
Establishing a support service

for educational technology within a university

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This paper covers some of the issues associated with the support of learning technology within an institution. It describes the activities of a working support service, and highlights approaches to some of the academic, technological, political and management issues that have helped it perform effectively over a four-year period.

Introduction

Over the past decade it has become increasingly apparent that computer technology is extremely effective in the support of teaching and learning. It has also become obvious that without proselytization and support, the adoption of this new method of teaching is patchy and frequently inappropriate. The raising of awareness, the training of staff and the provision of informed advice and support are necessary to facilitate the appropriate development of technology-supported learning within an institution.

The support paradigm which has emerged so far has two parts. The first consists of national discipline-based centres. These exist mainly within the Computers in Teaching Initiative (CTI) network and possess specialist subject knowledge as well as a knowledge of good practice within the academic field in question. Although personnel in the CTI centres have an ideal constellation of the necessary skills and knowledge, they are not available to academic staff in an individual institution on a day-to-day basis. There is therefore a need for local institutional support complementary to that supplied by national centres.

Jonathan Darby, in his comprehensive picture of UK learning technology in 1992 (Darby, 1992) refers to the fact that although a number of universities have developed their own CBL (Computer-Based Learning) units, with a few notable exceptions these are often limited in scope and frequently concentrated solely on IT skills. The University of Bristol has drawn on the early experience of units such as the Institute for Computer Based Learning (ICBL) at Heriot-Watt University, but has also looked closely at the experience and needs of individual academics as gathered by the staff of the CTI Centre for Medicine since its inception in 1989.

This paper seeks to encapsulate some of the structures, strategies and experiences which have arisen from the first four years of activity in a relatively modestly funded university-based educational technology service.

Structure and activities

In order to achieve its remit of 'promoting and supporting the appropriate use of technology in teaching and learning', the Educational Technology Service (ETS) of the University of Bristol undertakes three categories of activity, namely service, focused and academic.

Service activities raise awareness and inform client staff by means of a newsletter, an electronic mail list, a seminar programme, open days and a comprehensive advice service which includes technology, instructional design, project design and management, proposal construction and the use of global networks such as the Internet (Browning and Williams, 1995).

Focused activities consist of support for a number of defined learning projects each year. This has included evaluation of learning needs, acquisition of learning software and resources, and the production of learning material by University staff and its integration into the curriculum. These projects are carried out in collaboration with individual departments and are aimed at producing a measurable change in the quality and efficiency of a particular course or module. Productivity tools such as authoring templates for the production of interactive learning material and software for image digitization, storage and manipulation are developed to support these activities.

Academic activities cover the normal range of research and publication. These projects serve to expand the range of staff and expertise available to the University, and many form collaborations with other institutions.

Academic issues

Over the four years of the existence of the ETS, a number of issues and strategies have proved important. This paper concentrates on a few of the more significant ones; others are discussed in Longstaffe *et al* (1995).

In terms of academic issues, it is important to understand some aspects of the culture and the people involved in higher education before considering some of the approaches that it might be useful to adopt. There are three major factors in the university environment that must be taken into account when supporting learning technology. These are described here as individualism, teaching paranoia and time pressure.

Individualism

Most teachers in universities have grown up in a tradition which involves the preparation of a highly personal course, with much reference to printed material, but little to academic colleagues. Learning technology does not generally lend itself to such an individual approach. It is more effective when produced by teams or consortia which are likely to possess the mix of skills necessary. A collaborative attitude to the production of learning materials needs to be fostered by the staff of a support service. Locally, this has not only had the effect of generating

better-quality materials than in projects driven by individuals, but has also made materials more generally acceptable. The advantages of the team approach are further supported by Duguid (1995).

