 per year towards their education costs that had not been made apparent to them at the beginning of their courses.

Initially the Study Team met with the Executive Committee at Sheffield Hallam University Union of Students to discuss issues such as computer ownership, the introduction of Networked Learning to some courses and what students perceived as the greatest cost of this modified learning paradigm. The Committee believed that students should be approached directly to express their views on these issues and offered to post a questionnaire to all registered course representatives (450 in total). To extend this sample group, as the expected response rate from students was quite low due to end of year deadlines and examinations, the team produced a further 300 surveys which were placed in School offices for students to pick up at random. This maintained the cross-section of student profiles, with the opportunity of entry into a Prize Draw used to encourage response.

As with the Sectoral Survey, this self-completion questionnaire should be treated with a degree of caution but in this instance only one return was disallowed due to the inconsistency of the answers. Students did have the option of remaining anonymous but email addresses were a prerequisite for entry into the Prize Draw.

2.5 Case Study reports

The Institutions chosen for this exercise were selected to represent the Higher Education sector. Therefore Oxford, Cambridge and the Open University were discounted as atypical. Of those who returned a questionnaire, six Institutions were selected to fulfil the following criteria:

- representative of all countries in the United Kingdom
- representative of both traditional and new Universities
- at various stages of Networked Learning development.

The seventh Institution was Sheffield Hallam University.

Each Institution was approached with a letter to the Vice-Chancellor, which was copied to the staff member who had completed the questionnaire, thanking them for their response and asking if they would be willing to participate in the next stage of the project, additionally indicating which people we would like to see should they be agreeable. Once assent was given, the Study Team arranged to meet a range of staff, from Pro-Vice Chancellors to working academics, over a two or three day period. Only one Institution declined and a suitable substitute was soon found.

In preparation for the field trips, the Study Team compiled a profile of each Institution from publicly available reports and the Institutional Web site. A series of 44 interview questions was prepared for the visits.

This was done by identifying the main areas of enquiry, namely: Networked Learning, Costs, Activities, Issues, and the Model. In advance of the visits, individual Institutions received a briefing pack for each staff member to be interviewed this included a copy of the Interim Report of the project, the question guide, and a provisional model for tracking the costs of Networked Learning.

The first iteration of the Case Study reports involved writing up the interview notes under each of the original questions. The first page of each report was a description of the Institution and who the team saw. All positions, figures and titles were generalised to maintain anonymity. These draft Case Study reports were edited internally for consistency and then sent to the Institutions for comment and approval. After only minor alterations they were accepted and now appear in full as an annex.

2.6 Consultation

Consultation during this project has been far reaching - the team are now in contact world wide with most of the current projects and experts in this field. This ability to exchange thoughts and information has meant that a large proportion of work has been successfully completed in a short space of time.

During the project, one formal - and a number of informal - Advisory Group meetings took place with the CALT nominated representatives, Jonathan Darby and Robin Mason. These discussions were always informative and worthwhile.

Additional consultation was invited at a one-day workshop that five experts (some from education and others from finance) from Higher Education and Industry attended. The workshop was held to assess the progress of the project and provide a critical review of the findings. Experts engaged productively with the Study Team on issues relating to scope, accounting methodology, the opportunity cost of staff and student time, and proposed revisions to the working model.

A considerable amount of first-hand information and opinion was gathered at the Flexible Learning on the Information SuperHighway conference (FLISH99), held at the University in May 1999 on “The Business Case for Online Learning”. A detailed report of this event and its impact on the project can be found in Appendix 4.

3. Literature Review

"Most educational technology introduced over the past 50 years has supplemented and often enhanced - but not supplanted - traditional classroom instruction, thus adding to its cost, not reducing it."

The College Board (1999)

3.1 Introduction

In 110 sources reviewed by the Study Team, explicit use of the term "hidden cost" or "intangible cost" was confined to only a handful of references, including Tonks and Long (1989); Hermann et al (1991); Robertshaw (1993); Beaton (1995); Canale and Wills (1995); Temple (1995); Moonen (1997); HEFCE (1997); Alexander et al (1998); Bates (1998); CRE (1998); Delinger et al (in press); and Oliver et al (1999). Additionally there was reference, by implication, in the works of: Orivel (1987), Rumble (1989), Yenbamrung (1993), Massy and Zemsky (1995), Thomas et al (1998), Draper and Foubister (1998), and Mardell (1998).

Several more general studies have also been consulted to widen the understanding of the difficulties in accurately costing educational technologies. Rumble (1997 and 1999) incorporates several years worth of work on costing open and distance learning. Likewise Bates (1995) has examined the costs of various media over a number of years. Case studies from Australia (NBEET, 1994 and Alexander et al, 1998), North America (Arizona Learning Systems, 1998) and Canada (Bates, 1998) provided an important international perspective.

The review of these sources has been organised in this chapter around a number of themes. To begin with, there is a discussion inspired by the literature centred on the costs to each of the major stakeholders in Higher Education - the Institution, Staff and Students - as identified by Alexander et al (1998). This is followed by a brief illustration of the working model, arrived at through the literature analysis.

Previous studies examining the costing of Higher Education in the UK - together with a number of financial models developed for costing innovative learning systems - are analysed later in this report, where they are used as reference points to outline a methodology for costing Networked Learning (see Chapter 7).

3.2 Costs to stakeholders

In an Australian study of the costs and benefits of information technologies in learning and teaching the authors identified multiple stakeholders who, "... are affected by the development and use of information technologies: students, staff, departments, Institutions and society itself." Further, the authors argued, "Each of these can be said to incur a cost, as well as potentially receiving benefits" (Alexander et al, 1998).

Using this approach (the team regards departments as part of Institutions and society to extend beyond the scope of this study) the literature is reviewed here under three sections: costs to the Institution, Staff and Students.

3.2.1 Institutional costs

Palfreyman (1991) could have been referring to Networked Learning when he said the costing of a project "is rarely a matter of simple and mechanistic accounting".

The 1997 Information Technology Assisted Teaching and Learning (ITATL) report concluded that there were no robust mechanisms for determining the costs of developing courses and related delivery costs (HEFCE, 1997). This lack of data is due to the difficulty Institutions have in identifying the total cost for Communications and Information Technology (C&IT) and distinguishing the cost of C&IT-enhanced teaching and learning in a networked environment (HEFCE, in press). Moreover, in the UK Higher Education sector, budgets are devolved directly to academic departments. Therefore without a centrally imposed recording methodology, which operates at highly granular level, the centre will never be able to ascertain what is being spent on Networked Learning.

One of the main expenses for Institutions embarking upon Web-based or other electronic delivery courses is that of investment in infrastructure, such as IT-equipped lecture theatres and computer laboratories (Alexander et al, 1998) and course development. These start-up costs can amount to five years of a lecturer's salary (Arizona Learning Systems, 1998). These costs have to be amortised over a long period of time or significant economies of scale reached to provide a shrewd investment.

Another study highlights the need for increased technical support with regard to online learning programmes (CRE, 1998). This is not only for academic staff during the development stages but continuous assistance for both staff and students during the delivery of the programme.

Although developments in Networked Learning should reduce the need for Institutions to invest in property, Sefton (1998) warns of the considerable cost of refurbishing rooms for Problem Based Learning tutorials. Institutions will save in terms of space requirements if Networked Learning is offered to students wishing to remain at home, but this reduction in the requirement for buildings must be supported by serious financial investment in secure and reliable networks. A study by the Association of European Universities noted, "Another hidden cost overlooked until now…. is that of down-time or the time when the computer network is failing and all computer activity is interrupted" (CRE, 1998). This leaves the Institution with unproductive staff and students.

An additional and often overlooked cost to any Institution encouraging Networked Learning was identified by the ITATL study. Staff and students perceive Internet charges via the Institutional server at zero cost. Whether 'surfing' is for work or pleasure, Institutions pay these charges. Given present Institutional accounting procedures, it is difficult to devolve these costs to individual programmes and they therefore constitute a large hidden cost absorbed by the Institution.

The same study noted, "... many development costs are hidden, or are excluded from direct calculation, and thus their true extent may not be traceable, under-budgeted, or honoured only in the breach" (HEFCE, 1997). Development is a huge hidden cost in Institutional terms: both the time of staff to develop resources and the additional

technical support and related training costs are generally not accounted for and so are absorbed into existing budgets for staff development and academic planning.

3.2.2 Staff costs

Rumble (1997) points out the difficulty of assessing academic staff costs in an environment where staff pay is not directly related to the time they spend working on activities, and where their time can not be attributed to different activities. He notes the dangers of assuming that staff will always put in long, unpaid-for hours - both in terms of stress if they do and because of political changes in the acceptability of such practices.

The long, unpaid hours of academic staff are not just prevalent in the UK. Kirkpatrick and Jakupec reported that, "Most teaching staff [in Australia] are prepared to go 'beyond the call of duty' but this can only be sustained up to a point. The current educational environment where staff are facing heavier teaching loads, larger classes and increased pressure to attract external funding and to publish challenges the commitment of most professionals" (Kirkpatrick and Jakupec in Tait and Mills, 1999). Further to this, Dolton (1994) studied the use of computing on academic courses in Higher Education. He repeated a conclusion from a review by the Computers in Teaching Initiative, "… the amount of human resources to mount software, write it, service courses, give courses and teach computing to staff and students is huge and should not be underestimated."

Increased student-to-tutor communication in online learning programmes is extensively documented. Arizona Learning Systems (1998) report that faculty spend more time communicating with students (from 30 minutes to 4 hours per student per week) than they would have done for a traditional classroom lecture with associated follow-up time.

In addition, Rumble (1999) feels that the biggest and the least costed aspect of on-line learning is the cost of learner support. Tutors at the UK Open University consistently suggest that they are spending more time supporting learners on-line than was the case when they supported them through correspondence and telephone contact. Like academic staff in other Higher Education Institutions, they are not being paid, or recognised, for this increased workload.

The hidden cost of time invested by academic staff was noted by the Association of European Universities in terms of: familiarisation with new technologies; integration of computer-based learning materials in teaching; and the development of course material for technology-enabled learning "which is not taken into account in cost analyses" (CRE, 1998).

Meanwhile the ITATL study stated, "The significant quantities of time allocated by academic and technical staff to ITATL development within Institutions were … allocated a zero or minute cost value" by the Institution (HEFCE, 1997). Institutions are encouraging academic staff to develop electronic learning materials to enhance and extend the reach of their courses but are unwilling to relieve them of additional teaching and departmental responsibilities, thus resulting in the ever lengthening academic working day. In an Australian study of university IT projects (Alexander et

al, 1998), nearly three-quarters of the projects reported that time for project development was greater than expected.

The above report also noted that staff incurred a high personal cost "in terms of time, resulting in a loss of research and personal time" (Alexander et al, 1998). This can also be extended to include loss of tenure and promotion as well as increased work-related stress and is often categorised as an opportunity cost (HEFCE, 1997). Networked Learning is seen as carrying a price in terms of opportunities foregone in other areas of activity, for both Institutions and for individual academic staff.

Tonks and Long (1989), in their study of the Hidden Costs of simulation software concluded that: "timetable hours for staff and for students become a poor measure of effort and of contact when using simulations". This illustrates that even ten years ago it was being noted that teaching hours were not an accurate measure of academic workload when teaching material and communication with tutors was in an electronic format.

In 1997, a study by management accountants KPMG and the Higher Education Funding Councils noted the lack of a consistent, detailed and acceptable method of recording staff time and effort and assigning it to different activities. The study identified the 'cultural' difficulties in getting academic staff to accurately complete an activity-based time sheet. Two years earlier, Temple (1995) found that employers focussed on the direct costs of the training programmes and were "unaccustomed to identifying the indirect costs that the project was encouraging them to do".

Despite Tonks and Long's statement of 1989 and the KPMG study of 1997, a realistic and workable method of recording and then assigning staff time to activity has still not been found. In the 'Guide to Costing and Pricing in Higher Education' the Joint Costing and Pricing Steering Group states: "… in estimating the time spent by academic staff on teaching, research and other direct activities, some HEIs use workload models for planning and monitoring academic activities; some use estimates of staff time prepared by programme managers or by staff themselves; others conduct diary or timesheet exercises on either a one-off or a recurring basis" (JCPSG, 1999a).

3.2.3 Costs to students

A number of references are made in the literature about the transference of costs to students with the development of electronic learning environments. According to the report of the latest (US) Campus Computing study, significant numbers of students in the USA are being charged separately for computing facilities - at an average cost of $120 per year (Green, 1999).

Moonen states in Collis (1996) that to reduce costs in the long run some costs must be shifted to students, who must also take more responsibility for their own study and expect less personal contact with instructors. Similarly, O'Rourke, examining the Canadian experience, comments, " … shifts in responsibility for obtaining and paying for access may not just be the outcome of a particular technology, but may represent a fundamental shift in perspective" of who is responsible for the cost of education (O'Rourke in Tait and Mills, 1999).

Rumble (1997) declares that a successful online learning community must eventually rely on student ownership. The 1997 Dearing report proposed 100% student ownership of personal computers by the year 2005/06 (NICHE, 1997) but as a forthcoming HEFCE report points out, this transfers the costs-not only of purchase, but also of maintenance, insurance and running costs to the student and does not substantially reduce the cost of IT provision to the Institution (HEFCE, in press).

The National Union of Students conducted a survey of Hidden Course Costs in 1996. Three years later this data was used in a consultation document about top-up fees. It was found that students were being charged for: printing, photocopying, art materials, year abroad costs, IT costs, laboratory equipment, studio levies, compulsory field trips, hand outs, equipment hire and study packs (NUS, 1999). In over 80% of cases, those students who were being charged extra course costs had not been informed of such costs before entry to the Institution, despite Dearing stating that "students will need information about the adequacy of an Institution's provision of equipment for their use and must know in advance of study what expectations there are of students providing their own access" and therefore, implicitly, the associated costs (NICHE, 1997).

Notably, when Crabb (1990) developed a methodology for costing open learning, he included a cost to the learner of fees, materials, incidental expenses (travel) and equipment. The Australian study considered it important to value student time, the cost to students of the time they spend on education-related activities, i.e., time spent learning, travelling, seeking resources, etc. (Alexander et al, 1998).

3.2.4 Conclusion

The relative scarcity of literature specifically relating to Hidden Costs is clear from the above. However, the literature does outline a number of Hidden Cost issues relating to all three stakeholder groups.

Institutional Hidden Costs are mainly related to those which are absorbed under different budgets. Therefore, with a suitable accounting methodology these should become apparent, and activities, such as Networked Learning, could then be successfully costed on an individual basis.

In addition, Institutions must find a suitable method for dealing with staff-related Hidden Costs. Some of these fall into the above category but others, such as overtime, increased work loads and additional training needs, are currently overlooked by Institutions and therefore, in most cases, the cost is borne by the individual and remain unrecorded.

The other major area of Hidden Costs concerns the growing price students are paying for education in a previously free system. The cost of technology is being passed onto students, directly in the USA and (so far), less so, in the UK (Harvey et al., 1998, in Delinger et al., 1999). Students however appear unaware of the potential savings and possible increased benefits of learning with technology, such as reduced travel expenses and more productive use of their time (Delinger et al., 1999).

A report by the Association of European Universities giving guidance to universities on the strategy for incorporating new technologies suggests, "The integration of … Hidden Costs could make for a more accurate assessment of cost-effectiveness" (CRE, 1998).

Peebles (1997) regarded as most significant the decision at Indiana University to institute a form of Activity Based Costing (ABC). This allows the derivation of a notion of "unit costs" for the delivery of services. Rumble (1997) also advocates Activity Based Costing. With no Activity Based Costing mechanism in place, there is ignorance of the unit of costs for various transactions, ignorance of the value-added of each transaction, ignorance of the impact of cost reduction efforts, ignorance of how to respond to fall/growth in student numbers, and transaction costs cannot be attached to individual/different kinds of students.

Oberlin (1996) notes that at present the demand for, and costs of, Networked Learning are rising, but in the future Institutions can expect "solutions that support future cost avoidance rather than actual cost reduction". So whilst current investment is high, future results should be measured against cost savings and increased benefits. It is the informed inclusion of all costs that is required to assess the cost-effectiveness of Networked Learning.

3.3 Lifecycle - development of a model

During the literature review process each cost category or cost item mentioned was extracted and a list of such terms constructed. A report was also written analysing currently available models which attempted to provide a framework or methodology for recording the costs of technology-enhanced learning systems. On the basis of the abstract list of costs and the report on current models, the team met with academics from the University to develop a working model to be tested during the research stages of the project, and then finalised as the basis for the Planning Document and Financial Schema.

Almost 100 cost categories and items were identified at the half-way stage of reviewing the literature. These will appear later as an Annex to this Report.

A short report was complied to analyse the currently available models for costing educational practice. The team had already discussed at length the inappropriateness of traditional financial management accounting procedures, which are not suited to exposing the Hidden Costs of Networked Learning. A number of experts in the field of costing open and distance learning have proposed frameworks under which costs can be categorised.

1. Rumble (1989) believes costs can be classified by type as: human resource costs; costs of developing, producing and delivering; capital equipment costs; consumables and expenses; and space and accommodation costs.

2. Moonen (1997) summarises costs as: personnel costs; equipment costs; facilities costs; material costs and other costs, calculated in a 'costs per activity phase' breakdown of a) development phase, and b) delivery, operation and maintenance phase.

3. Cukier (1997) follows a similar vein by categorising the costs of educational technology as: human resources; general administration; development; production and delivery; capital equipment and start-up; consumables and expenses and space and accommodation.

4. Orivel (1987) states that the most common classifications of costs associated with educational media are: administration costs; production costs; diffusion costs; and reception centres.

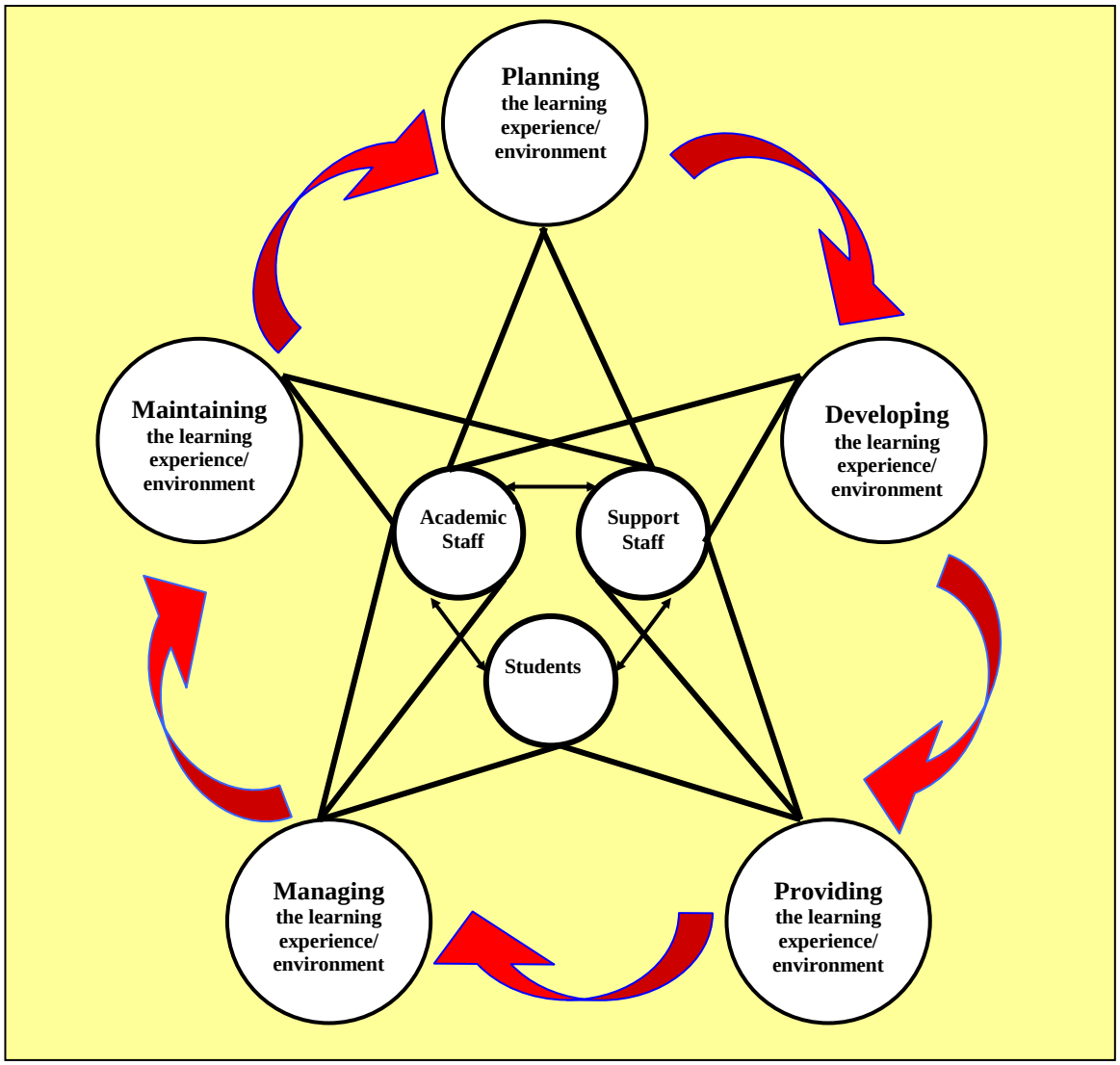
5. Crabb (1990) used headings of: human resources; premises-related costs; equipment; consumables and expenses; central resources; and overheads; in the two stages of development and delivery costs.

