# Teaching Computing and Provision of IT Support: A Bridge Too Far?

Malcolm Wieck
John McPhee

School of Computing
Christchurch Polytechnic Institute of Technology
Christchurch
wieckm@cpit.ac.nz

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## ABSTRACT

This paper evaluated existing models of IT support for providers of ICT tertiary education and training and other organisations. It looked at the support afforded by IT infrastructure in meeting the needs of teaching staff and their ability to deliver courses of instruction. By contrast, different models of support were examined from industry in terms of their applicability to the particular needs of the tertiary education sector.

The findings so far have identified a useful basis for comparison of IT infrastructure effectiveness and highlighted likely areas of difficulty. It concludes with a discussion of alternative models of provision of IT services ending with recommendations for a more appropriate model that better reflects the particular needs of the academic environment.

## Keywords

IT support, Activity Based Costing, Partnership, IT Alignment.

## 1. INTRODUCTION

Does the provision of IT Services in an academic environment warrant special consideration not already dealt with by existing models of IT services? To answer this question, one must first identify any aspects of an academic environment that are unique from an IT perspective. We have identified four areas of differentiation that are discussed below.

### 1.1. Hostile Environment

In an academic computing environment, it is quite commonplace for there to exist users who put considerable energy and time into violating system security, access rights, and sometimes, causing considerable corruption, data loss, and other detrimental effects to the system in the process. Furthermore, these users are frequently quite talented and possess in-depth knowledge of these matters making the threat they pose even more severe. This places a much higher requirement for internal security and robustness than normally exists in non-academic environments.

### 1.2. Competing User Groups

Within an academic environment, there exist two quite separate groups of users; students and academic staff. These groups have distinctly different needs and would appear to require an additional dimension to the management of an IT Service that needs to accommodate both. In a "customer-focussed" approach, the needs of the customer, i.e., the student, are placed first, though how this should be achieved in practice appears to be a matter of opinion. For example, a well-supported staff member is clearly in a better position to provide material for their students in a timely fashion, but their problems might receive a lower priority under this scheme.

### 1.3. Client expertise can be higher than IT staff's expertise.

Academic institutions that have a Faculty delivering computing courses, often have greater expertise within their academic staff than is employed within the IT Service provision department. If this fact is not acknowledged at all levels then the potential exists for professional jealousy with concomitant protectionist and exclusionist activities to fester within the organisation.

## 1.4. High incidence of new and emerging technologies.

The very nature of research-based academic environments necessitates the use and experimentation with new and unverified technologies. This can provide a high risk to the IT system and be very demanding of IT resources and time. Emery (1974) comments that "… swiftly changing IT is causing difficulties for today's IT management. Realising the potential of new IT while avoiding associated risks can pose a complex challenge to IT management. Mistakes can be costly, but it is virtually impossible to be expert on all emerging ITS." This comment is at least as true today as it was thirty years ago.

# 2. IT ALIGNMENT WITH DEPARTMENT NEEDS

An important similarity that an Academic environment has to other environments is the need for an IT Service to directly address the individual needs of the different departments, rather than taking a 'one size fits all' approach. Hardy (2002) elaborates the IT Institutes Management Guidelines. These guidelines consider one of the biggest challenges is getting IT and business strategy in alignment. Another important consideration is ensuring the quality of IT systems is appropriate for the business needs. Concerning the delivery of IT services, a key consideration listed is the delivery of IT services in line with Business priorities.

The guidelines recommend that management should insist on properly defined services and service level agreements and that they be monitored and measured in terms understandable to the business. Long *et al.* (2002) present a design philosophy for the targeted and cost-effective delivery of information technology services that balances innovation and infrastructure needs within an academic institution. Their study was based upon their experiences with the provision of IT Services at Yale University. The challenge that they address is, "How to balance resources between desperately needed infrastructure that serves as the lifeblood of computing on campus and the need to explore emerging but unproven technologies or undertake new initiatives that infuse teaching and learning with technology? How to balance the huge needs of a single sophisticated research faculty member with the individually small, but collectively huge, needs of students for networking help?"

The 'Value' pyramid they propose is concerned with the allocation of resources and time. The point of interest for this discussion is that their framework pre-supposes that as the services required increase in technical risk and reduce in technological maturation, a greater level of staff participation is involved. Their article continues to propose a method of categorising required services into three categories: Foundation services that provide the bulk of IT services with little need for staff participation. Exploratory level where collaboration with academic staff is required and Innovation level where a strong partnership with academic staff is needed. It is recommended that the 'shape' of this service pyramid will vary for different schools.

Almost universally, IT resources, particularly human ones, are scarce. For this reason prioritisation of provision of needs must occur. It is important that this prioritisation is established in partnership between IT and each department. In many academic institutions, provision of computing services at the student level is placed as the number one priority. The reasoning being that the core business of the institution is educational delivery, and that the end product, the delivery, is more important than the process and methods by which it is achieved. This principle becomes more complex when Computing is the educational material being delivered. In many instances, to achieve the end goal priority, provision of IT Services to Academic staff directly involved, needs to take precedence over providing service to the students.