Teaching paranoia

University teachers often have little or no formal training in teaching or educational theory. Most academics are aware of this and, as a result, are not unnaturally reluctant to expose themselves by preparing material which will be more public than their usual lecture or tutorial. It is necessary to provide sympathetic and constructive support which will include tactful training in aspects of instructional design, course design, evaluation and so on. It is becoming apparent to the authors of this paper that as teachers become involved in the production of materials of this sort, their criticism of similar work becomes more constructive.

Time pressure

The entire university culture is under pressure from reductions in funding, increased student numbers and administrative load. This is not an easy environment in which to expect the investment of large amounts of staff time. Fortunately, there are always enthusiasts willing to commit quite unreasonable amounts of time to projects. Tactful direction and support of these enthusiasts has produced good results locally. In addition, strategies such as the use of sabbaticals and the student production of computer-aided learning have worked extremely well in individual cases. Student production of CAL is a regular feature of the veterinary anatomy curriculum at Bristol, and has produced a measurable increase in performance in conventional examinations (Garvin and Carrington, 1995).

Differing levels of staff expertise

It is important to remember that no university academic population is uniform with respect to expertise in learning technology. We find that our 'clients' divide into sophisticated, knowledgeable and naive groups. In 1991, a small cadre of sophisticated staff were already producing and delivering material with a degree of expertise. Support targeted to this group has been specialized, such as help with image recording and manipulation, CD pressing and the digitization of video. With good contacts, it has also been possible to help the departments in question with locating, interviewing and appointing staff appropriate to particular jobs.

A larger and growing group comprises those who are knowledgeable about CAL and who are engaged in its production or at least sufficiently motivated to begin doing so. We have found that this is the most important group to target, and the one which has produced the most results per unit-effort.

Understandably, the majority of teaching staff can still be termed naive with respect to learning technology, although they may have a range of IT literacy. The ETS has raised awareness with a departmental seminar programme on the basics of CAL backed up with printed and electronic information, workshops and demonstrations. Visits from relevant CTI centres have created a very useful start with several departments. Once a naive department starts to move towards the knowledgeable, assistance with the formation of CAL committees, the planning and design of learning projects and the construction of effective grant proposals have also been shown to be successful strategies.

Technological strategies

These strategies are not so much about the technology itself, but constitute ways of coping with the technology. It is important, for instance, to be able to advise on how close to stay to the technological cutting edge: too close, and a project can get bogged down in bugs and incompatibilities; too far away, and opportunities can be lost. Guidelines can be broken in both directions, but it is important to have them first. A second technological strategy is to try to avoid the 'high-tech fascination' that seems to lure many enthusiasts into committing too much energy to ultra-sophisticated prototypes which never see the light of day. The 'keep it simple' approach is vital.

Another observed problem is the failure of clients to understand, or technologists to communicate, the nature of the software development cycle. Any piece of developing software must undergo numbers of iterations between producers and computer-tolerant users before it becomes effective. This is often extremely time-consuming for the users, who must be briefed accordingly. Too often, projects have been seen to under-achieve because of unreasonable promises on the one hand and unreasonable expectations on the other. Other technological strategies include coping with conflicting delivery platforms, keeping data separate from authoring structures, and finding ways of coping with the moving technological goal posts.

Political and management issues

Ways to relate to university senior management and to complementary units such as computing services and libraries must be devised, and the political and financial location of the service established. The location of the ETS within a school of education has been successful both in terms of available expertise and credibility.

One important concept to bear in mind is that of the 'multiplier effect'. The focused training and support of a relatively small group of individuals will create a growing body of expertise and models of good practice which in turn support and inspire others. Our own dental school has progressed in this way over five years from a single enthusiast to the replacement of 98 hours of the undergraduate syllabus by CAL materials. The Bristol Dental School is now regarded as a national leader in the field.

A service of this type must also manage itself in a highly conscious and flexible manner. Most of its activities will not have been performed before, and it is vital that reviews of policy and direction are frequent and effective. The ETS has developed a set of activities which are designed to effect its mission statement. These activities form a team job description which devolves into individual job descriptions. All activities are subject to an annual review which is informed by monthly brainstorming sessions. These focus on a particular aspect of service-function or client-need.

