A New Cost Analysis Model for Networked Learning

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Abstract

The authors have recently completed a six-month study into the Hidden Costs of Networked Learning, funded by the UK Research Funding Councils through the Joint Information Systems Committee. The study team defines Networked Learning as, "using a networked computer for the purpose of learning, blurring the boundaries between on-campus, distance and flexible learning". Most of the previous work on costing education has been done in the distance education field by authors such as Greville Rumble and Tony Bates. There is a need to update their work with current findings taken from our own study. The main outcomes include a three-phase course lifecycle model and a planning framework comprised of a financial schema and planning document. Both of these outcomes are based upon existing ideas, with input from Europe, America and Australia. Phase two of the project (due to begin in early 2000) will develop the theoretical outcomes of the first study into a practical handbook, using which we hope that the true costs of all innovative learning paradigms can be measured.

Introduction

The "Costs of Networked Learning" project (Bacsich et al, 1999) was funded by the Committee for Awareness, Liaison and Training (CALT), part of the Joint Information Systems Committee (JISC), of the UK Higher Education and Research Funding Councils. The main aims of the project were to identify the unrecorded or hidden costs involved in networked learning and to produce a planning document and financial schema that together would accurately record the costs of networked learning for the benefit of policy makers, course providers and students. This paper illustrates how the "Costs of Networked Learning" project builds upon earlier costings work in the distance education field.

The phrase ‘networked learning’ is generally taken to be synonymous with ‘online learning’, ‘technology enhanced learning’ and such like terms. The team used a definition of, *"using a networked computer for the purposes of learning, blurring the boundaries between on-campus, distance and flexible learning"*. We believe that the term ‘networked learning’ encompasses both distance learning and traditional classroom-based teaching, and it is hoped that the methodology will be flexible enough to be used in differing educational situations. The term ‘hidden costs’ encompasses costs that are both fundamentally unrecorded (such as academic staff overtime) and more generally absorbed into larger budgets (and are therefore unable to be attributed to an individual activity or even genre of activity).

Originally this project was expected to deliver one main outcome - the planning framework, comprised of a planning document and accompanying financial schema. As part of this deliverable, a course lifecycle model was developed for institutions that do not already have one in place. It is believed that using these three schemas an accurate picture of the costs of Networked Learning can be established.

The Costs of Distance Learning

There is a long tradition of costing in open and distance learning, mainly encouraged by the desire to reach more learners at a time when the demand for education is much greater than traditional methods are capable of delivering (Rumble, 1997). In addition, there is the growing need to reduce costs, thus increasing efficiency, whilst maintaining high quality. As Tony Bates notes in his 1995 book, "Technology, Open Learning and Distance Education", technologically enhanced learning modules allow an even greater number of learners to be reached. Thus, although traditional, distance education still exists, a growing number of networked learning courses can be taken at a distance. The educational climate is such that the cost efficiency (or effectiveness) of traditional classroom-based education, traditional distance learning and the newer networked learning paradigm needs to be established.

The Costs of Networked Learning

When staff at Sheffield Hallam University reviewed previous work on costing innovative learning systems, as part of the establishment of the Virtual Campus Programme, they 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. 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; and
- Some data is perceived as confidential and may not be made publicly available.

In order for the "Costs of Networked Learning" project to reach a useable conclusion, these barriers had to be surmounted. In addition to the four barriers listed above, we identified a larger barrier:

- Each previous costings approach uses a different vocabulary - these must be "standardised" before they can be analysed.

Course Lifecycle Model

During the early stages of the project a five-phase, cyclic model, which encompassed providing both the learning experience and the learning environment with a three-unit human resource model of academic staff, support staff and students - the stakeholders - was proposed (diagrams will be provided in the session). This model was tested twice: firstly with interviewees during the institutional visits; and secondly at a one-day workshop held to progress the thoughts of the study team. This thorough testing proved that the five-phase model was too complex and the subsequent four-phase model proposed by the workshop attendees would not resonate with the UK Higher Education sector, or make apparent the hidden costs. Therefore a three-phase model was proposed (again diagrams will be distributed in the session). Table one briefly illustrates how some course related activities fit into the three-phase model:

Table one - Breakdown of three-phase model

Planning and Development	coming up with - or being told - the idea writing the business plan purchasing and evaluating existing materials or developing your own
Production and Delivery	curriculum delivery progress monitoring marking and feedback
Maintenance and Evaluation	quality assurance exercises replacement and updating of materials evaluation against course aims outlined in business plan

The new model was then rechecked against the literature. While Bates (1995) proposes a two stage model of production and delivery, Rumble (1997) opts for production, including development, then transmission, distribution and reception. Moonen (1997) comes closest to our proposed model with development, production, delivery, operation and maintenance, though the categories do not map exactly. It is worth noting that evaluation as a phase has often been omitted even by distance evaluators.

The Financial Schema

During the study, we analysed around 10 different schemas. These include the KPMG Costing Guidelines (1997) for university financial planning, and the US Flashlight Cost Analysis Handbook (Delinger et al, 1999) which is rapidly gaining popularity in US HE. We also revisited the work of distance educators, including Rumble (1997) and Bates (1995). It was at this stage that we also included costings work from the training sector (such as Shepherd, 1998) for their attention to learner incurred costs. Table two shows our financial schema, with a number of example costs in italics:

Table two - Example of the financial schema

Expenditure dimension	Stakeholder dimension			Total
	Institution	Student	Staff	
Staff costs	*Salaries, wages, pensions etc.*	*Opportunity cost of learning not earning*	*Opportunity cost of not doing a better job*	
Depreciation	*Buildings, computing provision*	*Own home computer and accessories*	*Own home computer and accessories*	
Expenses	*Subsistence, registration*	*Computer consumables, connection charges*	*Expenses incurred on business travel*	
Overhead	*Software licences*	*Additional insurance*	*Additional energy requirements*	
Total				

The Planning Document

Rumble (1997) states, "The activity of costing is ... central to the planning and development of educational systems", and so the financial schema mentioned above must be partnered to a planning document. To this effect, we surveyed the research literature produced by major academic authorities relevant to the area of planning and decision-making in the use of Communications and Information Technology (C&IT) for teaching in higher education. There is, in our view, relatively little in the literature of value to planners and finance staff, with the exception of Bates' ACTIONS methodology (1995). HEFCE (1999) has recently looked again at the planning process, in "Appraising Investment Decisions". Annex C to this document outlines how the proposed methodology can be used to decide on a teaching and learning issue. 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 distance educator Bates (1995).

Conclusions

We hope that this paper illustrates how the "Costs of Networked Learning" project has built on the work of distance educators, and also that the framework we have devised is equally as relevant to distance education as it is to networked learning. We are now approaching phase two of the "Costs of Networked Learning" project, where we will be taking our theoretical framework and developing it into a set of guidelines that will then be tested in three dissimilar situations. We are also widening the scope of our work to include the effectiveness of networked learning and other issues such as relevant business models.

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