There appears to be a general consensus about what cost categories should be used, if not about their terminology. If one were to combine all five of the above models it would look something like this:

- Human Resource Costs
- Production and Delivery Costs
- Development Costs
- Equipment Costs
- Consumable Costs
- Facilities Costs
- Administration Costs.

The team held a series of short consultative meetings with a number of academics about the lifecycle of course development and delivery, then proposed a three-unit human resource model of academic staff, support staff and students and a five-phase cyclic model which encompassed providing both the learning experience and the learning environment. The model aimed to show the relationship between people and activities and therefore expose possible areas of Hidden Costs.

CNL Working Model



Each of the headings above were supported by a list of costs extracted from the literature.

This model was tested during the interview stages of the project and at an Experts Workshop. This was held to discuss the project and facilitate the movement from the above diagram to a Planning Document and Financial Schema. The evolution of this working model is discussed in Chapter 7.

4. Sectoral Survey Analysis

"Although cost of equipment, maintenance and replacement costs are, in principle, relatively easily identified, Institutions were not generally able to provide accurate figures on infrastructure and access costs, nor any of the less tangible cost concepts..."

HEFCE (1997)

4.1 Introduction

This postal survey aimed to establish the current extent of Networked Learning within the UK Higher Education sector. The questionnaire was sent to each Institution detailed on the Higher Education Statistics Agency Web site, http://www.hesa.ac.uk.

It questioned the provision of computing facilities, the permeation of Networked Learning activities and how the costs of these activities were recorded, if at all.

The analysis of the Sectoral Survey is separated into quantitative and qualitative sections. The qualitative section separately addresses both recorded and unrecorded costs, with all analysis stemming from respondents' comments regarding their personal perception of recorded and Hidden Costs with respect to their own Institution.

As with all self-completion questionnaires, it is necessary to treat the results with some caution. Responses are treated as being representative of Institutions. However, it must be remembered that questionnaires were completed by individuals within Institutions and that - especially with qualitative data - responses may not match views held by other members of the same Institution or the general Institutional viewpoint. Personal bias - however accidental - is almost inevitable within such surveys. Respondents may inadvertently provide false answers through misinterpretation of questions or by failing to follow instructions verbatim. Despite these limitations it is nevertheless possible to draw some tentative conclusions based upon the responses provided.

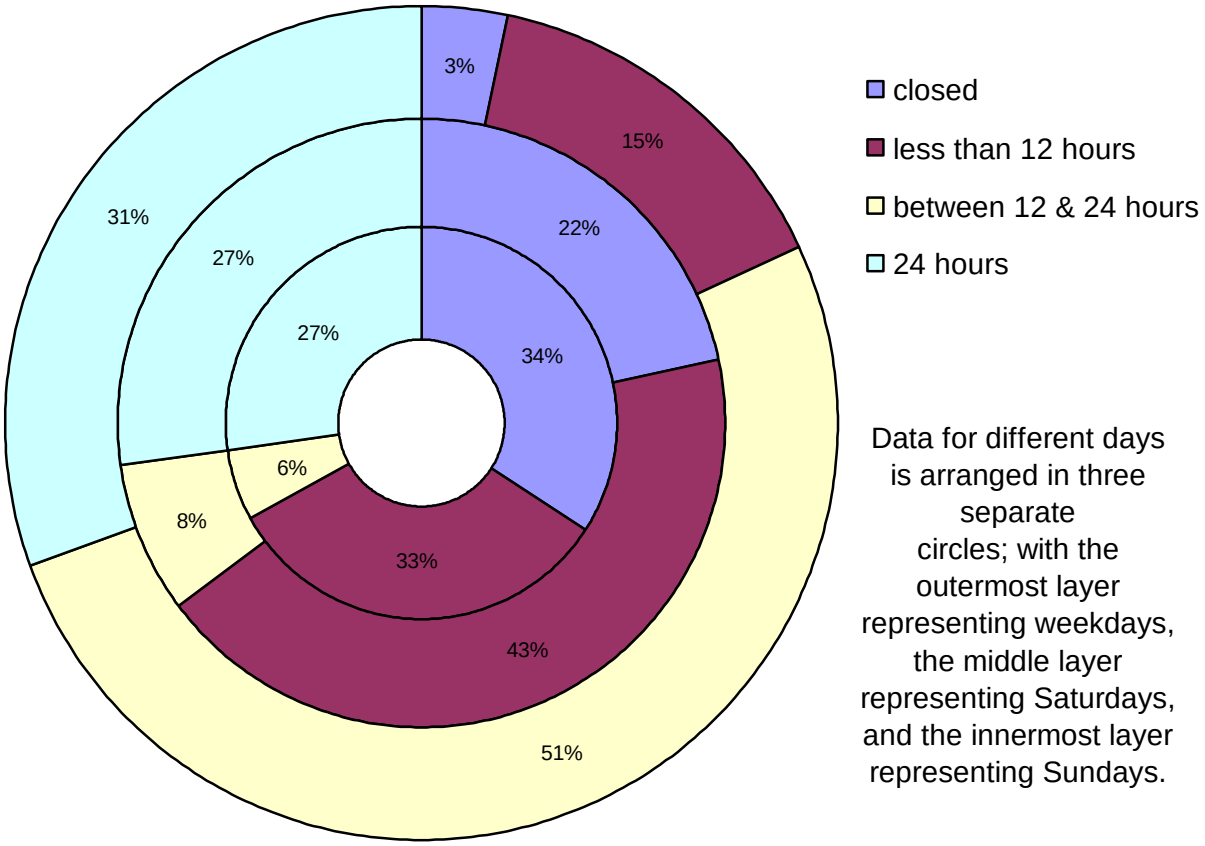
The graphs in the first section of this chapter are ordered from left to right according to student Full Time Equivalent (FTE) figures taken from the Noble Higher Education Financial Yearbook (1999), therefore on all graphs Institutions with small student populations are shown on the left rising to those with large student populations on the right. No Institution is mentioned by name to maintain anonymity. Not all Institutions who returned the survey are included on each graph as some did not provide answers to individual questions.

4.1.1 Response rate

The timing and subject matter of this questionnaire appear fitting to the Higher Education sector at this time, as the high response rate indicates. A total of 104 valid questionnaires were returned from an Institution population of 173, giving a response rate just exceeding 60%. This in itself might be viewed as being indicative of a high interest in the Costs of Networked Learning throughout the UK Higher Education sector.

4.2 Quantitative analysis of Sectoral Survey

Computer Services Opening Hours

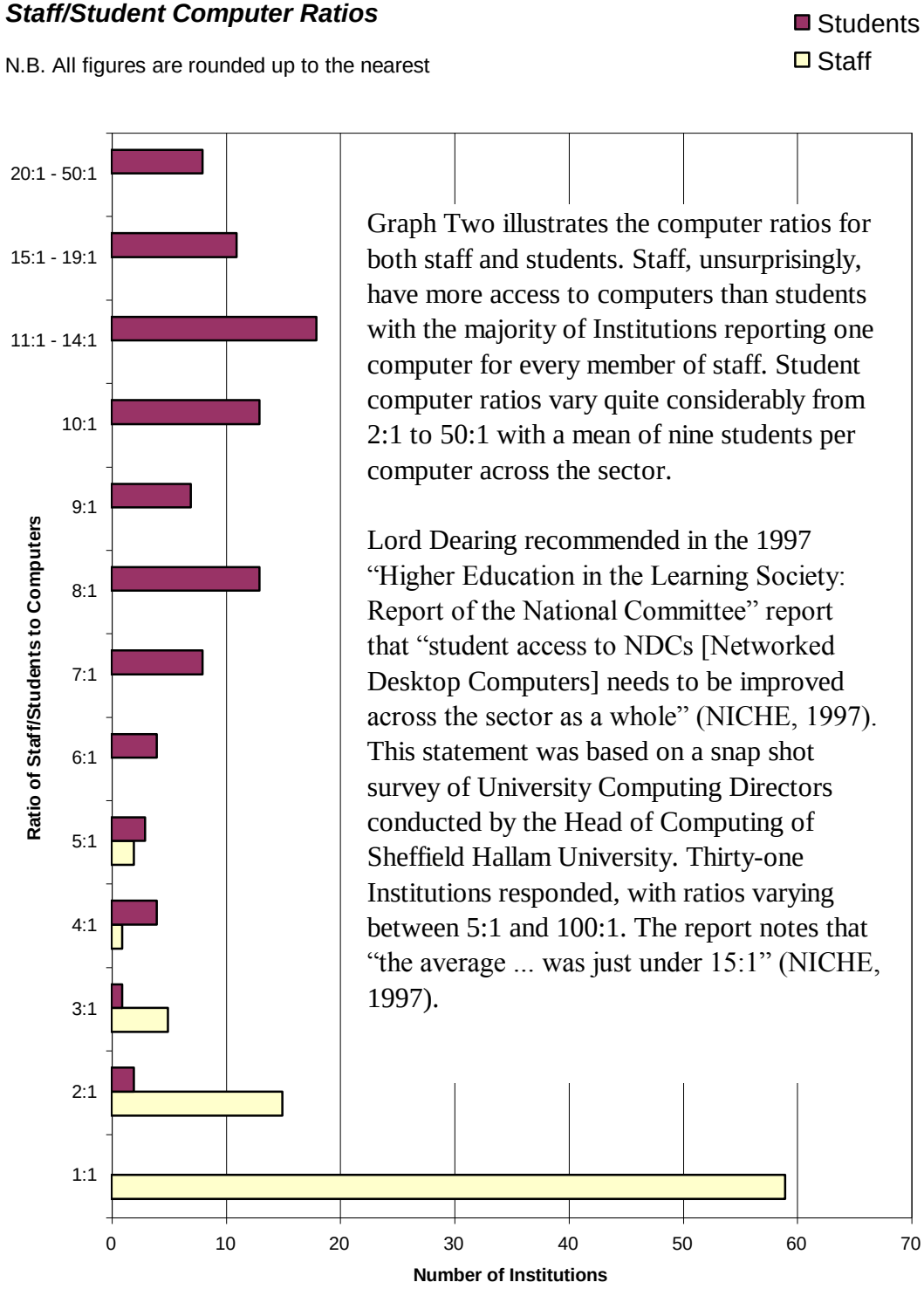


Graph One clearly illustrates that 31% of Institutions who returned the questionnaire offered 24 hours access to Central Computing Facilities during the week. 27% of respondents continued this extended opening policy over the weekend. A significant number of Institutions open on the weekends, if only for part of the day.

Longer opening hours enable greater student access to computing facilities without the need to increase the scale of the provision, thus enabling a greater proportion of Networked Learning to be introduced without further expenditure on IT.

Staff/Student Computer Ratios

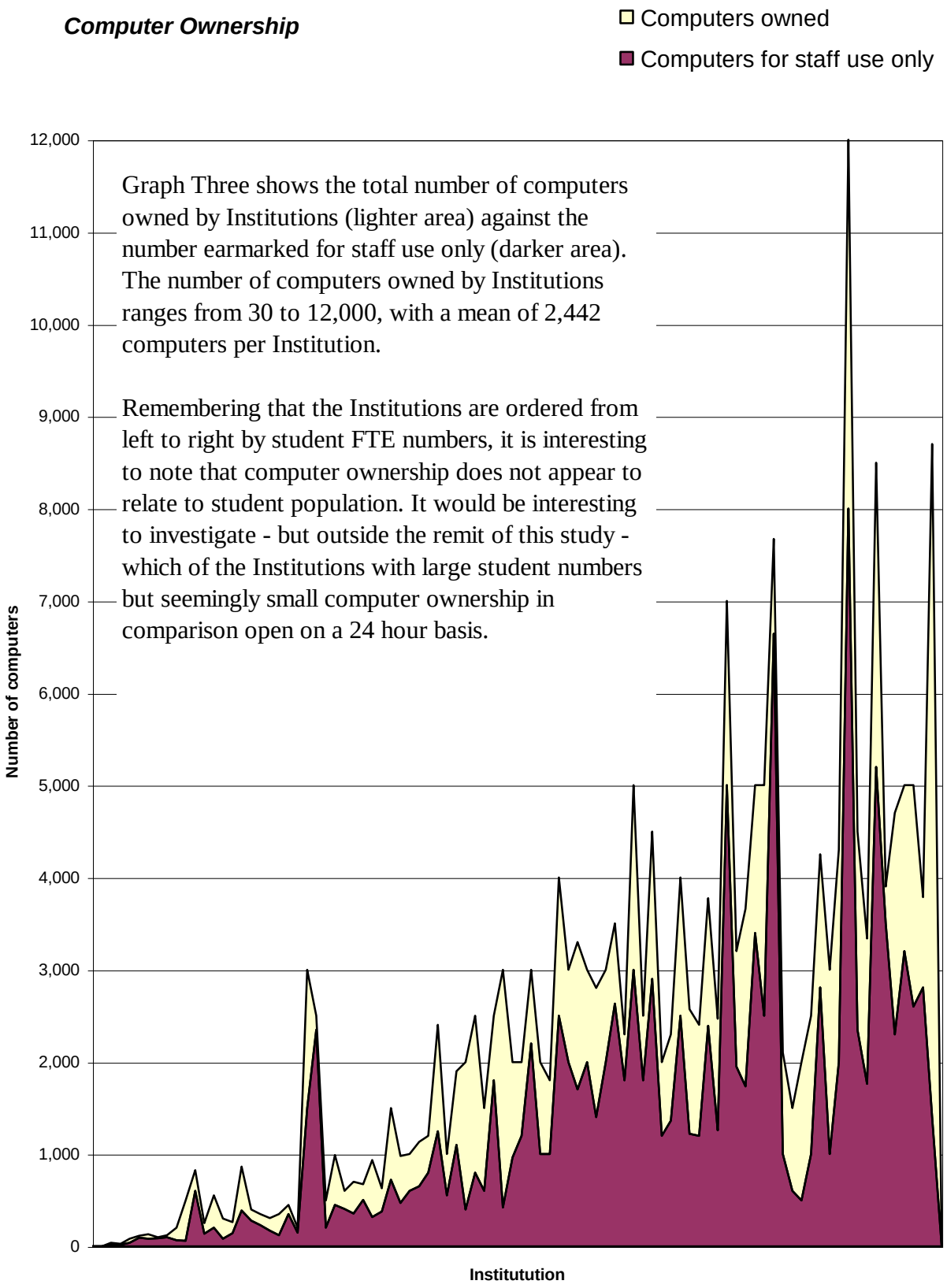
N.B. All figures are rounded up to the nearest



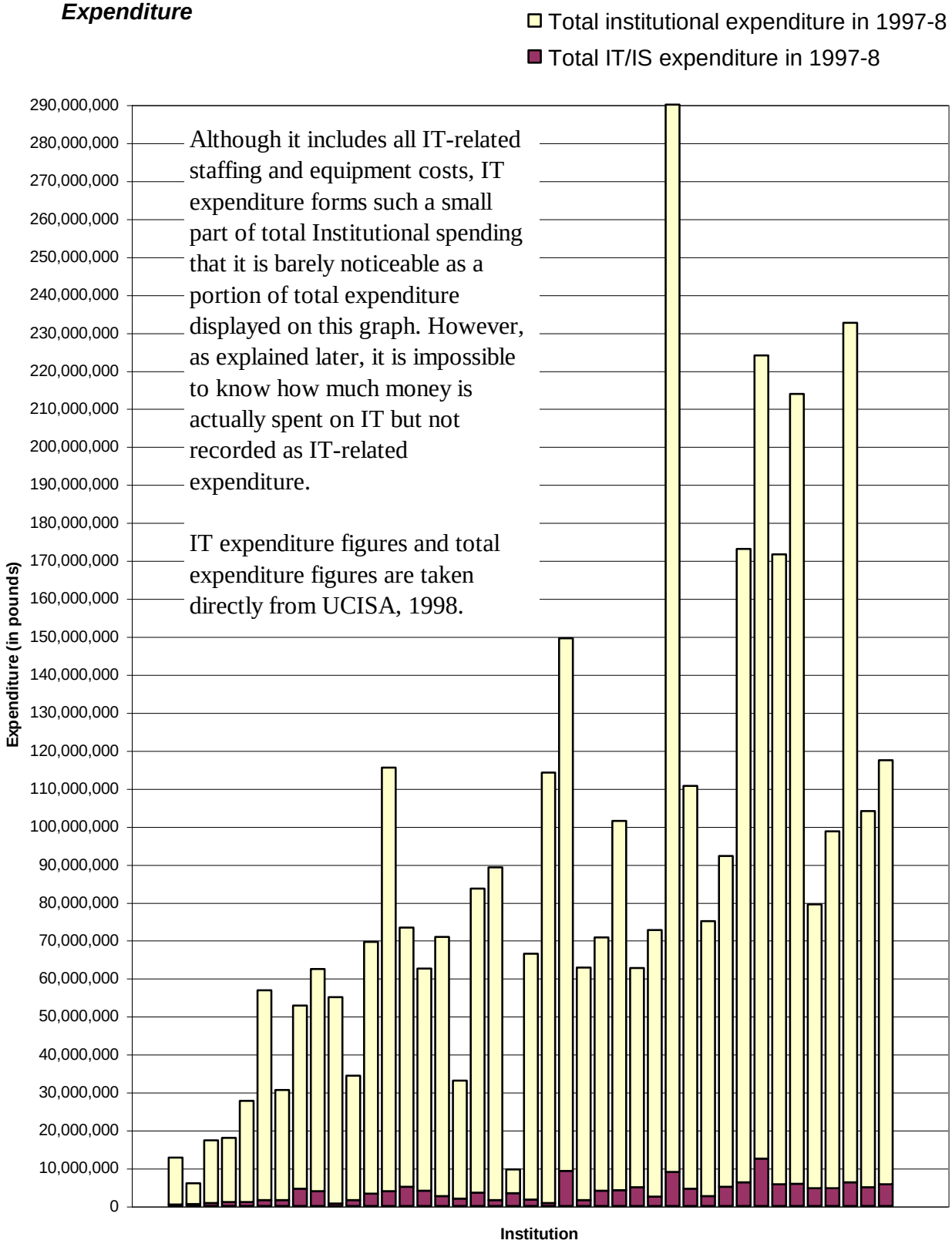
Graph Two illustrates the computer ratios for both staff and students. Staff, unsurprisingly, have more access to computers than students with the majority of Institutions reporting one computer for every member of staff. Student computer ratios vary quite considerably from 2:1 to 50:1 with a mean of nine students per computer across the sector.

Lord Dearing recommended in the 1997 "Higher Education in the Learning Society: Report of the National Committee" report that "student access to NDCs [Networked Desktop Computers] needs to be improved across the sector as a whole" (NICHE, 1997). This statement was based on a snap shot survey of University Computing Directors conducted by the Head of Computing of Sheffield Hallam University. Thirty-one Institutions responded, with ratios varying between 5:1 and 100:1. The report notes that "the average ... was just under 15:1" (NICHE, 1997).

Computer Ownership



Expenditure



4.3 Qualitative analysis of Sectoral Survey

Questions 17 and 19, within the questionnaire, asked for qualitative rather than quantitative information about recorded and unrecorded costs respectively. Answers provided to these questions plus analysis of any additional comments made are discussed below.

As previously mentioned, it is necessary to treat qualitative results with special caution because all qualitative comments are intrinsically subjective. Nevertheless, a great deal can be gleaned from their analysis.

4.3.1 Recorded costs

Only two Institutions make any claims about being organised in terms of costing: "Ah - this is entirely co-ordinated and budgeted actually" and; "costs of all university computing services is known" followed by "no attempt is made to cost…[*sic*]". Many comments are fairly vague; indicating that even where costing is considered, costs have not been thoroughly recorded. It is also apparent, from the huge diversity of reactions towards costing issues, that there is no generally accepted approach towards *what* should be included, *where* costing should take place, or even *if* specific (as opposed to general) costing is necessary.