Quality and value for money are important measurements for senior management to use in forming opinions about the optimal placement of funding. In order to achieve some sort of measurability, we return to the purpose which attaches to each group of activities, and then check to see how well those purposes are being met. Parameters such as departments producing CAL, departments delivering CAL, student contact hours and staff time saved are useful quantity indicators. Quality can be judged by staff and student feedback and assistance with rapid evaluation protocols (Edwards, 1995).

Organizational models for institutional and departmental support

Within the university

The ETS, based academically and politically within the School of Education, relates closely on a day-to-day basis to the Computing Service, Staff Development, the Library, the School of Education and other units such as Audiovisual Services and the Centre for Video Publishing. Staff training activities have, as a result, become virtually seamless, with staff from all units working in a collaborative fashion. With this sort of interdepartmental co-operation, it is becoming easier to identify training needs and satisfy them using knowledge and expertise located in the various units.

We have compared our activities and approach with other universities, notably Aberdeen, Heriot-Watt, Nottingham and Southampton. It is refreshing to note that, in general, they are grappling with similar problems in much the same way. Staff awareness, training and advice are dealt with in a 'service' manner with the production, acquisition, evaluation and integration of learning material being supported on a project basis.

Comparing our own approach to the complex relationships between academic and technological support units with those of other universities, it has become obvious that while a number of intra-university organizational models exist (ranging from the discipline-based initiatives at the University of Aberdeen to the more institutional-based approaches of Nottingham, Heriot-Watt and Southampton), the problems, strategies and solutions remain very similar. The key element seems to be the effectiveness of collaboration and awareness between units rather than any single organizational model.

Relationship to national initiatives

The most significant and useful initiative in terms of the needs of the ETS and its client academics is the discipline-based CTI network. The ability to call in a CTI centre with its discipline-based expertise, its networking and its knowledge of relevant materials expands the ability of a local service to create a positive effect in its community. A CTI visit to a relevant department has on several occasions been the trigger which has led to its serious involvement in learning technology. ETS staff have contributed to such visits, assuring personnel of the ongoing support and activities available locally.

In addition to the CTI, the development of the TLTP regional centres, as well as initiatives such as the Scottish Learning Technology Development Initiative (LTDI), clearly have a further positive effect. Provided that proper liaison is established between national and local initiatives, the synergy developed can only help with the enormous task of effecting the cultural change within higher education which is so necessary to its future.

Integration of the work of the service with individuals and departments

The section above deals with the relationship between the ETS and other learning-support units within the institution. Turning to the ways in which at the grass roots the ETS integrates its work with individual academics and departments, some of our experiences may be useful. With respect to focused or departmental projects, we have found academic ownership of the project to be essential. With assistance in project management, our most successful projects (in the Department of Professional Legal Studies, in dentistry and in veterinary anatomy, for

instance) have been clearly owned and driven by academics within the departments. On the down side, this has sometimes led to isolationism by departments, and unwillingness to involve ETS staff other than as service providers. This, in turn, has led to the consequent reinvention of some wheels.

Support and enthusiasm from a departmental head is an extremely powerful factor in the success of learning projects, even if this person is not directly involved. Conversely, negativity from senior personnel has led to loss of morale and momentum in some cases. One example of academic staff 'directed' to produce CAL material led to many delays in the production of that material, extra work for ETS staff, reluctant communications and severe delays in implementation.

Another stimulus for successful projects has been the award, by the University, of a number of grants totalling £100,000 per annum to departments for the development of 'excellence and innovation in teaching and learning'. The participation of the ETS in, first the structuring of proposals for this money and subsequently support for successful projects, has had a strong influence on both the high proportion of money awarded for technology-based solutions and the ultimate success of these projects.

Another stratagem is that of constant personal contact and encouragement. Many busy academics, left to their own devices, will procrastinate, delaying a CAL project to a severe degree. Gentle support, follow-ups, reminders and offers of help mean that project development stays high on personal agendas, making sure that academic time is made available within a reasonable timetable.