# 3. PARTNERSHIP

Hardy (2002) observes that "…Companies that have been successful with their IT often share a common theme – the business side is involved and committed to what IT does. They are engaged in all IT activities, run their operation with IT involved in every aspect of business planning and, most importantly, priorities, commitments and risk management are shared responsibilities, not disjointed management activities."

In a survey carried out by Gordon & Gordon (2002), the executives interviewed emphasised that the Business Units of the company were the focal point for the delivery of IT Services. They agreed that IT could not succeed unless the IT processes were owned by the business units, and in all companies surveyed, the business units drove the IT decisions.

Feurer *et al.* (2000) describe a Business Alignment framework implemented by Hewlett Packard. It is based around cross-functional teams that are given a charter by senior-level management to initiate and implement major changes. This allows business processes and information requirements to be defined in parallel with technology enablers and models.

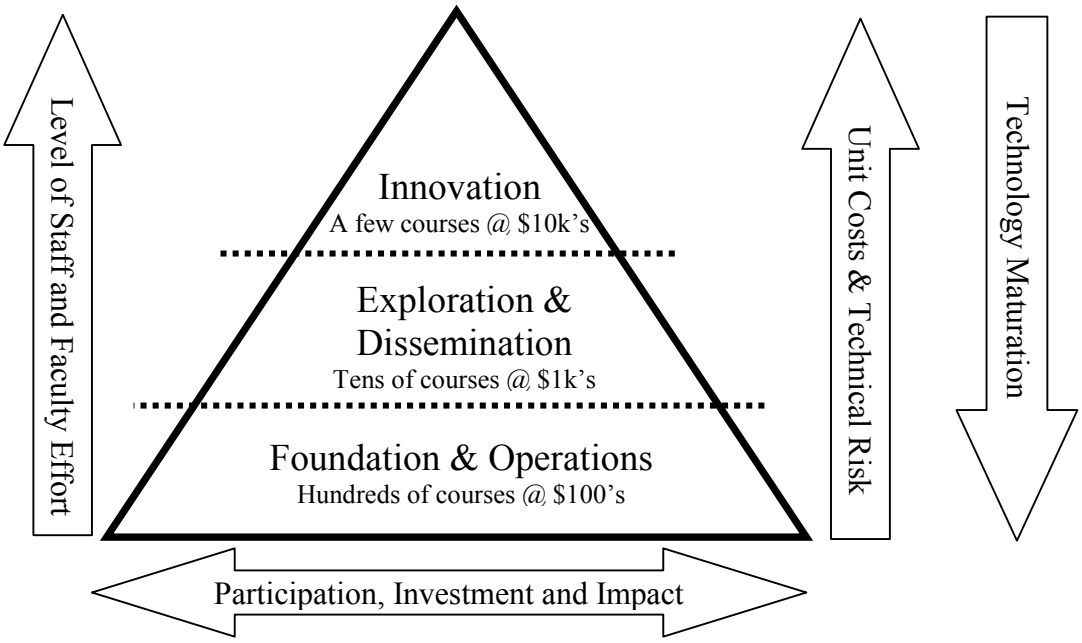


**Fig 1. From Long *et al* (2002)**

Partnership is vital, particularly in an academic institution where there is potential for professional jealousy. As well as the benefits discussed by the previous authors, partnership provides joint ownership of strategy decisions and contributes to corporate harmony.

## 4. POLICY REQUIREMENTS

Lyytinen (1987) comments on common bad-practice IS delivery noting that it has been commonplace to consider technical or cost-efficiency criteria, or to base it on intuition [Carlson 1974; Emery 1974]. Whilst this approach is easy to implement and makes intuitive sense to senior non-IT management, it has lead to the development of information systems that are technically sound, but nonetheless organizationally unacceptable or ineffective.

A similar observation is noted by Gerlach *et al.* (2002) "Traditionally, IT costs are treated as overhead rather than direct costs. Overhead costs are either inappropriately absorbed by IT departments or charged out equally to all business units regardless of individual consumption. Such indiscriminate cost-allocation schemes encourage the overutilisation of under priced services and the underutilization of overpriced services—both of which lead to suboptimal organizational performance."

The foundation for a successful IT service starts from the top of the organisation. There must be an unambiguous provision to allow different business units to have their individual needs catered for. This entails an easily understandable Activity Based Costing policy rather than a vague overhead levied against the Business unit. Unless IT Services are fairly levied then financial constraints force IT into a 'one-size-fits-all' policy.

The authors have observed an overhead-based levying system producing a variable overhead based upon enrolled student numbers. The percentage contribution per student is a figure negotiated with the academic department and covers all overheads; IT services are buried somewhere within that figure. Whilst this approach may well be satisfactory for the Foundation services at the base of the Value pyramid (Fig1) proposed by Long *et al.* (2002), it is not satisfactory for the upper Exploratory and Innovation levels of their proposed structure.

A danger of an Activity Based Costing method is the potential 'fragmentation' of IT Services. If Activity Based Costing is taken to a free-market extent allowing departments the latitude to out-source equipment and services, then the advantages of centralisation are lost. Policy must be in place to preserve the role of IT Services whilst allowing full alignment of Department needs and IT Services.