Before we look at *what* was recorded and *how* it was recorded, it is useful to see what was *not* recorded. 12 Institutions reported that the costs of Networked Learning activities are not recorded. A further eight Institutions revealed that only some costs are recorded, indicating that these costs are known about but not acted upon. 26 Institutions did not provide any answer to this question. Such responses (or lack of them) highlight the imprecision currently adopted towards detailing specific costs.

Some Institutions report that they are not yet tracking costs but are considering or moving towards costing. Stated otherwise, costing is not yet considered imperative but is viewed as being something worth doing at a future date. Other Institutions highlight the variety of costs and the consequent difficulty of cataloguing individual costs. This issue of categorisation is at the core of all costing problems. Everyone knows costs exist, they just don't know how to identify them. And because they do not know which costs they are recording, they do not know what costs go unrecorded (for further analysis of Hidden Costs, see below).

Cost categorisation is a problem of defining *what* costs to record and *where* to record them. Different Institutions - and even different departments and faculties within the same Institution - are currently recording costs in many different ways. This makes it impossible to compare like with like. Due to the tremendous overlap between costs, this problem is presently proving difficult to solve. This overlap is revealed in the responses relating to recorded costs.

Very few Institutions specifically record Networked Learning costs. The majority of Institutions indicate that Networked Learning costs are not differentiated from other costs but are 'subsumed' within other areas and therefore recorded elsewhere. Those Institutions adopting a centralised approach include Networked Learning costs either within a central Institutional budget, or within a central IT budget. Those Institutions adopting a devolved approach include Networked Learning costs within budgets for

individual units/departments/schools, or sometimes within budgets for individual projects, activities or initiatives.

In recording costs centrally, Institutions are adopting a general, overall approach towards costing. This is highly problematic for defining the Hidden Costs. For example, recording total staffing costs (or total IT staffing costs) centrally prevents any estimation of how much staff time should be attributed to Networked Learning. A more positive approach, in terms of costing Networked Learning, is a devolved method allowing Activity Based Costing (ABC) to be introduced. Although neither central nor devolved budgeting tends to include Networked Learning at the moment, Hidden Costs could far more easily be identified using an ABC approach.

We now turn from *where* costs are recorded to the similar question of *what* costs are recorded. Staffing costs, especially in the role of support, receive frequent mention. Equipment also receives much attention. However, both these broad categories remain very vaguely defined. For example, different Institutions adopt different equipment costing categories: one Institution divides hardware costs into infrastructure and delivery platform; another records the costs of network usage and computer provision; whereas another divides equipment costs into capital and recurring costs. Other Institutions combined staff and equipment costs in the figure given on the survey return. Although there seems to be little consensus presently over what costs are specifically recorded, a greater degree of precision would obviously be beneficial to identifying the Hidden Costs.

4.3.2 Unrecorded costs

Because they are not properly categorised, costs may easily be overlooked and therefore remain hidden. Institutions display only a vague awareness of these hidden, or unrecorded costs. Answers to the question of whether important costs remain unrecorded range from, "*Yes*, lots" to, "Not really applicable - not recorded anyway." The first reply is of interest because it acknowledges that a costing problem exists but does not offer any clues as to how this problem might be solved. The second response fails even to acknowledge that Hidden Costs are of any relevance: by failing to perceive that there is a problem, the chances of overcoming this obstacle are made insurmountable.

The majority of respondents provide examples of important but unrecorded costs. Analyses of these comments are grouped together below. Other more general costing issues mentioned in survey responses, not specifically related to Networked Learning, are not included here.

As with recorded costs, there is huge emphasis upon staff costs, with respondents highlighting academic staff costs above all other Hidden Costs. Time spent providing support- mainly technical support - to students also receives frequent mention. The provision of security staff also tends to remain a hidden cost. This issue is most crucial to Institutions keeping computing facilities open for 24 hours. It is interesting to note that longer opening hours are not commented on in terms of extra costs involved, neither as a recorded nor as an unrecorded cost.

Costs arising from the development and modification of technology-based learning materials are sometimes recorded; at other times, the extra effort (and time) required of staff to produce this material is not recorded at all.

Other important but hidden support staff costs include counselling, extra laboratory support and site visits. The unstructured nature of such support (in person and by telephone) is obviously difficult to record accurately. This issue is further complicated by the constantly changing nature of IT, requiring academic (and other) staff to undergo constant awareness raising and skill development. Regardless of any ensuing benefits, staff time devoted to these activities is not recorded separately and is therefore definitely a hidden cost (though possibly also a hidden benefit).

It is important to stress here that although staff development activities generally take place during the working day and therefore staff are paid for their time spent on the course, the opportunity cost of their time is significant and more often than not staff make up for lost work during their own time (which is not paid for). An opportunity cost is also incurred by Institutions paying high wages to teaching staff for time spent training other staff. Whether this opportunity cost is offset by resultant benefits remains to be seen. The difficulties surrounding the calculation of these and other hidden staff costs such as movement (internal and external), course reorganisation and short-term contracts should be obvious. And even if cost categories could be agreed upon, there will be constant need for revision as advances in technology necessitate new categories in which to record costs.

Those Institutions that commented on connection costs (for Internet access) all stated that connection costs are not recorded separately, either in terms of connection and dial-up time, or in terms of line rental/fee. It is therefore impossible to distinguish connection costs incurred through Networked Learning from more general connection costs.

Unforeseen costs such as those associated with Year 2000 compliance are generally not recorded. Depreciation of equipment tends also to remain individually uncalculated. Time lost in unscheduled glitches, whereby systems or resources may become unavailable - such as the failure of the network or any delays incurred accessing networked information - remain unrecorded; similarly, no record is kept of the time lost through the use of unproductive, out-of-date equipment. So the costs of new investments (plus subsequent benefits) are not fully recorded and neither are the future costs of not investing. It is therefore hard to compare the costs and benefits of investing with the consequences of failing to invest.

Student time and equipment costs are listed as being “hidden” in several responses. The student reaction to this issue is explored elsewhere in this report (see Chapter 6). It is important to note here that Institutions display an awareness of passing costs onto students. Specific mention is made of the transfer of printing costs onto students; students spend money and time printing Web pages rather than simply receiving staff-photocopied notes. Interestingly, only one Institution reports charging students a subscription fee to access the Institution network from halls of residence.

The main reasons for not recording costs seem to revolve around difficulties in the quantification and categorisation of these costs. Institutions frequently stated that the costing questionnaire was difficult to answer. This lack of readily available answers to

simple costing questions is itself illustrative of the need for more thorough analysis of costing issues. Currently, information about costing is neither available nor easily accessible.

4.4 Conclusion

There are positive conclusions to be drawn from the survey about the present condition within Higher Educational Institutions with regard to Networked Learning.

Firstly, the sector owns a great number of computers already. The ratio of computers to staff is very nearly 1:1, though closer investigation is needed to see whether this figure is reported accurately in the survey returns. On the whole this bodes well for Networked Learning. Where Institutions are currently failing is in the provision of computers for students. In some instances the need for future investment could be alleviated by opening longer hours to improve the student:computer ratio towards the levels recommended by Dearing in 1997.

Secondly, Institutions have achieved this excellent situation with regard to staff PCs despite relatively small IT expenditure (when compared with overall Institutional expenditure).

Currently, there appears to be little awareness of specific costing issues. Further, there is little uniformity of costing approaches between Institutions, and in some cases within the same Institution.

We are left with the strong feeling that there is much need for greater emphasis to be placed upon accurate and specific recording of costs. Only when a universal costing framework - at least for courses, but perhaps more generally - has been accepted throughout Higher Education can people begin in earnest to compare the real costs of Networked Learning.

5. Case Studies

"Case studies are 'a step to action'. They begin in a world of action and contribute to it. Their insights may be directly interpreted and put to use..."

Adelmann et al (1980), quoted by Bassey (1999)

5.1 Introduction

Following the postal questionnaire which focused on a broad overview of several areas the Study Team selected six Institutions (plus Sheffield Hallam University) in which to conduct in-depth interviews with a range of staff. The data collected in these interviews formed the basis for seven Case Study reports. (The full versions are in a separate Annex.) These findings are discussed here thematically. They illustrate the approach, depth and variety of Networked Learning activities, and how they are planned and costed. The sector's opinions of the working model developed by the Study Team can be found in Chapter 7.

The purposes of the interviews were to:

- reinforce, expand, check and follow up the survey results
- engage in dialogue with stakeholders
- act as field visits to observe Networked Learning activity
- explore the importance and perception of costs
- identify hidden and recorded cost areas
- explore the working model.

5.2 Discussion

One aim of this exercise was to assess the extent of Networked Learning in the sector. The Case Studies undertaken for this project show that in all cases where Networked Learning is taking place, it is mainly instigated and delivered by a small number of enthusiasts in each Institution. Networked Learning is becoming more widely accepted by students and utilised by staff. In most cases it was indicated that these small pockets of innovation in Teaching and Learning were beginning to influence other staff members. In some Institutions the management were starting to develop a clear strategic path for the development of Networked Learning activities. On the whole, these individual activities were considered to be very successful. In one Institution, the Head of Computing reported that Networked Learning was key to the mission of the University and that it was now unusual to find a course which did not include a component of Networked Learning.

Institutions are moving towards Networked Learning for very similar reasons - such as improving quality and access without increasing the costs to the Institution. Most Institutions were interested in taking the technology beyond just posting lecture notes on the World Wide Web, all the way to using computer conferencing systems and encouraging the use of technology in the production of assignments and project work. On the whole, the view that Networked Learning has the potential to enhance the learning experience was supported. However, the caveat was widely expressed that

this was only if embedded into existing paradigms, not as a replacement of conventional undergraduate teaching. (This may be a view disappointing to experts in the field).

5.2.1 Force-field analysis

Through this general positive atmosphere there were many forces said to be inhibiting the wider introduction of Networked Learning activities. Using a force-field analysis (Lewin, 1951) of driving and restraining forces, the following barriers were identified in the Case Study Reports:

- lack of training in new technologies
- the amount of time needed before staff were able to use the technology effectively
- lack of transparent tools for the development of materials
- lack of pedagogical evidence to support a move to Networked Learning
- cost of development - time, opportunity cost, and scalability
- lack of a "water-proof" (that is, highly reliable) computer network
- the debatable quality of some off-the-shelf Computer Assisted Learning materials
- lack of standards in courseware and technologies.

On the other hand driving forces were said to be:

- individual enthusiastic members of staff
- additional dynamism from members of the senior management team
- project champions (thought to be essential to success in innovation)
- large numbers of students and decreasing budgets.

Interestingly, one academic felt that if the benefits of Networked Learning could be quantified then this could also be considered a driving force.

5.2.2 Costs

Alongside the extent of Networked Learning taking place in the UK HE sector, this investigation looked at the costs involved and what the sector thought about their quantity and recording. Most Institutions believed that costing Networked Learning was a positive activity - many believed that more investment was needed but were unwilling to do this when the monies can quite easily be lost track of and so easily spent elsewhere. So in this instance a costing methodology would help to track the costs of learning, both conventional and innovative, and encourage the correct allocation of costs. Other respondents thought that a costings framework would make people more aware of the costs of both approaches to learning (Networked and Traditional) and allow individual departments to set their own agendas.

On the other hand, some interviewees expressed the belief that costing Networked Learning was a negative activity - it would stifle the small pockets of creative activity, and in any case academics do not want to know how much their teaching costs. Almost all Institutions stated quite categorically that their financial regimes would not adapt to an Activity Based Costing framework: "this Institution operates a highly devolved accounting system which would make an activity of this nature very difficult". Opportunity costs - in terms of research and promotion - and staff development costs were considered to be key factors militating against the introduction of Networked Learning on a larger scale.

Two interviewees questioned the relevance of our study in light of the current work by the Funding Councils to analyse spending (specifically the "Transparency Review of Research", published by JCPSG in July 1999 - which we have now incorporated into our thinking) but it was pointed out by another interviewee that earlier efforts in this direction had been "intellectually weak".

Many interviewees pointed out that there was the larger "cost of costing" issue to consider in this exercise. One Head of Computing said "there are larger costs in unearthing the costs than just the unearthing costs" - and the general thought seemed to be that once the costs were identified, Institutions would be forced to deal with them, and this in itself was costly. One Deputy Head of Finance stated that the key was to strike a balance and provide value for money. It was pointed out that a danger of this exercise was to find out the "cost of everything and the value of nothing". One interviewee expressed the view that University accounting systems were not designed to treat costs on this level and that an experienced financial manager would be needed in each department to make a costings framework of this nature succeed.

A view was expressed that no separate effort should be made to cost Networked Learning "against" conventional learning. However, several other interviewees thought that the imminent sectoral research costings guidelines (JCPSG, 1999) would give more consistent financial data on research which would by subtraction from total budgets give the cost of teaching and learning.

On the whole, Hidden Costs were not considered to be a major constraint on the Institutions with regard to the development of Networked Learning - but it was noted that this is only true while they were hidden and that once they had been revealed they may become a major barrier. One senior academic noted: "Innovation has Hidden Costs, by definition". Many Hidden Costs discussed during the interviews were time-based - such as the time spent on development, reading email, and administration. Many Hidden Costs were personally incurred by staff such as the time cost of the extended office working day and time spent working from home. Other Hidden Costs discussed included updating software, under-utilisation of hardware, viruses, "mail storms", and the social use of email by students. One academic reported that he had overcome one hidden cost of the *conventional* system by using some Networked Learning - the cost of *unscheduled* student/staff contact time.

5.2.3 Institutions

On an Institutional level there was much discussion as to whether Networked Learning was an important issue in research-led Institutions. Many reported that the pressures on staff time were different, and that the research standing of traditional universities was ingrained in their culture and of paramount interest to the management. Teaching and learning was often seen as a secondary activity as the Institutions believed they attracted a higher calibre of student more able to learn independently. While time and lack of incentive at one Institution were said to be barriers, another interviewee suggested that if staff developed Networked Learning materials that saved them time in teaching, then they could spend more time on research.

The success of Networked Learning on its current small scale was said to be largely due to the collaboration between central departments within Institutions. In one instance the Library and Computing Centre merged to provide a uniform information provision service. In another the Computing Centre were working in close collaboration with the Finance Department to fund computers for all staff. In yet another Institution a centrally directed programme was providing seminars enabling staff to move towards Networked Learning in small steps.

5.2.4 Staff

In all Institutions the issue of staff ownership of home computers for work was discussed. It was said that considerable costs are off-loaded onto staff, most of whom have purchased a home computer and pay for Internet connect time and colour printing. Between 20% and 90% of staff were thought to have PCs at home that they use for work. The reasons given were: to extend the working hours of the day; to assist the development of new materials; marking and feedback; and general administration (which was said to have increased dramatically over the years). In some cases, the interoperability of these machines with those in offices was thought to be a barrier to the introduction of Networked Learning - as was the speed of change, which meant that students often had more powerful machines and more up to date software than the staff.

Time was considered to be a major cost item as far as staff were concerned. This was encountered in two forms: firstly, the lack of time for staff training and development of materials, and secondly, the lack of recognition that materials development was an activity that needed extra time aside from current (conventional) teaching and research time. In theory, staff in one Institution were supposed to spend one third of their time on each of administration, teaching and research but this did not allow for the development of new materials which may save teaching time in the future. On the whole, staff time was costed only for commercial activities, and then generally under duress. In most cases, Networked Learning had been embarked upon with little consideration for the time needed to develop and then run courses. Efficient use of staff time was considered by some to be a driving factor towards Networked Learning. Many managers interviewed believed that academics spent time, mostly their own, on developing Networked Learning activities because they were interested or particularly keen - however, academic staff believed this work was done not on a good-will basis and should therefore be rewarded. A concern was expressed in several Institutions that if a move were made towards Networked Learning then this would give staff even more teaching duties as it would blur the boundary between course administration and teaching. If Networked Learning were to save time, many academics felt they would be given another hour of face-to-face teaching to replace the time saved by introducing Networked Learning. Staff time is seen to be the last unmonitored resource in Institutions - but in most cases academics would like this to remain the case.

In many instances the development of Networked Learning materials, and associated time, was done by academics on a good-will basis - there were no rewards or incentives to do this. Staff in some Institutions reported that staff training in Web page creation and such like was practically non-existent - in one example the courses were available but release time needed to be negotiated on an individual level. Others felt

that the training and IT support were available but not fully utilised. Some academics stated that they did not believe that courses on the pedagogy of Networked Learning were even in existence. A substantial number of academics interviewed still believed that Networked Learning was a "con" as it would make more demands on their already stretched time.

Only at one Institution did the academic staff believe that their time should be costed to activities. The overall impression was that staff time could not be categorised on a long-term basis - in particular, academic staff were resistant to all attempts to do this, due to the negative stigma attached to time sheets. One administrator pointed out that the amount of work needed to support a staff time-sheet activity would outweigh the benefits of installing one. Several alternatives were suggested such as: to complete a time sheet for one week at different times of the year to get a general balance of effort; occasional costing of small activities; diary exercises; sensible estimates arising from a pilot study; a retrospective system which requires staff to decide what percentage of their time in the previous year was spent under six categories. One Pro-Vice Chancellor pointed out that while he did not believe that time sheets as such were appropriate in an academic environment, he did anticipate some system of recording staff time would soon become mandatory. It was generally assumed that a form of "lightweight" time sheet would be proposed for research by the Transparency Review (this is now the case, see JCPSG, 1999), which could then be applied to teaching. One interviewee pointed out that it was too early to gauge the impact of the new Institute for Learning and Teaching on this issue but that to succeed any method of time recording must be based on reality rather than ideals (http://www.ilt.ac.uk/).

5.2.5 Students

It was generally believed that approximately 50% of students had access to a computer outside of the Institution, but it was noted by one Head of Computing that a much smaller percentage actually had access to the Internet from home. It was thought, by one Institution, that in the near future all students would need a home computer, and in one Institution it was thought that this would advance the take-up of Networked Learning. In view of this, one Institution stated that in their case there would be no further investment in large clusters of PCs on campus.

On the other hand all Institutions believed that students were becoming more demanding, especially in terms of IT provision and support. One Institution noted that students came to university expecting to use computers, since they have been encouraged to do so in school and now wish to extend their skills at university. This pressure may be due (as one Institution suggested) to the introduction of tuition fees, or it may be because students are becoming more proactive in their approach to Higher Education in the light of the changing employment market.

The student view of Networked Learning, as reported by academics in the interviewed Institutions, was generally mixed. On one hand, students seem keen on the potential of Networked Learning - especially regarding group discussion, information gathering and assessment. In contrast, Institutions reported a wide variation in the skill base of new students, some of whom were (still) quite technophobic; thus a diverse training programme in IT was still needed. Several academic staff expressed the view that

students were wary of Networked Learning since they felt it would reduce the amount of contact time with tutors.

On the whole, students paid for printing in the Institutions visited (although in some a free quota was given) - this was said to be discouraging some academics from posting course material on the Web. Institutions are conscious of shifting the costs of learning to students but feel that it is inevitable. In one Institution it was felt that their students were sufficiently well-off to bear the costs of their learning experience. The attitude in some Institutions was that, as long as the money was *visibly* used to improve service and provision, then students did not mind paying - and paying was said to reduce the amount of abuse by students. Another successful approach to charging students was to make students aware of the additional costs before they commence the course - this would give them the information to come to an opinion based on *total* cost. However, in all cases Institutions agreed that the costs must be justifiable in terms of future employability, contact time, quality of material and improvement of skills base.

5.3 Conclusions

Networked Learning *is* taking place - but mainly as small pockets of innovation, driven by individual members of staff, rather than large-scale strategic activity. The main reason given by our interviewees as to why this is happening is that it is aimed at improving access and quality without increasing the cost to the Institution. The interviews illustrated that there are many forces inhibiting the take-up of Networked Learning, although these are not necessarily cost-related. One very clear point made was the lack of evidence (in the eyes of the interviewees) justifying the pedagogical benefits of innovative learning systems.

Institutions were very concerned about related cost issues such as the "cost of costing" and the cost of dealing with the costs once revealed. The general feeling was that a costing methodology *would* help to track the costs of learning, both conventional and innovative methods; but that too rigid a framework would stifle creative innovation. There was also concern expressed about how a new costing methodology will integrate with existing financial management systems. On the whole it was thought that the work of the Research Transparency Review (JPCSG 1999) would supersede any framework devised just for Networked Learning. The importance of Networked Learning to research-led Institutions was also questioned.