Finally, one of our most successful strategies has been to produce a simple template associated with one of the commercial authoring systems (Asymetrix ToolBook. We support this with one-day introductory and follow-up seminars. This template has now been used to produce some hundreds of tutorials in use with students in disciplines as separate as dentistry, anatomy, law and modern languages.

Evaluation of the impact of the service

This has not been an easy task. Because it is essential that academic departments have ownership of the various learning projects, it is difficult to apportion credit between the support service and the client department. In the early years, the impact can be measured, as in Figure 1, by demand indicated by numbers of departments advised or trained. Another useful measurement in the early stages is departmental involvement in the production and delivery of technology-based learning materials.

We have more recently introduced such parameters as student contact hours and staff time saved. It is our experience that these measurements need to be planned for in advance: it does not usually occur to staff responsible for the development and delivery of learning material that the measurements could be important. The ETS is also assisting departments to evaluate their own and imported materials incorporating student feedback and attitudes. At this stage, most of the evaluations are informal, with lack of staff time proving a barrier to more formal processes. However, they are positive, and staff are becoming more evaluation-aware, and planning better monitoring in the future.

Finally, and encouragingly, we are beginning to receive positive and complimentary feedback

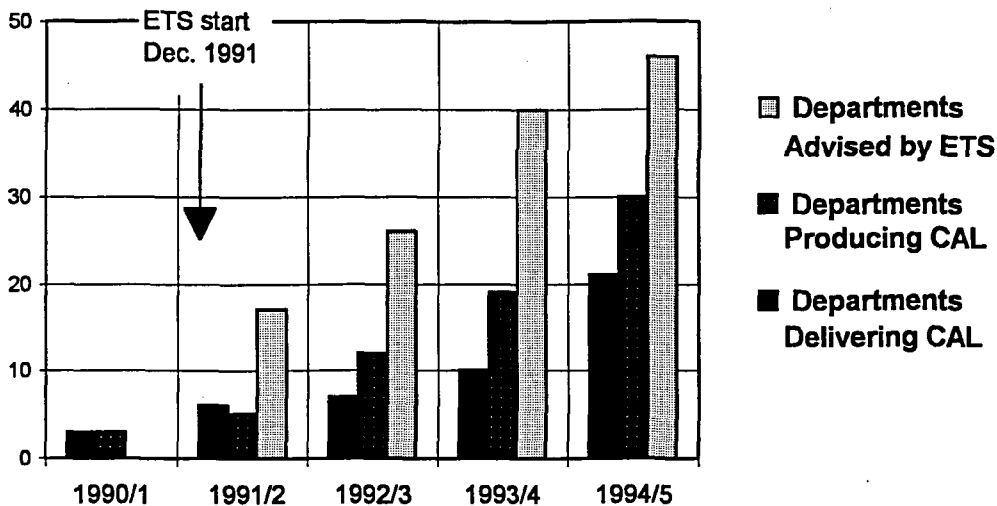


Figure 1

from the national Teaching Quality Assurance (TQA) visitations (for example, in one of our modern language departments) as well as from external examiners (for example in veterinary anatomy).

Conclusion

The impact of the ETS has been considerable. The number of departments advised has risen to 45 in the last four years. In the same period, the number of departments producing CAL materials has increased from 3 to 30, and those delivering some form of CAL to their students has increased from 3 to 21 (see Figure 1).

It is important to remember that a support unit in learning technology is not just a technical or even an academic service, but an agent to effect and underpin cultural change within an institution. It is also worth noting that activities in support of the adoption of learning technology have a number of unanticipated and significant side-effects. Client academics have demonstrated improved teaching ability, have developed project design and management skills, have structured collaborative teaching, and have acquired IT skills. Transferable skills such as these are already seen to be important in students, and their development is of course equally important in staff.

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