The issue of recording staff time appeared to be a highly contentious issue. The development of Networked Learning materials has usually been done on a goodwill basis rather than on Institutional time and resources. For this and other purposes a majority of staff have PCs at home that they often use for work.

Institutions also note that the majority of students have access to computers off campus, but that students (the same ones?) are demanding more IT support and facilities on campus. On the whole, Institutions reported that students were generally keen on Networked Learning, but not willing to lose the face-to-face contact of conventional methods.

Institutions also recognise that students are being asked to fund more and more of their education as Institutional budgets (per student) decrease.

6. Student Questionnaire

"Each University should know each student in the same way as each parent knows its child."

Cardinal Newman, 1852, in 'The Idea of a University' as quoted by Tim O'Shea, Master of Birkbeck College, at the 1999 Teaching and Learning Conference, Sunderland University.

6.1 Introduction

This survey was conducted to meet the need for more information about student participation in, and feelings towards, Networked Learning. It became apparent during earlier research that student views were not well documented and that many of the Hidden Costs being identified were actually being absorbed by students. In short, the earlier data confirmed that most students feel Networked Learning is increasing the cost of learning but that this is offset by the general view that it is also enhancing their experiences, making learning more positive and therefore enjoyable and profitable.

As the exercise was entered into at a late stage of the project it was not possible to conduct a wide-ranging survey involving students from different Institutions; therefore the decision was taken to concentrate purely on the student body of Sheffield Hallam University. The Union of Students offered to co-ordinate this activity after the Study Team met with them to discuss student issues - notes from this meeting are included in the analysis. 450 questionnaires were sent to student/course representatives. A further 300 questionnaires were sent in batches of 25 to each of the University's 12 academic Schools for collection by any student interested. In order to motivate students, returning the questionnaire with an email address guaranteed entry into a prize draw and a chance to win one of five £10 music vouchers.

The final response rate was 11%. A more statistically sound sample group and higher response rate would be desirable before definitive conclusions could be made using this data - therefore caution is recommended. However, due to the timescale of the project, time of the year (after exams) and nature of the sample group it was not possible to do better. However, our results do correlate closely with the National Union of Students (NUS) submission to the Department for Education and Employment in March 1999.

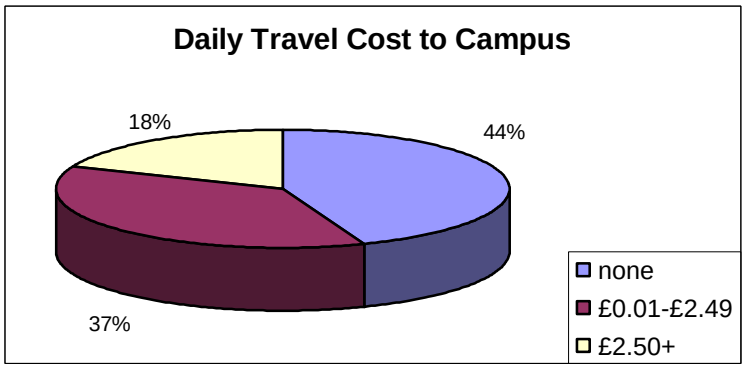
6.2 Student profile

Sheffield Hallam University has just under 20,000 student FTEs, with 84% of these studying at undergraduate level. 38% of respondents to this questionnaire were between 18-21 years old, 27% between 22-26, and 35% over 26. 92% were undergraduates. The majority of respondents were female.

6.3 Student routine

69% of respondents lived within 30 minutes travelling time of the University campus; only 5% lived more than one hour away. It is interesting to note at this stage that a number of respondents to this question who have a long journey to campus own their own computers and believe that Networked Learning is increasing the costs for students. (Since Networked Learning is currently available only on an additional basis for most courses, it *is* increasing student costs. If Networked Learning were available on a substitution basis for some courses, students could actually save travel money.)

The pie chart below shows the average daily cost of travel to campus by students who returned the questionnaire.



Of the 18% who undertake the most expensive journeys to campus, 85% own their own PCs, while 31% "would definitely make use of" 24-hour access to University computing facilities.

Only 29% of postgraduate students incur no cost travelling to campus; 43% spend up to £2.50 and 29% spend over this amount. Further analysis of the 29% with the most expensive journeys to campus shows that these students own their own computers.

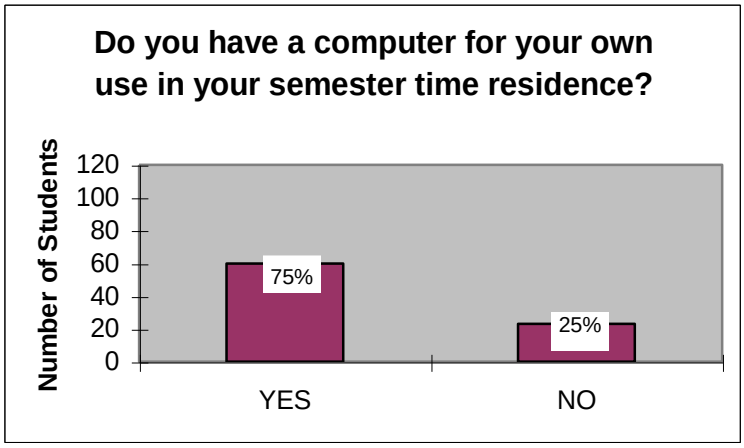
Considering both postgraduate and undergraduate students, 32% of students are in employment, 51% of these work between 1-16 hours per week, 19% work between 17-32 hours and 30% of students who work do so for over 33 hours per week.

33% of the undergraduates that replied are in employment, 14% of these are part-time students. 72% of full-time undergraduate students work between 1-16 hours per week - surprisingly, 17% of full-time undergraduates answering this question worked for *over 33 hours per week*. It is well known that students are now working to cover the costs of their learning, and there is much controversy as to the effect that this has on their achievements, but these figures seem to indicate that students are working much longer hours than thought. Further investigations should look into this issue.

Of the 9% of respondents who were postgraduates, 42% work - of these all work 33 hours or more per week and are part-time students.

6.4 Computer issues

75% of students who returned this questionnaire had access to a personal computer in their semester time residence. This is much higher than previously thought by the Institution.



Of those students who own PCs, the majority have a desktop PC; only 5% own a laptop. 92% of students have a printer attached to this computer, *with just over 50% having modems*. All but one student live more than 30 minutes away from the University campus.

Students were asked *when* they used their home computers - in order to determine whether Networked Learning took place within the normal nine-to-five educational paradigm or if students were using a more flexible approach. The results show that there is an even spread between students who use their computers on weekdays and on weekends (51% weekdays, 49% weekends). Students use their computers most often at the end of the working day and during the afternoon on the weekends - this corresponds with earlier analyses showing that students would like access from 5 pm to 12 am on weekdays (see below).

It is worth noting at this stage that 23% of respondents would like to use campus-based computing facilities *before* the typical 9 o'clock lectures begin during the week, as well as in the evenings.

In July 1998 the University conducted an Undergraduate Student Experience Survey. The 'Satisfaction & Importance Grid' for general University Services illustrates that IT/Computing Accessibility had a level of importance of around 90% but only a level of satisfaction (in the student's opinion) of approximately 40%.

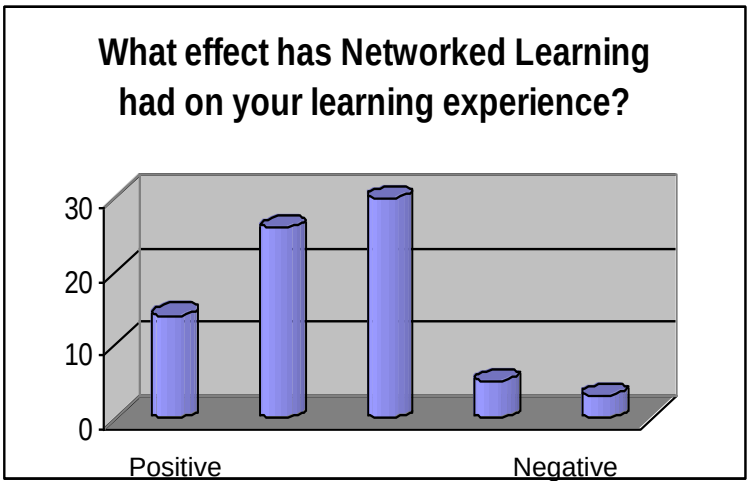
Our survey asked if respondents would make use of 24-hour access to campus based computing facilities if offered. Over half replied that they would definitely use these facilities (computing facilities are not currently open on a 24-hour basis at Sheffield Hallam University).

Of the students who said they would never use 24-hour access, 66% are undergraduates and have access to a computer in their semester-time residence, therefore it can be assumed that they feel they have no need for increased access. The

postgraduate students who answered this question negatively lived over an hour from campus and were all part-time students. One can reasonably understand that they would not benefit from increased access, and in some cases these students had access to a personal computer in the home or workplace.

6.5 Networked Learning

Student comments regarding Networked Learning varied. Some felt that face-to-face interaction was most suitable and that electronic learning packages reinforced this, but could not replace it without a detrimental effect on the process; others felt that Networked Learning would be more flexible and essential for some courses and groups of students.



On the whole, as the graph above illustrates, students felt that Networked Learning had a *positive* effect on their learning.

The extent to which Networked Learning is integrated into the students' courses varies across the departments. Students were asked how they felt about Networked Learning replacing part of their degree course, the answers form almost an even distribution, just slightly more positive than negative.

6.6 Costs

According to the 1996 NUS survey (NUS, 1999), the average student spent £89 on computer software and hardware per annum - the main reason is said to be the fear that marks would be lost if assignments were not typed.

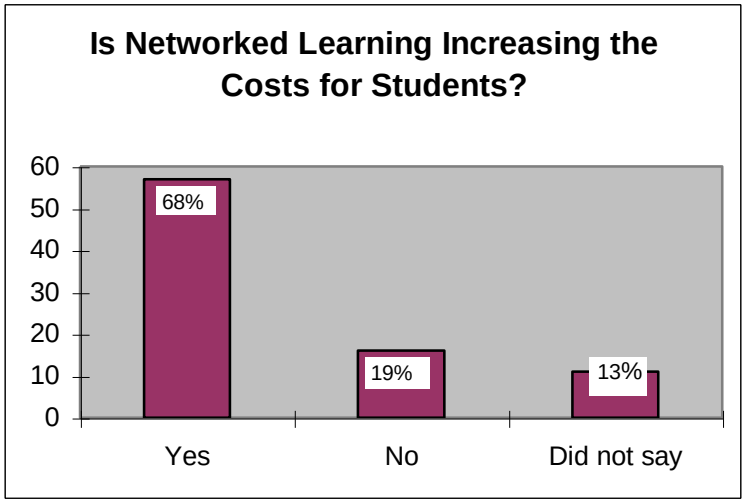
Many respondents to our survey did not answer our question on costs, but of those who did, the majority spent between £50-£100 per year on consumables. The maximum spent on consumables was £260, the minimum was £30 and the average expenditure was £81. Most students (51%) purchased their home computers for between £1000-£1500; only 14% paid over this amount.

37% of students responding to our survey reported that they spent between £20-£40 on their telephone bill per month; 13% of students spent between £80-£100.

During a focus group meeting, the Students Union Executive Committee stated that they believed that costs were being passed to students and that students unwittingly perceived them as normal. The Students Union representatives felt that "time to get to grips with IT" was a large issue among students - this correlates with our results.

The Students Union also mentioned childcare as a growing cost among students, especially given the number of students at the University with young families. More Networked Learning across the University would certainly save money in the long term for those with children to care for.

The large majority of students believed that their costs are increasing.



Of those who believed that Networked Learning was increasing the cost of learning, 96% are undergraduates. 75% own their own PCs and 40% of those with PCs have use of a modem.

Students reported that the main cost to them was *time*: including time to gain familiarisation with software, time delays at log on, time queuing for printing, and time lost due to system crashes. The telephone bill, hardware and software were next most important - other items such as insurance were fairly low on the list.

6.7 Conclusions

From this small study it appears that students are aware of the increased costs of Networked Learning but are unaware of the potential savings. These include reduced book purchase, savings in transport costs, and the reduction of time spent on activities such as attendance at lectures. From the student comments at the end of the questionnaire (32% commented), the following came through strongly (similar comments came via our site visits):

- On-campus facilities are perceived as inadequate.
- Printing is perceived as expensive, when tutors expect *two* copies of assignments.
- Time is perceived as the largest cost and largest cause of frustration.

One said: "Without computers things would be cheaper - but they are very useful!" This seems to sum up the common student view across the sector.

7. Evolution of the Model

"It is potentially straightforward to record a comprehensive list of the costs associated with all phases of ITATL development, adoption and maintenance. In practice, however, experience to date indicates that institutions have not been required to identify costs on such a basis, and there has been widespread failure to appreciate the true costs burden either of conventional teaching materials creation or of ITATL alternatives".

HEFCE (1997)

7.1 Introduction

At the end of Chapter 3 a working model was arrived at through the analysis of the literature and consultation with colleagues. This working model was tested during the interviews for the Case Study reports and also during a workshop attended by five experts (some in costing, some in online learning) from both Industry and Education. The results of these discussions are detailed below. After this the model was redesigned in light of these suggestions to form the three-phase model used as the basis of the Planning Document and Financial Schema outlined later in this Report.

7.2 Reminder of the five-phase model

The original model comprised a five-phase "cyclic" model which encompassed both the learning environment and the student experience, under the headings of Planning, Developing, Providing, Managing and Maintaining. The model had three inner units for Academic Staff, Support Staff and Students.

7.3 Test group one - site visits

Interviewees at the seven Institutions were shown a copy of the working model and asked to comment on several aspects. One clear point was that of omissions. Staff in HEIs thought that Senior Management (Deans and above) and Evaluation should be included in the cyclic framework. Others thought that more general issues such as Flexibility and Sustainability should be included. Still others believed that additional stakeholders such as Employers and Parents should be incorporated.

Yet on the whole, the response to the working model was positive. Staff were pleased to see Course Maintenance and Support Staff being properly recognised in an educational setting. The "life cycle" approach to the issue was also commended. One interviewee expressed the view that simple methods had more impact on non-financially aware academics - however another thought that even in its simplest form the model would need serious staff training and "hearts and minds buy-in" at a grass-roots level in order to succeed.

Some academic staff interviewed were concerned that a framework of this nature may be too rigid, since organisational change is slower than the pace of technology. Another believed that scenarios would be a good way of illustrating its function. Interestingly, on further analysis it seems as though most academics are negative

about the idea of a framework to document the costs of Networked Learning, while senior management were in favour of a methodology which would help record the costs of any learning system.

Much concern was expressed about whether the model could stifle creativity and innovation, thus hindering the development of Networked Learning.

7.4 Test group two - experts' workshop

At the experts' workshop, the experts agreed, without contention, that the model - in whatever form it finally takes - should be equally as appropriate for costing conventional teaching systems as for costing Networked Learning. If the model did not also apply for alternative systems then no fair comparisons could be made and the sector would be no closer to determining whether Networked Learning is more cost-effective than conventional teaching and learning, an issue which was agreed to be more important than the issue of whether Networked Learning costs less.

During the workshop there was much discussion about the staff aspect of the model. Should the staff role be renamed to "learning facilitator" to include how staff might operate in a Computer Based Training situation or an integrated learning environment? Also under which bubble did managerial staff play a role? It was suggested that all staff should be categorised under one heading as the boundaries between traditional staff groups were now beginning to fade. However, experts from universities argued that although this may happen in time there will still be a specific distinction between a cleaner and Vice Chancellor, so it was decided that a less controversial way of dealing with this was to rename Support Staff as Non-Academic staff, a phrase which they thought sounded more encompassing.

Strategic Planning was notably missing, but on discussion it was resolved to take place outside of the existing model. Quality Assurance and Evaluation were also noted to be missing and it was decided that these two aspects definitely needed inclusion in the main model.

One expert, from a financial background, was concerned that the model did not make distinctions between staff versus non-staff costs and capital versus recurrent costs. It was explained that the model should just be a diagrammatic representation of underlying spreadsheets - these would break costs down to a level where the hidden or misallocated costs are visible. (See Chapter 8.)

Further discussion on the model revealed that the industry-based experts were actually not comfortable with the five-phase working model. They proposed a helical Business Reengineering (BPR) Model which revolved through the following aspects: Develop, Market, Provide, and Assure. However, when the identified costs were categorised under these headings it was found that some categories were quite sparse (Assure) while others (Provide) would need to be broken down into more than one subcategory. When the aim of the exercise is to categorise costs in an understandable way to policy makers, academics and financial managers and to also do this at a level that does not allow for the hiding of Hidden Costs, the above suggestion did not work, and therefore was rejected as unsuitable for this purpose.

One valuable suggestion made was to break the costs down firstly by who incurs them and then by activity; therefore costs can be categorised by Student-incurred costs; Staff-incurred costs; and Institution-incurred costs. Most costs, of course, are incurred by the Institution as the service provider but many Hidden Costs are borne by students and staff. Since this suggestion matched our input from the literature, and our own interim conclusions, we decided to follow it.

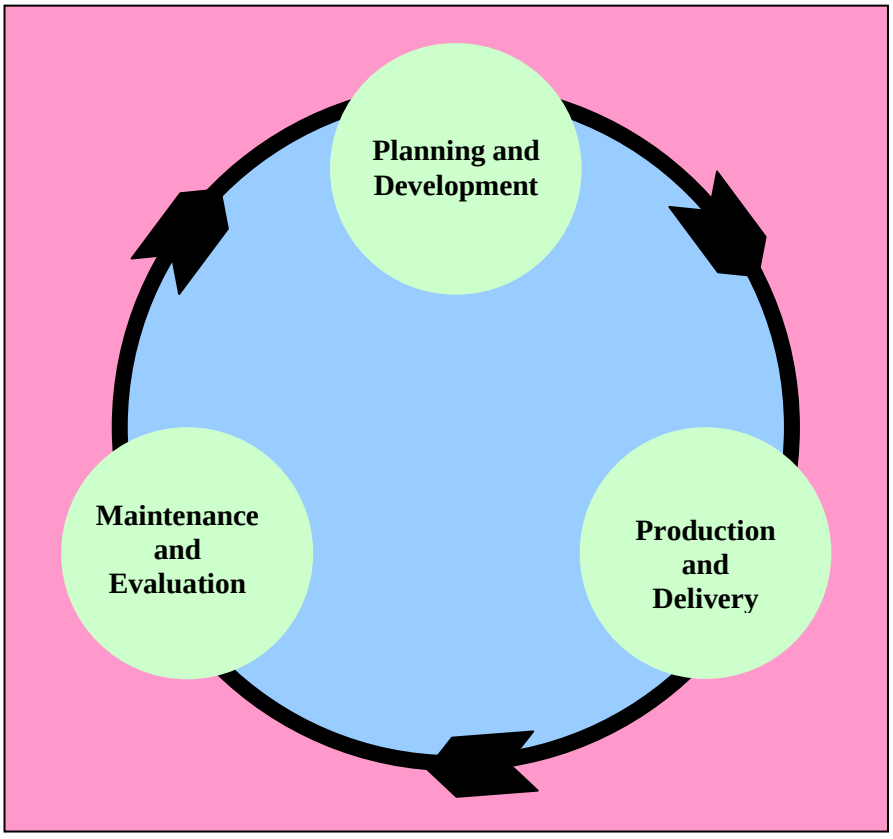
7.5 Re-analysis of five-phase model

Both test groups noted that there were omissions from the working model:

Additional Stakeholders	Management	Flexibility
	Evaluation	Sustainability
	Strategic Planning	
	Quality Assurance	

Another vital comment was that simple methods have more impact with academic staff especially when they impact on costs, time and workload. It was decided by the team that a five-phase model was too complex and that the four-phase BPR model proposed by the majority of the workshop attendees would not resonate with the UK Higher Education sector, or make apparent the Hidden Costs we were trying to identify, so therefore a three-phase model was proposed.

The new model includes Evaluation and Quality Assurance but assumes that Strategic Planning takes place on the periphery. (One could argue that this is a valid assumption from the viewpoint of the "working academic".) Staff and Students have been removed from the model as now their place as stakeholders is secure.



However, it was decided that there was not enough evidence to suggest that additional stakeholders such as Parents and Employers should be directly included in the model - but the Study Team acknowledges that there may come a time when they should be, perhaps in special circumstances. Flexibility and Sustainability were thought to be inherent in the model and therefore did not need stating separately.

The three-phase model follows classic course planning frameworks from the distance education sector but also incorporates in a more visible way than usual in such literature the need for Quality Assurance and Course Maintenance.

Chapters 8 and 9 show how this model is used as one of the bases for the Financial Schema and Planning Document for estimating the costs of Networked Learning.

The three models are compared below:

five-phase	*four-phase*	*three-phase*
Planning	(implicit?)	Planning....
Developing	Develop	....and Development
Providing	Provide	Production & Delivery....
Managing	Market	... (includes Managing and Marketing)
Maintaining	Assure	Maintenance & Evaluation

7.6 Confirmation from the literature

In his book "Technology, Open Learning and Distance Education", Bates (1995) - regarded by many as archetypal of the distance learning expert coming to grips with the conventional HE sector - works with a framework of "production and delivery costs". Crabb (1990) takes a similar view in the UK Open and Flexible Learning context. Cukier (1997), after Bates, says that "the most important factor in costing educational technologies is the difference between fixed and variable costs". Fixed costs are independent of the number of students and variable costs depend on the number of students using a system (Moonen 1997). This reflects the distinction between the production phase where a "master copy" of course material is produced, and the delivery phase where it is distributed (broadcast, posted, put on a Web site, etc) to a variable number of students.

Rumble (1989) used a Lifecycle model of developing, producing and delivering learning material. It is somewhat interesting to note that in his later book (1997), he defined costs as: Production costs (including development/conception); Transmission or Distribution costs (including duplication); and Reception costs (including teaching costs and costs incurred by the student). In his later opus Rumble includes the costs incurred by academic staff and student - a serious omission in his earlier work, and a key component when documenting hidden costs.

Orivel (1987) reported on Production costs; Diffusion costs; and Reception centres, all three of which fall into the second phase of the model as all being dependent on student numbers.

Crabb (1990) used a two-phase Development and Delivery model, which neglects Planning, Production (perhaps), Maintenance and Evaluation.

Cukier (1997) follows Rumble with phases: Development; Production and Delivery. We would add Planning to Development and call Production and Delivery one phase, but would highlight the omission of any form of Evaluation or Maintenance.

Moonen (1997) distinguishes two phases: a Development phase and a Production, Delivery, Operation and Maintenance phase. We would split his second phase into two parts, leaving Maintenance in phase three.

It became more apparent in the later stages of our study project that work on costing in the training sector was closely related to the Activity-Based Costing systems we were working towards. However, although they were more in touch with costs incurred by staff and students and the growing opportunity cost of activities, their course models proved no more comprehensive than those above.

Stahmer (1995) proposes a model of course development comprising three phases: Research and Planning; Development; Delivery. In this instance we would group one and two together in our "Planning and Development" phase.

Hunt and Clarke (1997) have a four-phase model: Research and Development; Initial Investment; Operation and Support; Disposal and Salvage. We would group one and two together. Their phase four is rather odd, and hard at first sight to equate with our "Maintenance and Evaluation". One assumes they were thinking of courses delivered primarily by CD-ROM.

The table below contains a summary showing how the most significant models compare.

Standard	*Bates*	*Rumble*	*Stahmer*	*Hunt & Clark*	*Moonen*
Planning & Development	Production	Production including Development	Research & Planning Development	Research & Development Initial Investment	Development
Production & Delivery	Delivery	Transmission & Distribution Reception	Delivery	Operation and Support	Production, Delivery, Operation...
Maintenance & Evaluation	(omitted)	(omitted)	(omitted)	Disposal & Salvage	... and Maintenance

It is noteworthy how Evaluation is not covered when costs are considered, even though the authors involved are well aware of evaluation issues. The other main issue is one of vocabulary - the term "production" is unwise to use in the Planning and Development phase because its meaning in industry has overtones of "volume" (printing, etc) and thus student-dependent variable costs, which are inappropriate in this part of the Course Lifecycle.

7.7 Three scenarios

As a reality check, we look at three extreme scenarios:

1. a fully conventional course (though not quite as conventional as you might think)
2. a traditional distance learning course (Open University model)
3. a "totally online" Masters course (post-Fordist OU-like model).

7.7.1 Fully conventional course

Dr Albrecht of the University of Tynebridge was asked last year to teach a new final year course on Post-deconstructionism this academic year for one semester. It followed the standard form in his Institution of a 1-hour lecture and 1-hour discussion group each week. His lecture notes consisted of a topic list and a list of readings. The discussion group was lightly moderated by him and needed little preparation. He had to mark two essays per student during the course. The class size was 15.

Phase	*Types of task*
Planning & Development	Read the latest works on the topic, listen to a new radio series, create lecture notes (in Word), set essay topics. Adapt his own research articles to be suitable to final year students.
Production & Delivery	Give lectures, get lecture notes copied, moderate discussion groups, mark essays.
Maintenance & Evaluation	Students complained about his handwriting - so he will have to use OHPs next year. He has heard that OU is putting on a similar course - perhaps he could use the videos? RAE pressures mean that he would like to get his RA to work as a TA to moderate the discussions. A particularly bright disabled student has asked to attend next year's course "online" - what to do?

7.7.2 Traditional distance learning course

Dr Birtwright is the Course Team Chair for the new Open University course on Post-Deconstructionism. This is a course with 8 TV programmes and an optional CD-ROM thanks to a generous US grant.

Phase	*Types of task*
Planning & Development	(Team effort.) Review related work. Write course units and related print material, work with BBC on TV programmes, acquire content for CD-ROM. End up with an electronic master copy of all the course units, videotapes of each TV programme, and 600 Mb of data on hard disc ready to be pressed on the CD-ROM.
Production & Delivery	Print and post course units and all supplementary material. Broadcast the TV programmes, send CD-ROM to pressing plant and post to students.
Maintenance & Evaluation	US funders require a full evaluation by educational technologists. Online version of the course must be delivered in two years time for global market - must transform course material to Web format and set up computer conferences, using the OU's existing conferencing system.

7.7.2 Totally online course

Sensing a gap in the market, now that many Arts graduates (e.g. at the BBC) have PCs and are on the Internet, Dr Carter at the University of Rother Bridge has got approval to mount a totally online course on Post-Deconstructionism as part of her new distance learning MA on "Radical Philosophies".

Phase	*Types of task*
Planning & Development	Read the latest works on the topic, listen to a new radio series, create lecture notes, set essay topics. Adapt her own research articles on "deconstructing gender - where next?" to be suitable to final year students. Put all this on the course Web site. Ask the Computing Service to set up a Bulletin Board System. (They want to charge for doing this. She refuses, citing the departmental overhead.)
Production & Delivery	Make more material available on Web, such as topical items on Philosophy, moderate discussion groups online, receive and mark essays sent in by email. Set up "real" office hours for those students who live nearby.
Maintenance & Evaluation	Students want some "synchronous" online events; so must get technician to find out about RealAudio and record some lectures for next year. Also worried about the new OU global course in this area; how can she differentiate her course? (What about her students at the BBC?) Can she write something about this in a journal and count it for the next RAE?

7.8 Conclusions

We have proposed a three-phase model of the Course Lifecycle:

- Planning & Development
- Production & Delivery
- Maintenance & Evaluation.

This has been checked against our earlier course models, the literature and some test scenarios. We believe that it has stood up to these tests and we shall use it as one of the bases for the Planning Document and Financial Schema.

We shall return to scenarios, especially ones similar to the third one, in Chapter 9.

8. Financial Schemas

"Too often there is a gap in understanding and in working practice between these two groups [academics and finance staff] which may lead to outcomes that are not optimal for the institution."

KPMG, 1997:foreword

In this chapter we describe the main conclusions of the study as it affects the "schema for estimating costs", as proposed in the original bid. In the next chapter we construct an outline planning checklist.

Our conclusions are that the "traditional" planning model which underpins University, department, and course planning is defective in at least four ways:

1. It takes no account of the costs incurred (or saved) by the additional stakeholders in the learning process other than the Institution - in other words, it treats the Institution as a *closed system*. The most important of these additional stakeholders are Students and Staff (own time and resources), but there are others in certain cases - in particular, Parents and (current) Employers.

2. It assumes a crude allocation of overheads (e.g. by simple cost drivers such as staff numbers or space occupied) rather than an approach based on amount of use (e.g. number of online student hours per year).

3. It takes little account of the division of academic time into research, teaching and administration, beyond some work planning models which are suspect even in the classroom situation and make less and less sense the further one moves from that.

4. It takes no account of the activities *within* the course development process.

Interestingly, as one moves away from internally-resourced development into externally-funded activities (research and teaching), the demands of funding agencies, especially the European Commission have forced attention on points 3 and 4; but there has been little evidence until recently that points 1 and 2 have been covered.

All of these conclusions are still essentially negative, saying what is wrong with the past. What do we propose that is positive?

8.1 Existing schemas

One of the main problems has been a lack of a concise, usable Financial Schema which is flexible enough to apply to a number of different learning situations relevant to Networked Learning.

We have looked at around 10 different schemas. These include the KPMG schema for university financial planning and the US Flashlight schema (rapidly gaining popularity in US HE), as well as a number of more traditional schemas, as well as some from the training sector.

Our first positive conclusion is to note that the work in the previous chapters compels us inexorably towards the following view:

- It confirms the multi-stakeholder approach that we decided on early in the study, and suggests that the most important stakeholders are the *Institution*, *Student* and *Staff*.

We shall not in this study look at *Parents* and (current) *Employers* as stakeholders, though we accept that in certain circumstances they are relevant.

In the rest of this section we look at a number of models both from the training sector (where there is a more developed tradition of cost-benefit analysis) and the education sector. We shall describe them in terms of our conclusion above, rather than recapitulating the analyses that led to various being given precedence over others.

The majority of models use some version of Activity Based Costing. This is defined in the Flashlight Cost Analysis Handbook (Delinger et al., 1999) as:

> Traditional accounting breaks costs down by organisational units and usually attends only to expenditures and revenues. Activity-based costing breaks down costs by basic types of activities. These costs may cut across organisational boundaries and include all relevant resources (e.g., use of time, space), even if no unit is currently carrying that 'cost' as part of its operating budget for the year.

8.1.1 KPMG Guidelines - UK

We shall use the KPMG Guidelines to briefly introduce the reader to the basic financial mechanisms of UK Higher Education. (We know that not all our readers will be familiar with the financial approach in the UK HE sector.)

Introduction to the KPMG Guidelines Report

The KPMG Guidelines "Management Information for Decision Making: Costing Guidelines for Higher Education Institutions" (KPMG, 1997), released in July 1997, aim to provide a set of guidelines which can be used by Institutional managers with or without a financial management background. The Guidelines say that they provide a range of costing methods, a set of working documents, not a prescription.

The study which led to the Guidelines identified good practice in UK HE Institutions via a survey (administered by the Funding Councils) which questioned the Institutions about their approach to costing. After this the Study Team conducted a detailed review of requirements and current costing practice at ten volunteer Institutions.

This work had two main conclusions:

- The UK HE sector places a high importance on accurate costing information.
- An acceptable method of recording staff costs against activities was needed.

The report reminded the readers of the purposes of costing. For cost of teaching, it stated that the main purposes were:

- To assist in pricing courses.
- To assess the economic viability of courses.
- To determine the cost-effectiveness of different methods of teaching.

But several other purposes that the Guidelines raise are relevant to Networked Learning (we have added our comments in italics):

- To assist in the use of staff and other resources *for courses.*
- To support bids for external funding - *e.g. UfI, Adapt - to mount courses.*
- To provide measurements for business process improvements, benchmarking or value for money studies *concerned with courses.*
- To allow comparison of costs with prices *of courses e.g. at Masters level.*
- To inform internal recharging *e.g. for Computing Centre support.*
- To assist in outsourcing decisions *e.g. buying online curriculum material.*

The UK HE sector financial regime

A typical UK University "Consolidated Income and Expenditure Account" will have the following top-level categories for Income (the categories are fixed but the balance between them varies widely between Institutions):

Funding Council grants
Academic Fees and Support Grants
Research Grants (not just RAE research) and Contracts
Other Operating Income (e.g. Catering, Conferences)
Endowment Income and Interest Receivable

The Expenditure part of the Consolidated Income and Expenditure Account contains the following short list of "real" categories (we have ignored Interest Payable):

Staff costs
Depreciation (for capital equipment)
Other operating expenses

However, so that the schema can operate at any level within the Institution, we shall add a further line, the one so easy to misunderstand:

Overhead

We shall use these top-level categories for all our analyses and comparisons.

Note that within conventional "closed-system" accounting conventions, the Overhead item at the Institution level is defined to be zero. However, if one steps up to level -1, that of the Funding Council, one sees that it is an example of a hidden cost. *Not all the money that a Funding Council gets is passed to its Institutions.* Some of it goes to pay for a central secretariat, some goes to JISC, etc.

If we link the stakeholder categories to the expenditure categories we get a matrix as follows:

Expenditure dimension	*Stakeholder dimension*			***Total***
	Institution	*Student*	*Staff*	
Staff costs				
Depreciation				
Expenses				
Overhead				
Total				

(Staff costs are made up of Wages and Salaries, Social Security Costs, and Other Pension Costs.)

A key ratio is the cost per day of a member of staff. This is difficult to calculate not because of the above categorisation (a common mistake), but because of the vexed issue of how many days in the year and hours in the day does a member of staff work? (Especially members of academic staff who have "no set hours of work" in their contracts.)

KPMG Report - conclusions

The basic methodology of the Report, including the introduction, is described in a brisk 17 pages. The Report proposed a five-step process for recording costs:

1. Determine the cost objective.
2. Identify activities which contribute to the cost objective.
3. Assign resource costs to activities.
4. Link activities to the cost objective.
5. Analyse and report results.

The Report identified the cost objective as the purpose of costing - this will influence the process used and accuracy required. It identified three methods of assigning costs to objectives: direct attribution; estimation; and apportionment based on prior knowledge and experience.

The Report then worked through the framework using the fictitious University of Tynebridge, first at the whole-institution level, then followed by the application of the Guidelines to an academic department, and finally a support department.

Staff issues

The Report proposed, via its worked example, that academic staff had five core academic activities at the top level (our additions in italics again):

teaching, including main course undergraduate and postgraduate
research, including grants, contracts and general research
other service activities including short courses and consultancy
department administration and other professional activities *carried out in "work time" - e.g. chair of a professional body*
faculty administration - *and university administration*

Institutional-level worked example

Despite the care taken in the Report, our Study Team felt that the worked examples given were not really understandable to non-financial planners, without more explanation.

A more significant criticism, relevant to Networked Learning and Hidden Cost issues, is a focus on using estimated figures - e.g. for the usage of the Library and the Computing Centre - rather than actual figures, even though there was an admission of the need for more accurate information. The main cost categories used for indirect costs - overheads - were:

Building Use
Equipment Use
Premises
General Administration
Research Administration
Student Admin and Services
Learning Resources (Library, Audio-Visual, Computing Centre)

Departmental worked example

The Report conducted a Worked Example on a fictitious department. The cost objectives - and the activities - were defined in a general way as follows:

- taught undergraduate (UG) courses
- taught postgraduate (PGT) courses
- supervised postgraduate research (PGR)
- sponsored research projects (funded from Research Councils, EU, etc)
- general research projects
- other service activities (short courses, consultancy, etc).

Regarding finding out the amount of time that staff spent on the various activities, the following sources of activity information were considered:

- Use information from the department's workload planning systems.
- Ask programme managers to estimate staff time spent on each activity.
- Conduct a survey of academic staff to estimate the proportion of time they spend on each activity.
- Conduct a diary or time-sheet exercise, as a one-off or ongoing project.

The department decided to perform an effort survey for academic staff activities. The department manager used the department's workload plan to determine the split of staff effort across the six activities. This information was used to apportion academic staff costs between activities. In other words, the data was only as good as the workload plan. In fairness, it was admitted that a more precise approach would have been to apportion costs individually for each member of staff.

All technical and clerical staff costs were assigned to the general "departmental administration" category. The department could have carried out a full analysis of technical and clerical activity, which would enable the full cost of this resource to be directly assigned to activities. Without that there are liable to be considerable

distortions between courses making heavy use of technical support - e.g. Networked Learning courses - and courses making light use. A similar procedural weakness affected the calculation of operating expenses including Computer Centre use.

Overall conclusions

This Report made useful progress on non-staff issues, and we shall use it as the basis for future work - see later in the chapter.

However, it clouded over some important issues especially in the staff area and in the area of overhead allocation. Implicitly, it took a conventional view both of teaching and learning and of IT support. Note that it was completed before the Dearing Committee reported.

8.1.2 Flashlight - US

The Study Team had been aware of the Flashlight project in general terms for some time, and knew they were working on a costing methodology, but it came as a surprise mid-way through the project when one of our advisors notified us that the release was imminent. We contacted Flashlight immediately and after the usual negotiations, gained access to a draft copy. (We now believe that this has been updated and slight changes made, but do not believe the fundamental ideas to have changed.)

The Flashlight Cost Analysis Handbook claims that it has been created to help users better understand the cost issues involved in incorporating new technologies into teaching and learning, and that it hopes to promote the appropriate use of technology. The Handbook provides a process for building an Economic Model which should help readers to focus on the crucial, and "sometimes hidden", uses of resources by describing patterns between the use of resources such as time, money and space.

The Economic Model explores the relationship between the resources, units and outputs (products or services) in terms of Activity Based Costing. Thus at that strategic level it is totally consistent with our views.

The Handbook encourages readers to consult the publications of the (US) National Association of College and University Business Officers (NACUBO), most recently Jenny (1996) "A Cost Accounting Handbook for Colleges and Universities". It also refers to the KPMG report. It criticises the weakness of some other previous models. It notes that there are many difficulties in accessing costs in Higher Education including the various accounting methods used by different Institutions at different stages, and the issues of hidden subsidies such as external funding.

Like the KPMG Guidelines, the Handbook uses examples and pilot projects in order "to breathe life into the myriad of decisions that must be made in implementing and evaluating an innovation".

The Economic Model is completed in eight steps:

1. Identify the question of interest.
2. Identify the outputs.
3. Identify the activities completed to produce your outputs.
4. Identify the faculty/staff workload.

5. Identify the resources consumed in the activities.
6. Identify the metrics/performance measures.
7. Calculate costs for each activity.
8. Aggregate the total cost and calculate the metric/performance measure.

The Handbook addresses each step in turn using the pilot project to illustrate difficulties or specific examples of usage. This includes in Step 4 a breakdown of the use of staff time as six categories: teaching, research/scholarship, professional growth, administration, consulting/freelance work and "other".

In Step 5, resources are put under three headings: Compensation (employee salaries and benefits), Direct Non-Personnel Services (e.g. consumables), and Hidden Costs - which are deemed to be depreciation, buildings costs, utilities etc. Delinger states:

> For now, there are three types of Hidden Costs to consider: (1) administrative overhead; (2) physical plant; and (3) activity-based costs related to a specific course, but which might not get picked up in looking at a departmental balance sheet.

The Flashlight Sample Model

Part three of the Handbook (Delinger et al., 1999) constructs a sample model using examples from the pilot projects. It key point is that "one of the most critical steps in cost analysis involves the process of defining activities and breaking these up into tasks".

Analysis

The eight-step methodology of Flashlight can be mapped into the five-step methodology of KPMG as follows:

KPMG	*Flashlight*
Determine the cost objective	Identify the question of interest Identify the outputs
Identify activities which contribute to the cost objective	Identify the activities completed to produce your outputs
Assign resource costs to activities	Identify the resources consumed in the activities Identify the faculty/staff workload Identify the metrics/performance measures
Link activities to the cost objective	
Analyse and report results	Calculate costs for each activity Aggregate the total cost and calculate the metric/performance measure

Academic staff time (Step 4) splits as follows:

KPMG	*Flashlight*
Teaching, including main course undergraduate and postgraduate	Teaching
Research, including grants, contracts and general research	Research/scholarship, professional growth
Other service activities including short courses and consultancy	Consulting/freelance work
Department administration and other professional activities	Administration Other
Faculty administration - and university administration	Administration

There is an interesting point about academic hours. In the UK, freelance work would not usually be done within "work time". Perhaps the Handbook recognises that in some Institutions, freelance work can be carried on via the Institution as "paid overtime".

In Step 5, the resources classification fits the standard model as follows. Note that Hidden Costs had to be split.

Standard	*Flashlight*
Staff costs	Compensation (employee salaries and benefits)
Depreciation	Hidden Costs (depreciation)
Other operating expenses	Direct, Non-Personnel Services (e.g. consumables)
Overhead	Hidden Costs (not depreciation) - buildings costs and utilities etc.

Regarding Step 8, the idea of encouraging the developer to think of the Economic Model as "a pyramid of linked spreadsheets, the first spreadsheet contains data on total costs while those cells are linked to totals and sub totals on lower levels which break the total and sub total costs down to individual cost categories for selected activities and tasks" is a nice theory and a good analogy but mind-blowing in practical application.

8.1.3 Rumble - world-wide (distance education oriented)

Rumble (1997) is in many ways the seminal textbook in this area; and as such impossible to summarise. His suggested classification of costs maps into the standard schema as follows (overleaf):

Standard	*Rumble*
Staff costs	Human resource costs
Depreciation	Capital equipment costs
Other operating expenses	Consumables and expenses Costs of developing, producing and delivering (presumably the non-staff aspects)
Overhead - details below	
Building use	
Equipment use	
Premises	Space or accommodation costs
General administration	
Research administration	
Student admin and services	
Learning resources	

8.1.4 Stahmer checklist - Canada

Stahmer (1995) uses a model based on the local allocation of cost factors under key headings to form a checklist of costs that is applicable to each individual company. She encourages - wrongly, in our view - the use of estimations when assigning costs to salaries, overheads and efficiency values.

8.1.5 Crabb charts - UK

Geoffrey Crabb produced a study in 1990 at the behest of the National Council for Educational Technology (now BECTa, the British Educational Communications and Technology Agency) which costed Open and Flexible Learning. The study produced a set of 17 charts to be filled in. For these charts he assumes a Course Lifecycle model, common among such analysts, of two phases: development and delivery.

The charts appear simple to complete and calculate, the columnar approach allowing for as little or much data to be filled in by the user as required. The forms give a clear explanation of which columns to compute to gain particular results.

His cost categories can be mapped into the standard format as shown on the next page, but one of the Crabb categories has to be split three ways. To us this seems like an accounting error on his part, rather than a problem with the KPMG approach.

Standard	*Crabb*
Staff costs	Human resources
Depreciation	Equipment (hardware)
Other operating expenses	Consumables and expenses Equipment (consumables)
Overhead - details below	
Building use	
Equipment use	Equipment (time needed for leased equipment)
Premises	Premises
General administration	
Research administration	
Student admin and services	Overheads (central administration)
Learning resources	Central resources (institutional services such as library, computer systems)

8.1.6 Temple matrix - UK

Hilary Temple Associates were commissioned by the Department for Education and Employment to look at the cost-effectiveness of open learning for SMEs (Small to Medium Enterprises) in the UK (Temple, 1995). The team conducted analysis on the companies who agreed to be case studies for the report, and then developed a matrix of costs. The framework focuses upon those activities in a training situation which incur costs. Each key costing heading is further broken down to a sub-activity basis against which costs can be recorded. The Institutional elements of the Temple cost structure can be mapped, with some difficulty, into the standard structure as follows:

Standard	*Temple*
Staff costs	Activity breakdown as: Management time Assessment Support learning
Depreciation	Equipment
Other operating expenses	Consumables Materials (minor capital items)
Overhead - details below	Overheads
Building use	
Equipment use	
Premises	Premises
General administration	
Research administration	
Student admin and services	
Learning resources	

8.1.7 Jewett's "Bridge" model - US

The above schemas have been paper-based. Computational models allow the user to input a series of figures, view the result and then change the parameters to allow for different scenarios to be pursued.

The Bridge model (Jewett, 1998) was developed by Frank Jewett of the California State University as part of the project "Case Studies in Evaluating the Benefits and Costs of Mediated Instruction and Distributed Learning". The model was programmed using Microsoft Visual Basic 5.0 and Excel 6.0. It is different from the previous models in that it operates only at the Institutional level.

The model graphically compares the operating and capital costs of two campuses over 30 years. The first is a campus using traditional methods of course delivery - this is represented on the graph as a constant line, presuming that these costs will remain unchanged. The second campus is increasingly adopting a "distributed learning" approach and can have its costs simulated and represented graphically. The user is able to increase or decrease certain cost categories for both broadcast and asynchronous courses and to see the effects of these changes instantaneously represented graphically. The user also has the option to show operating, capital or total costs on the graph, and to access the underlying spreadsheets.

The four main cost drivers are: Final Enrolment Distribution, Mediated Course Enrolment, Broadcast Course Specifications, and Asynchronous Course Specifications.

Although highly detailed and conceptually interesting this model provides no concrete help to those engaged in developing just one Networked Learning course in part of an Institution.

8.1.8 Shepherd's "Cost-Benefit Calculator" - UK

The Cost-Benefit Calculator was produced by Clive Shepherd (1998) for the EPIC Group, UK. It is a tool allowing one to view both tabular and graphical representations of both the costs and the benefits of Intranet-based training. The author realises that many will doubt the feasibility of a generic calculator but he assures potential users that much consultation, experience and testing went into development of the tool.

The data used to drive the tool is collected in three phases:

- Set-up - collects information about the user, the organisation and the proposed uses of the Intranet.
- Costs - collects information about capital and revenue costs.
- Benefits - collects data about the possible benefits that could be experienced.

Initially each field contains default data (based on his research) - but even the smallest alteration of this data can lead to dramatic results in the reporting stages.

Four individual reports are available in both tabular and graphical form. The first two are simple summaries of the costs and benefits, the third shows the costs and benefits

as they would impact on the company profit and loss account, and the fourth details to rate of return on the initial investment.

This calculator has a wider scope than the other costing models and could be highly relevant to future work, such as the Hidden Benefits. However, it is not clear how useful it would be in the more realistic situation of costing a few courses run in parts of an Institution.

8.1.9 Oliver and Conole - UK

This work by Martin Oliver and his co-workers (Oliver, Conole and Bonetti, 1999) takes an approach based on Hunt and Clarke (1997), but embeds it in a wider view of costs. These include:

1. Efficiency gains (for the context and for this investment).

2. Qualitative costs:
   - intangible costs (innovations, potential salary increases for trained staff, quality, access, etc.)
   - opportunity costs (including staff time).

The quantitative analysis does not in our view add anything new but the less quantifiable factors discussed in their work might be useful for future work of wider scope, such as on Hidden Benefits.

8.1.10 Other input

This section covers issues raised by Ruth Sharratt (University of Sheffield), Jef Moonen (Twente University) and other experts.

Sharratt

Sharratt (1993) introduced a level of refinement in her discussion of the costs of Open and Distance Learning (ODL). Much of her analysis is not relevant to our narrow financial concerns here but she makes two good points on writing time and fees for writing, which should increasingly concern those managers attempting to produce online learning material.

Moonen and others

Measuring costs can be carried out following the "ingredients" method in which all the ingredients that are necessary for the realisation and use of a product are specified according to their market values. Therefore a distinction can be made among cost ingredients in categories such as: (a) human resources, including staff development and support staff, (b) network infrastructure, capital equipment and start-up costs, (c) facilities costs, including space or accommodation, (d) material costs, including consumables and expenses, and (e) others, including general administration (Dondi, 1995; Moonen 1997; Cukier, 1997; HEFCE, 1997; HEFCE, in press).

We can map these into the standard model as follows (overleaf):

Standard	*Moonen et al*
Staff costs	Human resources, including staff development [staff costs] and support staff
Depreciation	Network infrastructure, capital equipment and start-up costs [capital aspects]
Other operating expenses	Material costs (including consumables and expenses)
Overhead - details below:	Others
Building use	
Equipment use	
Premises	Facilities costs (including space or accommodation)
General administration	Others (general administration)
Research administration	
Student admin and services	
Learning resources	

8.2 Conclusions

We hope that the above review of the literature makes it clear that the KPMG framework stands up well when judged against the other experts, and that the Flashlight work is, after KPMG, the most systematic work available relevant to the problem. This leads us to the following conclusions for a Financial Schema:

1. Accept the multi-stakeholder approach that we decided on early in the study, focussing primarily on Institution, Student and Staff own costs.

2. For Institutional costs take the KPMG schema as a basis for Institutional costing, adding in any updates resulting from the Transparency Review - JCPSG (1999).

3. Then factor in Flashlight insights to the UK situation.

4. Next factor in "classical" costing work of relevance to Networked Learning (Rumble etc).

5. Finally factor in remaining insights from our study.

In Chapter 9 we shall apply the stakeholder, Course Lifecycle and Activity Based Costing approach to the construction of the Planning Document.

9. The Planning Document

"A key component of this new attitude is activity-based costing, where the allocation of an overhead department's costs to products is made on the basis of the cause/effect relationship between the product and the activity levels it causes in the department. Thus the costs of a quality control function may depend as much on the complexity of the product, as on the volume produced."

Howson & Mitchell (1995)

9.1 Introduction

The final outcome of this project is a Planning Document, which used in conjunction with the accompanying Financial Schema, as described in the last chapter, can help to record and understand the "true costs" of Networked Learning. Together the Planning Document and Financial Schema form a Planning Framework.

This chapter describes a proposed Planning Document, which is then demonstrated through a brief worked example.

However, the Planning Document and Financial Schema will need a considerable amount of further work and consultation - and staff training - before they can be used routinely by the HE sector.

9.2 Planning Framework

Any proposed Planning Framework needs to resonate with financial managers, planners, administrative staff and academic staff, and therefore needs to be understandable and usable with the minimum amount of guidance. The Framework also needs to be based on tried and accepted methods. The Framework is expected to be relevant to different approaches to Networked Learning and make especially apparent which costs should be recorded and where, thus eliminating Hidden Costs.

Similar to our proposals for the Financial Schema, we propose a Planning Document with the following features:

1. It can operate at the level of a whole Institution; a department or faculty; a course; or a unit (module) within a course.

2. It takes account of the costs incurred (or saved) by the additional stakeholders in the learning process other than the Institution - in other words, it does not treat the Institution as a closed system. The three Primary Stakeholders, identified in Chapter 3, are the Institution, Staff and Students.

3. It is based on Activity Based Costing (following KPMG work) as described in Chapter 8.

4. It takes account of the division of academic time into Research, Teaching and Administration.

5. It takes account of the Activities *within* the course development process and proposes a model for these, the three-phase model, if there is no existing model relevant. The three-phase Course Lifecycle model involves both the learning experience and student environment, through Planning and Development; Production and Delivery; and Maintenance and Evaluation.

6. It is flexible in terms of allocation of overheads, with an orientation to overheads based on actual usage rather than estimation.

7. This implies that it will require some kind of recording of academic effort spent on activities.

The challenge is: can we find an existing framework to adapt, or do we have to create a brand new one?

9.3 Input from the literature

The Study Team has surveyed the research literature produced by major academic authorities which is relevant to the area of planning and decision-making in the use of Information and Communications technology for teaching in Higher Education. With one exception, there is in our view relatively little in this literature of value to planners and finance staff. The exception is the work by Bates (1995).

Tony Bates

In his book "Technology, Open Learning and Distance Education", Bates (1995) devotes a great deal of attention to the planning process, or as he calls it, "Building a framework for decision-making".

His rationale requires a framework to have the following features:

1. It will work in a variety of contexts.

2. It allows decisions to be taken at both a strategic or Institution-wide level, and at a tactical or instructional level.

3. It gives equal attention to instructional and operational issues.

4. It will identify crucial differences between different technologies, thus enabling an appropriate mix of technologies to be chosen for any given context.

5. It will accommodate new developments in technology.

This resonates closely with our concerns. However, he does not state explicitly (though we believe it to be implicit in his work) that the framework should accommodate conventional teaching and learning solutions.

His framework has received a great deal of attention around the world. It is called **ACTIONS** - which stands for:

Access	How accessible is a particular technology for learners? How flexible is it for a particular target group?
Costs	What is the cost structure of each technology? What is the unit cost per learner?
Teaching and Learning	What kinds of learning are needed? What instructional approaches will best meet this need? What are the best technologies for supporting this teaching and learning?
Organisational issues	What are the organisational requirements and the barriers to be removed, before this technology can be used successfully? What changes in organisation can be made?
Novelty	How new is this technology?
Speed	How quickly can courses be mounted with this technology? How quickly can materials be changed?

Though the ACTIONS framework is popular with educational technologists and theorists of online learning, there are some concerns that we have with the particular presentation of his approach. The main one is that as the scale of use of Communications and Information Technology grows, decisions on courses that make use of it are likely to have to be taken at a high level in Institutions. These senior management levels are on the whole comfortable with financial decision-making and the language in which this is articulated, and with the general educational context, but less comfortable with the subtleties of the language of educational technology. (A similar worry is often expressed about decision-making concerning IT systems). There are also some threats to the status quo, and those who uphold it, in the framework that Bates proposes, with his focus on Organisational issues and its overtones of re-engineering. And though Bates himself says that Novelty is a "two-edged sword", it could be thought surprising that it rates as one of the top six decision criteria.

Our conclusion is that we like the framework but are concerned about the vocabulary and the apparent over-importance of some of the criteria.

Sir John Daniel

Daniel (1996) in his magisterial "Mega-universities and Knowledge Media", does not deal specifically with the planning process, despite the thoroughness with which the Open University plans its courses. However, he recommends the "excellent guide provided by Bates", namely the ACTIONS methodology, as the way to proceed, once a technology strategy is in place.

Diana Laurillard

In "Rethinking University Teaching" (Laurillard, 1993), the index does not mention 'strategy', 'plan', 'decision-making' or any similar terms. However, there is a planning procedure *implicit* in the book. Chapter 10 "Designing Teaching Materials", gives the following procedure for doing so, based on the 'conversational framework':

1. Define learning objectives.
2. Identify students' needs.
3. Design the learning activities.
4. Consider the interface implications (of the systems).
5. Consider the comparative development costs.

Greville Rumble

Rumble's masterwork "The Costs and Economics of Open and Distance Learning" (1997) contains, as expected, a great deal on costing, but not much on planning and strategy.

Other authors

The other authors that we have analysed have given us useful input on the Course Lifecycle and in some cases, in particular Delinger et al. (1999), on the Financial Schemas, but do not shed much light on an appropriate planning model to use.

Conclusion

Inasmuch as there is a consensus from the educational technology and distance education authorities, the work of Bates seems to set the benchmark. Our main objection is that this framework does not use the language and concepts familiar to financial planners in UK universities. But this objection is fixable.

9.4 HEFCE work

HEFCE (1999) has recently looked again at the planning process, in the HEFCE Guide 99/21 of March 1999, "Appraising investment decisions". At first sight it looks like another weighty document of interest only to Estates and Finance Departments; however, the methodology can be used more generally - and indeed in one of its annexes (Annex C) it actually outlines how the methodology can be used to decide on a teaching and learning issue - with even a hint of Networked Learning!

The key is in a quote from the introduction to the document:

> It sets out a framework for the appraisal process which Institutions can use for all kinds of decision making. The details may vary but the same principles apply across a whole range of decisions. They are as valid for a decision about setting up a new course as for one about property options, and Institutions can tailor the process to suit their individual circumstances.

As an exercise one of the Study Team rewrote the HEFCE document to reposition it fully to the development of courses, and in the team's view the result is surprisingly convincing.

What the HEFCE document lacks is the *educational* framework. We recommend that this is added from the authoritative work of Bates.

To summarise, instead of trying (as several have done) to transform educators' attempts at course planning into planners' language, we propose to transform planners' attempts at planning into educators' language. This has the additional advantage in that as decisions about Networked Learning begin to impact on the Estates Strategy (e.g. by substituting home-based learning for lecturing or by providing video lecturing to remote sites), at least both sides of the debate will speak the same language.

9.4.1 HEFCE planning with educational modifications

In the next few paragraphs we outline our approach. Paragraph numbers reference the HEFCE report. Bold capital letters are from the ACTIONS methodology of Bates.

The following steps are the main steps in the appraisal process (¶13):

1. Define the objectives.
2. Consider the options.
3. Identify, quantify and where possible value the costs, benefits, risks and uncertainties associated with each option.
4. Analyse the information.
5. Present the results.

This process should be done at least twice: first for an outline business case, then refining the most plausible of the options into a full business case (¶ 16).

Establishing the outline business case is broken down as follows (¶ 18). After each point we make some brief remarks which are our interpretations of the key points to consider - for these we follow the Bates approach.

1. **Define the objectives**:

   - *Identify the need or problem.*
     What is the learning need? Where can it be satisfied (campus, home, workplace)?

   - *Consider the strategic context.*
     Consider the C&IT strategy - Technology Strategy in the terms of Daniel (1996) - the **T**eaching and Learning strategy, the Estates strategy (especially if there is a move to reduce or change the type of accommodation needed for teaching), and other relevant policy documents.

   - *Decide objectives.*
     What is the *content* - learning activities which the course will be expected to provide, and the *context* - the facilities or services needed to carry out these activities? What are the time, cost and quality aspects? Do not over-specify these (especially with C&IT).

2. **Identify the options**.
   Consider a wide range of options, including the "do nothing" option. Be open-minded and rethink university teaching (Laurillard, 1993), change organisational aspects (Bates, 1995), or even re-engineer (Bacsich, 1998).

3. **Assess outline costs and benefits**.
   This is the point to consider the other stakeholders. What are the costs to students? Are you making assumptions about staff overtime or staff use of their own equipment? The Institution may be getting funds for the course from an outside agency - what are their views?

4. **Analyse the information**:

- *Select a preferred solution.*
  Make sure that it is viable - there is no point in recommending the "best of a bad lot".

- *Initial assessment of affordability.*
  The preferred solution may be unaffordable, and the second-best should then be considered.

5. **Present the results**.
   Each Institution has its own procedure for "signing off" a course - this may involve several steps (and iterations).

Developing a full business case involves the following additional aspects (¶ 34):

1. *Confirm assumptions of outline business case.*
   The parameters might have changed just because of the passage of time. In particular, many more students might now have Internet access.

2. *Consider procurement routes.*
   It may be that consultant writers should be hired or specialist content bought in, rather than just hiring more academic staff.

3. *Assess financing options.*
   This is especially important if the expenditure reaches a "risky" fraction of the departmental budget.

4. *Reassess and select preferred solution.*
   Risk and uncertainty analysis should be carried out, especially if **N**ovelty of technology is an issue (Bates).

9.4.2 Some issues raised by this process

Appraising non-financial aspects

Appraisals will have to handle non-financial aspects differently, depending on how easily they can be measured. They can be categorised as (¶ 51):

1. Benefits which can be valued.
2. Benefits which can be measured in some other way.
3. Benefits which cannot be measured at all in conventional terms.

Alternatives may offer different levels of satisfaction (from ¶ 55):

- the contribution to an Institution's long-term strategy
- political acceptability, *e.g. of charging students even implicitly for C&IT*
- enhancement of the Institution's academic image
- protecting an Institution's market position *as lifelong learning takes off.*

Valuing risk and handling uncertainty

Risk analysis can be handled by standard techniques (¶ 85-89). Uncertainty analysis is also crucial - one should test the effects of altering key assumptions by sensitivity

analysis (¶ 90-94). There are many obscurities in the educational process. Some topical examples under the Bates themes are:

- **A**ccess - how many students have good Internet connections?
- **T**eaching and Learning - how effective, in detail, are new methods? (The literature is full of controversy - the "no significant difference" issue.)
- **I**nteraction - how well will students learn a new Web-based email system?
- **O**rganisational - can our Computing Service really move to 24x7 working to support students in all time zones for a global course?
- **N**ovelty - is streaming video really going to work well enough to be educationally effective?
- **S**peed - and how soon will it work, soon enough for our course to thrive financially as well as educationally?

9.4.3 Presenting the results

The results of an appraisal should be set out in a report covering (¶ 101):

- the strategic context
- the objectives
- the options considered
- the results obtained, in both financial and non-financial terms
- the preferred option(s)
- how the preferred option(s) compare with the alternatives
- how the risks have been evaluated
- the sensitivities of the preferred option(s) to variations in key assumptions
- the impact on the department's financial position
- how and when the project will be monitored and evaluated.

9.4.4 An appraisal checklist

We have reworked Annex A of the HEFCE report into the language of teaching and learning as follows:

Specifying the objectives
- How does this appraisal relate to the strategic aims of the department?
- Is the teaching and learning requirement clearly defined?
- Are the objectives supported by a strategic plan?

Identifying the options
- Has a sufficiently wide range of options been considered?
- Has the 'do nothing' or 'do minimum' option been explicitly considered?
- Have all realistic procurement options been appraised (including innovative forms of procurement such as buy-in of content, use of consultant writers)?

Valuing costs, benefits, timing, risks and uncertainties

- Has account been taken of all the direct costs and benefits accruing to the department?
- Are there any wider considerations?
- Have all relevant costs, income streams and benefits (over the life of the course) been included?
- Has allowance been made for running costs over the life of the course?
- In particular, have course maintenance (including running update) costs over the life of the course been taken into account?
- Does the appraisal take account of assets that are already owned (opportunity costs)?
- Is there any double-counting of costs and benefits?
- What allowance has been made for non-financial aspects?
- Have uncertainties in key assumptions been identified and tested?
- Have risks been assessed and valued?

Assessing affordability

- Has the impact on the department's overall financial position been assessed?
- Can the department accept the best and worst case scenarios?

Presentation of results

- How does the chosen option compare with the alternatives?
- Are the results set out clearly, in an appraisal report, in a logical order and with all relevant assumptions made clear?
- Are tables available showing the details of costs and benefits for all options?
- Do they show the effects of risks?
- Do they show the influence of sensitivities?
- Is the overall financial impact clear?

Monitoring and evaluation

- Is provision made for monitoring throughout the Course Lifecycle?
- Are proposals included in the appraisal report for evaluating the course once implemented?
- Is the timescale for evaluation defined?

9.5 A worked example

In the interests of space, we have given this worked example in narrative form - however, it covers most of the issues raised by our Planning Framework. It is planned for there to be an Annex giving a full Planning Document and Financial Schema for this example.

The University of Rother Bridge is concerned to ensure that it makes a good impact on its local region. Regional development is now high on the local agenda. The University has a thriving Department of Regional Development, but most of its work has been done in far-away regions including outside the UK. The local region has identified a shortage of regional development experts.

Idea: Develop a Masters programme in Regional Development!

Define the objectives

To teach a Masters Programme in Regional Development oriented to students in the region. The strategic context is clear: this is consistent with university and departmental strategy. The department has the expertise.

Consider the options

The crucial option choice is: Full-time or part-time?

Identify, quantify and where possible value the costs, benefits, risks and uncertainties associated with each option

The following conclusions come from market research with current employers. Students going straight from a first degree through a full-time Masters will be regarded in the region as "wet behind the ears". Releasing existing regional development staff for a 1-year full-time course is infeasible - there are already staff shortages in the region. Thus it must be a part-time course. Employers will pay, something, towards a suitable course for their staff.

Analyse the information

Find out the numbers of potential students in the region. Is it as high as regional enthusiasts say it is?

Present the results

The outline business plan recommends a part-time Masters course oriented to staff currently in employment in the region. Doing nothing is not an option - there is a high risk that the university in the adjacent region will fulfil the need.

Full business case

The sub-options to consider are the *mode* of part-time course. These include:

1. Day-release
2. Evening class
3. Weekend courses
4. Distance learning, workplace-based
5. Distance learning, home-based.

Mode 1 is a non-starter. Mode 5 seems boring - they have too many books and reports to read already. Mode 2 looks promising until department staff analyse the lifestyle of potential students - the region is too dispersed and potential students have too much travel in the week and too many late meetings. Modes 3 and 4 look the best. Mode 4 fits the EU agenda; but starts to fall foul of the chaotic and stressful nature of office life and PC usage in the typical regional development department. Mode 3 seems the best choice but is not popular with the students or their families (they want to relax at the weekends). Mode 3 is not popular with the academic staff until they realise that a suitable package can be negotiated for weekend working including the feature that teaching hours can be "burned off" quickly, leaving more weeks free for research. Mode 5 is revisited - a pedagogic expert is brought in and suggests that the course is constructed to be experience- and evidence-based, concentrating on the kind of books and reports that such staff have to master anyway, and using online group discussion over the Internet.

In the end, for pedagogic reasons, the course is articulated as mixed mode (Modes 5 and 3) - with minor elements of Mode 4 added for political reasons (including attracting funding).

Market research establishes that many potential students, including those most interested in the course, have PC and Internet at home - some for family reasons, others because they use them for work. It is decided that such a constituency will form the initial basis for the course. (It was accepted with reluctance that some students would thus be left out, at least initially.) There was some student reluctance to use the Internet even more than they do already. (There was no cable operator in the region offering really cheap Internet telephone calls.) However, it was pointed out that unlike many other students doing distance education, students on this course would not incur any travel costs or travel time, other than for the occasional weekend events. Unusually, quite a lot of the online learning work is planned to be oriented to the weekends, rather than the evenings (due to the lifestyle of potential students).

There was a brief flurry of technology-driven interest in using videoconferencing on the course, which died away when market research showed that none of the main employers for potential students had videoconferencing systems.

The staff position is considered. Is the course likely to impact on staff own time and resources? The time element at weekends has been negotiated - but it is realised that staff will have to teach online in the evenings and this is added to contact hours allocations in the work plan (Rother Bridge is a post-1992 university).

The staff *resource* element has so far been ignored (not unusually). It is agreed that the core staff teaching on-line on the course will be loaned a PC to use at home, or a laptop to use while travelling (if they have a PC at home). Since laptops have been in traditional short supply in the department, this scheme seems to motivate staff.

The debate now moves to the amount of online material that must be created. Is the course to be in the popular Open University tradition of being resource-rich, allowing less online teaching? Or will it be teaching-rich? Lobbying from the Multimedia Centre is resisted, on the grounds that the development costs for multimedia material would be a large fraction of the departmental non-staff budget - too risky. There is also the **S**peed issue to be considered - multimedia is felt to take too long to develop and this course has to be delivered soon to hit the EU regional agenda. The compromise chosen is to make the course material Web-based, professionally but not over-excitingly designed. Staff hours to develop content are allocated, on a "pseudo-contact hours" basis (using a tradition taken from some other departments at Rother Bridge who have developed print-based distance learning for some years).

An argument builds up about teaching hours. One of the staff works part-time for the Open University and is aware of the issue that online teaching is said to take more time than face to face. The Head of Department agrees to put in a "fudge factor" of 1.2 compared with the face to face system (staff asked for 1.5). This is easily covered from the income projections for the course.

The plan also assumes external consultants are brought in to do the course Web design and to train staff to teach online. This is the first course that the Department

has taught online, so this is regarded as an acceptable once-off cost. Provided that the course enrolments are as predicted (40 in the first year), this start-up cost can be absorbed.

There are some other minor costs for software licenses but not significant in the business plan. There is an argument with the Computer Centre over what exactly the departmental overhead charged by them entitles the department to.

Endless discussions take place about whether subsidies to students should be built into the business plan. (EU funding rules allow a course oriented to "minorities" to attract subsidies in some cases.) In the end it is decided to ignore such subsidies for the purposes of the business plan, thus regarding any such subsidy as a bonus.

The initial budget for the course assumed that the course would run unchanged for 5 years. After consulting with potential students and their employers, it became clear that the course material would go out of date much more quickly - thus the final budget assumed that 25% of the course material would be rewritten each year.

Non-financial benefits of the course are seen as:

- Contributing to the university's involvement with the region.
- Pushing forward the university's lifelong learning agenda (while quietly making an operating surplus on the course).
- Protecting the university's reputation as an innovator.
- Maintaining the university's reputation for *relevant* research since the department's research results can now be deployed in service of the region.

The presentation of the results is written up in the approved format. Spreadsheets are included but are not allowed to dominate the report. A PowerPoint presentation of the business and educational case is also produced by the course team for use at course planning and regional meetings.

9.6 Summary

It is impossible to test as well as develop a methodology of this nature in six months. However it is hoped that this chapter gives a flavour of how the Planning Document would be used in reality. The Study Team are planning to continue work on the Document after the project has officially finished and a Handbook, with real (not hypothetical) examples, will be made available as an Annex to this Final Report in the near future.

10. Dissemination

"It is a very sad thing that nowadays there is so little useless information."

Oscar Wilde (1854-1900)

Although this project has been small, in terms of both funding and length, it is expected that its impact will be extensive. Therefore a number of dissemination activities have already taken place and several are planned for the future. These are detailed at length below.

10.1 Final Report

The Final Report is a key dissemination activity of this project. When approved, it will be sent to all Institutions who completed the questionnaire and participated in the interview process. It will also be sent to all key agencies. All speakers and delegates of the FLISH conference, who request it, will also be sent a complimentary copy of the Final Report, as will the other major costing-related projects around the world. The report will also be available on request via the project Web site, and will be posted there as a pdf file after 12 months.

10.2 Conferences

A short report on conferences attended by the Study Team to disseminate the project can be found in Appendix 4.

The 1999 "Flexible Learning on the Information SuperHighway" conference (FLISH99) was organised by the Virtual Campus team at Sheffield Hallam University specifically to disseminate the interim findings of the project and to bring together costings experts to advise and further the ideas of the Study Team. Both Paul Bacsich and Charlotte Ash, from here on referred to as the dissemination team, made presentations at the conference and all team members reported on the informal discussions conducted during refreshments and social events.

In June 1999, the dissemination team travelled to Seattle, USA, to present a work-in-progress paper at ED-MEDIA99. This was a worthwhile event and much interest in the project was shown by other delegates, both in the presentation and informally.

During this period, Kim Boniwell and Leon Kaplan presented at the Sheffield Hallam University internal Teaching and Learning conference. The paper concentrated on the student issues identified during the project and the reception was generally in approval, but attendees were cautious of the results due to the small size of the sample group.

On 1 July 1999, the dissemination team presented a paper on the project at the Teaching and Learning Conference at Sunderland University. Again this activity evoked much interest from both academics and senior level management who attended.

In early September 1999 Paul Bacsich presented a paper at the 1999 International Meeting of University Administrators (IMUA) at Edinburgh University. The paper concentrated on the study's impact on this particular segment of university staff as it is believed that without the support of administrators the Planning Framework is unlikely to succeed.

The study was also represented at the Association for Learning Technology Conference (ALT-C) at the University of Bristol in September 1999. In line with the conference theme a paper was presented entitled "Costing the Lifecycle of Networked Learning - From Conception to Completion".

Paul Bacsich has been invited to Israel in October to present a paper at the Euro-Med conference "Technology in Learning Environments: The Learning Citizen". The paper is entitled "Planning and Costing Virtual Universities" and will draw upon the work undertaken in this project to update his earlier work on Virtual Universities.

Charlotte Ash has been invited to participate in a panel discussion - with Dennis Jones (of the National Centre for Higher Education Management Systems) and Robin Zuniga (from the TLT Group, currently working on the Flashlight Cost Analysis Handbook with Stephen Ehrmann) - at the Western Co-operative for Educational Telecommunications conference in Portland, Oregon, in November 1999. The session is entitled "Weighing Air: Measuring the Costs of Technology in Courses".

Paul Bacsich will be presenting in Canada to the Telelearning NCE '99 conference in November 1999. This paper will concentrate on the main costing issues of the project and will discuss how the ideas can transfer across to the Canadian situation.

Charlotte Ash will give the opening presentation at the 1999 "Evaluation of Learning Technology" conference to be held at the University of North London. The paper is entitled "Evaluation meets Costing: Fight or flight" and hopes to bridge the gap between costing and evaluation to ensure a harmonious future for both.

Both Paul Bacsich and Charlotte Ash will be attending the Online Educa 99 conference in Berlin in November 1999 to disseminate the findings of the project. Paul Bacsich is organising and chairing a plenary session on the costs of online learning at which he will also present the main project conclusions - other speakers include Frank Jewett (California State University) on the "Bridge" model, Clive Shepherd on his recent costings work for the DfEE, and Lou Van Wyk (South Africa).

Paul Bacsich and Charlotte Ash have submitted a paper to the 1999 Australian Society for Computers in Learning in Tertiary Education (ASCILITE) conference, in Brisbane, December 1999.

This blanket strategy ensures that practitioners in all main continents are aware of the JISC-funded "Costs of Networked Learning" project and its findings, within six months of project completion.

10.3 Journals

A number of journals have been selected during the project and assessed for the likelihood of publishing a paper on this subject. Over the coming months, papers will be written and submitted to further disseminate the study to the sector.

10.4 Project Web site

The project Web site - http://www.shu.ac.uk/virtual_campus/cnl/ - has been active throughout the last six months and will be updated and extended to reflect the findings and conclusions of the study. The site will host copies of presentations made by the Study Team and copies of or links to accepted papers, and will also contain a facility to request a copy of the report. After 12 months it will also host a downloadable pdf copy of the report.

10.5 Informal dissemination

Informal discussion and dissemination has been taking place throughout the project. Contact has been made with almost all other costings studies around the world and ideas discussed. Personal contacts in the field have also been regularly consulted and updated.

10.6 The listserv

The Study Team have been monitoring existing listservs throughout the project and have identified a gap in the provision. We have therefore recently set up a listserv on the subject of costing via the UK Mailbase listserv facility.

See http://www.mailbase.ac.uk/lists/costs-of-networked-learning/ for the listserv.

The plan is to encourage an online community of interest, discussion with members of other costings projects, and international participation.

11. Project Management

Project management "involves managing the cost, effort, priority and timing of project deliverables, tracking of the process of change, planning ahead, managing risk, scheduling equipment and technology, helping people to perform their best and maximising their rewards."

Canale and Wills (1995)

Overall, we feel that the management of this project has been successful. In terms of personnel, the project has been directed by Paul Bacsich, managed by Charlotte Ash, and contributed to by two full-time research assistants employed with the project funding, plus a number of temporary staff and consultants. The project has also benefited from the expertise and assistance of a number of Sheffield Hallam University staff. It is unlikely that the project could have been so successful without the active support of the Assistant Principal for Teaching and Learning, Professor Dianne Willcocks, now Principal of the University College of Ripon and York St John.

As the project did not include other Institutions there are no issues on collaboration to report. When other Institutions were asked to participate in the study for the in-depth interviews they were on the whole willing to make themselves available, and for this we are most thankful.

The Study Team held two Advisory Group meetings during the study. The first meeting, held in January 1999, was attended by Jonathan Darby, from Oxford University, and Robin Mason, from the Open University, both of whom were nominated by CALT - and by Alice Colban, from the CALT Secretariat. In this meeting, a revised plan and time structure were discussed in detail, including how the Study Team (then only Paul Bacsich and Charlotte Ash) would manage until staff could be employed, and the various intricacies of the project not detailed in the original proposal.

The second meeting was of more of an informal nature and was held in conjunction with the FLISH99 conference, where only Robin Mason was able to attend. There have also been a number of informal conversations taking place between Robin Mason and the Study Team.

However no project runs without problems. Although they were minimal, they are briefly outlined below, detailing what they were and how the Study Team solved them.

The first problem encountered was one of late notification of the successful proposal by JISC. At the time of notification, Paul Bacsich and Charlotte Ash were travelling to a European conference in the run-up to the Christmas Holidays. This posed several problems for both staff employment and the postal survey. Moving as fast as possible, advertisements were placed on the Web and in the local and national press before Christmas, and interviews held in mid January - but the two research assistants did not start work until the beginning of February, two months after the project officially was supposed to start.

The postal questionnaire needed to be sent before Christmas in order to be answered and returned in January. The survey was written at speed - luckily it could be based upon several previous studies written by the team. However the short time span forced the team to contract the printing, postal and data collection responsibilities to a third party. Unfortunately this resulted in many errors, including the mis-copying and mis-sending of questionnaires, and incorrect data input. When the problems were identified a temporary data entry clerk was hired to re-input the raw data and complete the analysis.

The Study Team were lucky to have the help of additional Sheffield Hallam staff over short time spans, although when these staff returned to their normal work, additional pressure was put upon the core team to continue at the heightened level of productivity.

The site visits and interviews required much co-ordination by the project manager: relationships needed to be established and interviews arranged by telephone and email, working through an intermediary and all within a tight schedule. The logistics for these visits were also time-consuming, which posed a major problem given the tight time scale of the project. This activity would have been much easier to co-ordinate if the project had run over a longer period.

The student survey, which was only identified as a necessary activity halfway through the project, also posed a management problem due to the timing of the survey needed to receive and analyse the data before the end of the project. This coincided with end of year coursework deadlines and some examinations. It was decided that the returned quota, from the first mailing, was not sufficient to base adequate conclusions on - therefore the decision was taken to produce a second group which were available via school offices. This strategy increased the number of responses to an adequate level.

The FLISH conference was organised as a consultation and dissemination event for the project, and was very beneficial to the project. The conference was financed at no cost to the JISC budget. However, Paul Bacsich and Charlotte Ash were on the Organising Committee, as well as speakers, and therefore the possible operational impact of the conference could have been considerable. This was kept under control until the two weeks leading up to the conference - at that point a temporary research clerk was employed to assist the Study Team during the project director and project manager’s absence.

The employment of this clerk was continued after the conference to aid the team in consolidating and producing the Final Report and Appendices.

In the final 6 weeks of the project study period, the Study Team had to cope with a high dissemination load, staff holidays and unavoidable absence, and the impact of late-breaking but vital information, in particular the Transparency Review of Research (JCPSG, 1999).

Funding for the project ceased at the end of July 1999. Liaison with CALT, minor updates and the publication of the Final Report, along with a substantial amount of dissemination, has taken place outside of the JISC funding period.

12. Conclusions and Recommendations

"Until the business case is quantified and verified, the promise of using information technologies to realise the anticipated benefits will remain just that - a promise."

Oberlin (1996)

This chapter is divided into three sections - conclusions, project recommendations and recommendations for further work.

12.1 Conclusions

The literature search established that the past literature is confinable, with a slow rate of accretion. The sources are diverse, with only a small proportion of direct relevance and high quality. There are some useful bibliographies. The literature from the training field is relevant in view of the convergence of the two sectors.

Earlier UK work on costing innovative learning systems in Higher Education was found to be of little use. However, more general costing work, such as the KPMG Costings Guidelines, has been helpful. The recently released Flashlight work on costing is, we feel, likely to be of great relevance. We have also been privy to a number of other studies conducted internationally within this field.

The Sectoral Survey established that the costs of Networked Learning (overt and hidden) are little considered at this stage. We also encountered problems of scope, such as "What *is* Networked Learning?", and that of inconsistent information - indeed there is little correlation between the replies to different surveys, as there is not a uniform method for asking the questions and recording the answers.

The site visits confirmed that Networked Learning is prevalent in all types of HEI, but that cost analysis of Networked Learning is not currently on the agenda (although HEIs are aware that cost analysis is firmly on the Funding Councils' agenda). The site visits also proved that student concerns and behaviour are neither well understood nor seen (yet) as being strategic.

Both the survey and site visits confirmed that there are organisational barriers to accurate costing: such as the reluctance to consider any form of timesheet; reluctance to acknowledge that staff work "overtime"; and the inconsistency and non-granularity of internal accounting. A general move towards costing activities was thought to be a good idea, although some suspect that this may inhibit innovation and also that simple methods may have more impact. The larger "cost of costing" issue was raised as the negative side of this issue.

Institutions did identify a useful set of Hidden Costs to complement those we uncovered in the literature: including the hidden cost of innovation; the costs of collaboration; the cost and complexity of monitoring informal staff-student contact; and the cost of copyright compliance.

Institutions felt that more compelling pedagogical evidence for the benefits of Networked Learning was badly needed before strategic moves towards Networked Learning could be taken. The development of Networked Learning activities needs to be both top-down and bottom-up to succeed. The quality of materials need to be assessable before academics will trust the innovations; therefore criteria must be established against which standards can be evaluated. Simple, transparent tools, templates and users guides need to be developed and evaluated.

The study has uncovered the costs being absorbed by academic staff which were previously hidden. Many academic staff have purchased computers privately for use at home, and increasingly these are being used to counteract the shortfall in the working day. Staff overtime, development time and materials were highlighted as issues in need of redress.

The student survey showed that there is a disjunct between student beliefs - in essence, students believe that Networked Learning *increases* costs to them - and student behaviour - that coming to campus (and the time and cost it takes) is less and less attractive. Students seem to believe that, and act as if, time has an opportunity cost to them. In particular, students undertake more paid work and own a greater number of personal computers than is generally recognised. Our survey, supported by the national work in this area, shows that students feel Networked Learning is having a positive effect on their learning but that it is also raising the cost of learning, mainly because it is currently mostly on an additional not a substitution basis.

Planning Framework

We have proposed a Planning Document and Financial Schema with the following features:

1. It can operate at the level of a whole Institution; a department or faculty; a course; or a unit (module) within a course.

2. It takes account of the costs incurred (or saved) by the additional stakeholders in the learning process other than the Institution - in other words, it does not treat the Institution as a closed system. The three primary stakeholders, identified in Chapter 3, are the Institution, Staff and Students.

3. It is based on Activity Based Costing (following KPMG work) as described in Chapter 8.

4. It takes account of the division of academic time into Research, Teaching and Administration. There are some detailed issues on classification but in general terms we would follow the guidelines from KPMG (1997) and JCPSG (1999).

5. It takes account of the Activities *within* the course development process and proposes a model for these, the three-phase model, if there is no existing model relevant. The three-phase Course Lifecycle model involves both the learning experience and student environment, through Planning and Development; Production and Delivery; and Maintenance and Evaluation.

6. It is flexible in terms of allocation of overheads, with an orientation to overheads based on actual usage rather than estimation.

7. This implies that it will require some kind of recording of academic effort spent on activities. (JCPSG (1999b) outlines some of the problems with this.)

8. The planning aspects are based on HEFCE (1999) work, but re-positioned to course development issues.

Though it is possible to propose the nucleus of a Planning Document and Financial Schema in six months, much development and testing is needed to prove its viability and worth.

12.2 Project recommendations

1. We support the centrally initiated drive towards coherence which is needed to counteract problems created by the current lack of uniformity in university accounting procedures.

2. Conventional teaching and learning must also be costed by the same methodology as we have proposed, in order for comparisons of the costs and benefits to be drawn.

3. Now that many HEIs are thinking of changing their finance systems, and in the light of the recommendations from JCPSG, let alone our work; there is a need to locate and evaluate finance software suitable for the "new era" of Activity Based Costing in HEIs.

4. There is evidence that the UK HE sector is "tired of surveys" (although the response to our particular survey was very good), and the responses given in national surveys are not consistent or indeed based in reality. A co-ordinated "mega-survey" approach is needed, including recognised procedures by which figures are collated.

12.3 Recommendations for further work

1. Now that Further Education is joining JISC, the study should be extended to include FE. The easiest way of doing this is to start from the existing HE report (which included one University College in its site visits) and rerun the current methodology with the FE sector, updated in the light of experience, to ensure that specific FE concerns and vocabulary are taken into account. We suggest that the Study Team works in conjunction with an FE provider of suitable skill to produce an FE version of the report (not a unified HE-FE report). The FE report should also include issues relevant to the University for Industry.

2. The Study Team has had several discussions about international collaboration with other relevant projects, and links are in place with them already; most closely with Canadian, US and EU researchers. The diversity of the HE sector across the world makes it unlikely that a world-wide study would have great relevance to JISC or indeed the Funding Councils, but two issues are of immediate interest:

- Collaboration with Australia may be profitable, especially in the light of the current CVCP/HEFCE research project, "The Business of Borderless Education". The Study Team is hoping to present a paper at the ASCILITE conference in Queensland in December 1999 and there is the possibility of extending this trip to encompass a 'mini' version of the study.

- Informal discussions with EU sources have suggested that an EU-wide study would be of interest and an embryo consortium is in existence (including a Canadian partner). Due to the diversity of the HE sector across Europe, it is possible that such a study would focus more on student and staff (own) costs than on proposing a uniform regime on Institutional costing.

3. Evidence from a recent Canadian report - and a strand of US activity over some years - suggests that the next area ripe for treatment, in terms of costing education, is the UK schools sector. We are not aware of any strategic UK work in this area and recommend to the DfEE that the issue of such work is considered.

4. The Study Team is happy to work with the HE and FE Funding Councils to look at specific issues relevant to the constituent countries of the UK. This is why - despite the severe restrictions on the number of site visits - we included a Scottish and a Welsh HE Institution in our site visits. If appropriate, the FE studies referred to in point 1 could be conducted on a country-by-country basis.

5. We recommend a study into the benefits - overt and hidden, for all stakeholders - of Networked Learning. (We note the DfEE's recent Call for Expressions of Interest related to this area.) Without such a study, the cost issues are seen too much in isolation.

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A2 Questionnaire to UK HEIs

Section One

HESA Identifier

Name of Recipient .....

Role of Recipient .....

Brief Description of that Role .....

.....

Contact Details: e mail .....

phone .....

fax .....

Section Two

1 How many computers does the institution own? .....

2 How many computers are available on campus for student use? .....

3 How many computers are assigned for staff usage only?

actual number .....
percentage of total .....

4 How many institution-owned computers are available for off-campus use?

Staff .....
Student .....

5 Please state the number on computers assigned to:

Central Computing Facilities .....
Library Computing Facilities .....
Departmental Computing Facilities .....

6 Please state the opening hours of the above.

	Mon-Fri.	**Saturday**	**Sunday**
Central Computing Facilities	.....	.....	.....
Library Computing Facilities	.....	.....	.....
Departmental Computing Facilities	.....	.....	.....

7 Please indicate which facilities are open access (OA) and which require users to belong to a particular subject area (SA).

	Mon-Fri.	Evenings	Saturday	Sunday
Central Computing Facilities	.....	.....	.....	.....
Library Computing Facilities	.....	.....	.....	.....
Departmental Computing Facilities	.....	.....	.....	.....

8 Please indicate whether students have access to networked facilities at the University's expense in the following places.

- Halls of Residence ☐
- University approved student accommodation ☐
- Non University approved student accommodation ☐
- Other ☐
- The University does not provide this facility ☐

9 What is the institutional IT budget per annum? .....

10 Please state the following expenditure.

Capital .....
Recurring .....

Section Three

11 What percentage of institutional teaching and learning activity makes use of Networked Learning facilities?

2 years ago .....%
presently .....%
in 2 years time .....%
in 5 years time .....%

12 Please indicate the extent of Networked Learning use across your institution.

- The staff are unaware of Networked Learning ☐
- The students are unaware of Networked Learning ☐
- The staff are aware of Networked Learning ☐
- The students are aware of Networked Learning ☐
- The staff deliver Networked Learning in some activities ☐
- The students use Networked Learning in some activities ☐
- The staff deliver Networked Learning in most activities ☐
- The students use Networked Learning in most activities ☐

14 In your opinion what forces are driving your institution towards Networked Learning?

- Time to Market ☐
- Competition ☐
- Student Demand ☐
- Costs ☐
- Widening Access ☐
- Other ☐
  (please give details)
  .....

15 Which statement best describes your institutional approach to developing Networked Learning activities?

- Generally Ad-hoc ☐
- Individual to each department ☐
- Individual to each activity ☐
- Best Practices used across the Institution but no written policy ☐
- Well defined across the Institution ☐
- Other ☐
  (please give details)
  .....

16 Which statement best describes your institutional approach to recording the costs of Networked Learning activities?

- Generally Ad-hoc ☐
- Individual to each department ☐
- Individual to each activity ☐
- Best Practices used across the Institution but no written policy ☐
- Well defined across the Institution ☐
- Other ☐
  If other, please give details.
  .....

17 Please state in as much detail as possible what costs are recorded.

.....
.....

18 When are these costs recorded?

In the Planning Stages	☐
During Development	☐
After Development	☐
During Activity Execution	☐
At End of Financial Year	☐

19 In particular we are looking at unrecorded or hidden costs for the institution and the student. With this in mind are there any costs which you do not record but see as important to take into account when developing further activities?

.....
.....
.....
.....
.....

Please feel free to continue any answers on additional sheets of paper.

Thank you very much for your time and effort.

Please return the questionnaire in the pre paid envelope provided.

A3 Student Representative Survey

We would be grateful if you could take the time to complete this questionnaire. It will form an important part of a national study into the Costs of Networked Learning in Higher Education. Hidden and unrecorded costs are the main focus of our research. We believe that these costs are being largely absorbed by you, the student, so your input will be valuable.

You should fill in your responses with a line like this. Yes ⟝
Use an HB pencil or a blue or black pen. Please do not tick or circle. No ( )

1 E-mail address _____ ***Male*** ** ***Female*** **
(optional but necessary for entry into draw)

2 Age: *18-21* ** *22-25* ** *26-29* ** *30+* **

3 School:

4 Are you: *Under Grad* ** *Post Grad* **

5 Are you: *Full time* ** *Part time* **

6 Daily travel time to campus: *0 – 30 min* ** *30 min – 1 hr* ** *Over 1 hr* **

7 Daily cost of travel to campus: *no cost* ** *£0.01-£2.49* ** *£2.50 +* **

8 Are you in paid employment? *Yes* ** *No* **

9 If Yes, How many hours per week? *1 to 16* ** *17 to 32* ** *33 +* **

10 Do you have a computer for your own use in your semester time residence?
Yes ** *No* ** **IF NO, GO TO Q22**

11 Is this computer a – *Desktop* ** *Laptop* **

12 Is this computer attached to a printer? *Yes* ** *No* **

13 Does this computer have a modem? *Yes* ** *No* **

14 Is there a phone socket at your semester time residence that you could realistically use with your computer when you wanted to? *Yes* ** *No* **

15 How old is your computer? *up to 1 year* ** *2-3 years* **
1-2 years ** *3+ years* **

16 How much did your home computer cost? (approx.) *below £500* ** *£1000-£1500* **
£500-£1000 ** *£1500+* **

17 How much do you spend per year on computer consumables (ie ink, paper, discs)? £
(please be as accurate as possible)

18 On average, how much is your phone bill per month? £

PLEASE TURN OVER

19 Do you use an Internet Service Provider (ISP) at your semester time residence? (eg Demon, Freeserve)

No ** *Yes, I use a free ISP* ** *Yes, I use an ISP which costs money* **

20 When do you use your home computer? (please indicate all that apply)

Weekdays:	*9am – 1pm* **	*1pm – 5 pm* **	*5pm – 12am* **	*12am – 9am* **
Weekends:	*9am – 1pm* **	*1pm – 5 pm* **	*5pm – 12am* **	*12am – 9am* **

21 What do you use you home computer for? (please indicate all that apply)

Coursework ** *Business* ** *Other* **

22 Would you make use of 24 hour access to University computing facilities (extended opening hours)?

Definitely ** *Maybe* ** *Never* **

23 When would you make most use of this service?

Weekdays:	*5pm-12am* **	*12am-6am* **	*6am-8am* **
Weekends:	*5pm-12am* **	*12am-6am* **	*6am-8am* **

24 Would you use an IT Support help line at the following times? (please indicate all that apply)

Weekdays:	*5pm-12am* **	*12am-6am* **	*6am-8am* **
Weekends:	*5pm-12am* **	*12am-6am* **	*6am-8am* **

25 To what extent is Networked Learning (see definition above) used on your course?

(please mark the appropriate position on the scale below from 'Fully integrated' to 'Not at all')

Fully integrated ** ** ** ** ** *Not at all*

26 What effect has Networked Learning had on your learning experience?

Very positive ** ** ** ** ** *Very negative*

27 How do you feel about Networked Learning replacing part of your degree course?

Very positive ** ** ** ** ** *Very negative*

28 What training have you received in using the network and the software you need for your course?

A lot ** *Some* ** *None* **

29 Please indicate who provided this training. (Please indicate all that apply)

Your School ** *CIS* ** *Other* **

30 How would you rate the quality of the training?

Superb ** ** ** ** ** *Poor*

31 In your experience, which of these are the main costs to students of Networked Learning ?

Hardware ** *ISP cost* ** *Time* **
Software ** *Phone bill* **
Insurance ** *Consumables* **

(familiarisation with software etc., logging on, print queues, server 'crashes')

32 Do you think Networked Learning is increasing the costs for students?

Yes ** *No* **

33 Please use the space below for any further comments

A4 Conference Reports

A4.1 Report on the FLISH99 Conference with regard to CNL

Introduction

In response to JISC circular 9/98 it was stated that should Sheffield Hallam University be awarded the grant, the outcomes of the "Costs of Networked Learning" project would be presented at the "1999 Flexible Learning on the Information SuperHighway" (FLISH) conference. The conference took place in May at the University and its theme was, "The Business Case for Online Learning". Due to the late notification and other planning difficulties explained elsewhere in the project report, the study was delayed by one month and therefore it was agreed by the Advisory Panel that only the preliminary outcomes would be presented at the conference. This short report details the organisation of FLISH99 and how integral this has been to the success of the project.

Organisation

The organisation for FLISH99 commenced in February 1999 with Professor Bacsich taking the lead assisted by staff and financial support from the Virtual Campus Programme at Sheffield Hallam University. The organisation was undertaken in close consultation with the project team, to maintain continuity and direct relevance to the project.

Speakers with costings expertise were invited and marketing commissioned, including a Web site and Conference brochure. A call was posted for papers to be contributed to the costings workshop on the final day of the conference.

Once the Web site was functional and brochure completed a large postal mailing was distributed from a database of contacts held within the team and built up over a number of years. E-mail notification to UK HEIs was undertaken and several members of the team posted to listservs. Adverts were placed in the Times Higher Educational Supplement, the Independent and local press over the weeks leading up to the conference. Sponsorship, in the form of funds and services, was obtained from SoftArc, Tiny Computers and WBTSystems.

The conference was held in the Pennine Theatre on the University's City Campus, with exhibitions and refreshments in the Atrium. A conference social evening took place at the Kelham Island Industrial Museum and gave delegates and speakers a chance to network and discuss issues raised during the day informally.

Registration was available by phone, fax, post and online and delegates were charged a conference fee of £300. The event covered its own costs on a non-profit basis.

Speakers

Keynote speakers were invited to present at the conference on the theme of "The Business Case for Online Learning", several concentrated specifically on costs. These included:

- Professor Chris Curran, Dublin City University, *"Online Learning - the Business Case"*
- Patti Harvey, Mount Royal College, Canada, *"Shining a Flashlight on Students (CSI) & Resources Costs"*
- Professor Jef Moonen, University of Twente, Netherlands, *"National Differences in Approach to the Costs of Online Learning"*

- Dr Greville Rumble, The Open University (UK), *"The Costs of Networked Learning: What have we Learnt?"*

Other keynote speakers included:

- Chris Yapp, ICL (UK), *"The Business Case for Online Learning: UK Plc"*
- Professor Claudio Dondi, Scienter, Italy, *"The Business case for Virtual Student Mobility"*
- Professor Linda Harasim, Simon Fraser University, Canada, *"A Business Case for Research in Online Education and TeleLearning: Outlook for the 21st Century"*
- Dick Davies, Cable and Wireless College (UK), *"Controlling Risk in the MarketSpace for Online Learning"*
- Dr Robin Mason, The Open University (UK), *"The Business Case for Global Online Courses"*
- Keith Dunham*, CBTSystems
- Professor Bill Graziadei*, WBTSystems
- Dr Catherine Middleton*, York University, Canada

* These speakers were part of the commercial sponsorship of the Conference.

Presentations were also made by Paul Bacsich on the Costs of Networked Learning Project, and Charlotte Ash on current work in progress and the Financial Schema. This session was followed by a plenary discussion with an experts' panel on costs and hidden costs.

It was observed that hidden costs were not considered as institutional costs although they were quite a high proportion of costs. Time was seen as a principal cost. Staff were not sure how to organise themselves on on-line. There was a need for a more sophisticated apportionment of overheads.

The Head of Computing Services from one University told the conference that income per student was £3,500 of which the share of computing services was £350. Yet the total cost of ownership of a workstation was £1500 including network and technical support costs. This was 3-4 times more than the individual allocation per student and was a driver towards future student ownership of PCs.

Four papers were selected for the Costings Workshop on the final day of the conference:

- Dr Grainne Conole, University of North London, *"The Hidden Costs of Change: evaluating the impact of moving to online delivery"*
- Dr Gilly Salmon, The Open University, *"The Business Café Project"*
- Silvia Bartolic-Zlomislic, University of British Columbia, Canada, *"Cost-Benefit of TeleLearning"*
- Pieter de Vries, CINOP (Centre for the Innovation of Training and Education), Den Bosch, Netherlands, *"TELELEARN: An EU project on Costing Issues in Flexible and Distance Learning"*

Copies of the presentations, and papers where available, are available on the FLISH99 web site at http://www.shu.ac.uk/flish/

Delegates

The project team had made provision for 200 delegates but in practice it was much more difficult to engage potential delegates in this subject. It is estimated that over 7000 people

were directly targeted via postal and email postings, apart from the newspaper advertisements. Some 120 people registered for the conference, with some being on a day-delegate or special rate. The delegates came from a range of backgrounds and professions. Some were engaged in their own costings work, others about to begin work in this area at the behest of their organisations and others merely curious.

Analysis of event in relation to CNL

- The event allowed consultation, both formally and informally, with a number of experts whom it would have otherwise been difficult to pin down.
- It enabled presentation and discussion of the project during work in progress stages.
- It was clear that the sector is especially difficult to engage in this subject at all levels.
- Those who did attend had genuine interest and concerns.
- World experts in costings could sit around one table, while those presently working on costing-related projects would fill only a medium-sized room.

A4.2 Report on Ed-Media conference with regard to CNL

The CNL team submitted a short work-in-progress paper to the Ed-Media99 conference held in Seattle, 19-24th June. On the whole the conference was worth attending and much informal dissemination was conducted. Forty-two people attended the short presentation given by Professor Bacsich and Charlotte Ash about the project. The response was good and a number of people expressed a wish to receive a copy of the final report.

On scanning the Ed-Media CD-ROM abstracts the word "cost" arises 16 times generally accompanied by 'at low' or 'minimal' cost or with terms such as efficiency or effectiveness tagged on. Only three papers (apart from our own) were specifically about cost, and these are briefly detailed below.

Thomas Walter, Swiss Federal Institute of Technology in Zurich, presented a paper entitled *'A System for the Cost-Value Evaluation of Teleteaching Systems and Its Application'*. The project team aimed to calculate the costs of ownership, the cost of usage and the associated benefits of using the Teleteaching system. Costs were categorised as either, equipment, manpower or operation, but did not account for non-project specific costs. The costs were multiplied by both subjective and objective benefits, arrived at through a weighted questionnaire, to determine the cost-value ratio. The lower the ratio the more cost-effective the system. Walter did state on questioning that the methodology was very specific to the Teleteaching project and that there were no plans to assess its applicability to other scenarios. Only seven people attended this presentation.

Kenneth J Ekegren, from the North Central Technical College in the USA, presented a paper entitled *'Practical and Low Cost Methodology for Internet Classroom Presentations'.* He had introduced a system by which live lectures were recorded, in audio, and then posted to the web site alongside the corresponding visuals, accompanying materials and assignments allowing students unable to get to the lecture to receive the same information. The method was reported as low cost as the additional equipment needed did not amount to $1000, but no account was made for the pre-existing equipment or for the time needed to rerecord the lectures onto the visual material. The audience for this presentation was large and generally thought this was a practical, low stress and low cost method of increasing access to materials.

Konrad Michalski, Assistant Professor, Computers and Management Information Systems at the University of Athabasca in Canada, delivered a paper to a large audience about a '*Cost-*

Effective Approach to Electronic Course Development and Delivery in Distance Education'. The system removed all costs from the course provider and placed them on the student and a third party - whom they did not pay - leaving the University only with the costs of examinations and marking. It was clear from the reaction of the audience and talking to people after the presentation that this was clearly a laughable suggestion, and a fine example of why costing education is treated in such a negative way.

A4.3 Report on Sunderland conference with regard to CNL

Paul Bacsich and Charlotte Ash submitted a paper to the Sunderland University Teaching and Learning Conference, held on the 1st July 1999, which was accepted, and a thirty minute presentation was given followed by an extensive question and answer session.

The audience was mainly academics with a small number of top management. Questions focused on the staff issues mentioned, the collection of materials, and student concerns.

The other sessions attended by Paul Bacsich and Charlotte Ash concentrated on the practical application of ideas not cost issues although costs were mentioned in a few instances as difficulties, barriers or where work had taken place through funding opportunities. There were a number of references to students, such as the quality of the learning experience, value for money, extended provision and retention; in contrast the staff themselves were not mentioned.

A4.4 Report on IMUA conference with regard to CNL

Paul Bacsich presented a paper "The Hidden Costs of Networked Learning: The consequences for university administrators" during the International Meeting of University Administrators (IMUA) at the University of Edinburgh on 6-9th September.

The audience comprised mainly senior administrators (Registrars, University Secretaries) with a small number of academics. The questions focused on working hours of academics and the calculation of overheads. It seemed to be the case that the JCPSG Costings Guidelines had not yet percolated much beyond Finance Departments.

A4.5 Report on Association for Learning Technology Conference with regard to CNL

Paul Bacsich and Charlotte Ash attended the annual Association for Learning Technology Conference at the University of Bristol. The conference theme was the Learning Technology Lifecycle and concentrated on Design, Practice and Outcomes over a three-day period. The dissemination team presented a paper entitled 'Costing the Lifecycle of Networked Learning: Documenting the Costs from Conception to Evaluation' under the Organisational Change sub-strand. The presentation was well received by the packed room of delegates from a range of backgrounds, although the paper concentrated on the development of the Lifecycle model rather than the final outcomes of the project. Much informal dissemination and consensus building took place throughout the event.

The Lifecycle model developed for the project was also used by the Oxford University TALL (Technology Assisted Lifelong Learning) team as part of their pre-conference workshop.

There were no other papers related to costing issues at this conference.