

Does the traditional IT department have a future in small to medium sized educational institutions?

Laurence Fouweather BSc MSc MIET MBCS

Summary:

With the increasing maturity of computer hardware and software systems, the traditional role of an IT department in educational institutions is changing. This paper discusses the changes, the effects on small to medium institutions and suggests a new model that should be considered, in order to improve the value that is obtained from their spending on IT.

The Traditional IT Department

Conventional IT departments have grown up over many years and have accreted functions and staff as new technologies have emerged, generally because they were seen as being the sole custodians of knowledge about "Information Technology" and its various ramifications. Most are now involved with the following:-

- Teaching equipment (including Audio Visual)
- PC workstation (including software and peripherals) acquisition, installation and maintenance.
- Network installation and maintenance (voice/data, wireless etc.).
- Servers:
 - File and Print sharing
 - Web including eLearning and Intranet
 - Email
 - Databases
- Security (Antivirus, Spam and Spyware etc.) and Backup.
- IT Helpdesk, advice and training.
- Application systems (Student Records, Alumni, Library, Accounts etc.)

Many IT departments have also taken on responsibility for additional areas such as web site design and maintenance and telephone system support.

The staff of IT departments are often seen by the rest of the institution as remote technical types who jealously guard their empire and enjoy fiddling with the technology rather than understanding what the users need to function effectively. Whilst this may be unfair to some, it is unfortunately only too common a view and one reason why it has come about is the history of some of the technology involved.

Changes in Technology

Until the last few years, to set up a network and configure servers and workstations required a deep level of understanding of the hardware and software involved and how they worked together. IT staff spent a lot of time and effort in getting systems to initially function at all and then continued to work hard to keep them operational.

For example, to configure a system to a local area network (LAN) required specialist knowledge of the particular network interface card, the setting of hardware switches or jumpers and editing of complicated configuration files for the software. Today the same operation requires no involvement with the hardware and software-driven tools are used to enter the minimum information about the network (usually just its name). The connection then configures itself. This streamlining and deskilling of previously complex tasks has continued right across the whole IT function with suppliers competing to provide systems that either self configure or need a minimum of human intervention.

In many institutions, if a PC develops a fault, it is still the case that it will be taken away to the IT department, where technical staff will see it as a challenge to solve the problem and eventually fix it. Unfortunately with all the pressures on staff time, it is common for such fixes to take days if not weeks, during which the end user is left without a usable system - or even worse with an old PC which does not provide them with the current version of their environment. With the use of modern system management or imaging tools, a PC environment can now be rebuilt in a matter of minutes and promptly returned to service. Hardware faults are now best dealt with by purchasing or leasing systems with manufacturer's on-site warranty and not by using IT staff time to dismantle the machine and attempting to repair it. Although this may cost slightly more, it will provide a much better service for the end user. Spare systems can now be purchased at a price which may be less than one day's salary for an IT Manager. Similarly items such as cables, keyboards and mice are now so cheap that a stock of spares can be afforded.

Another example is the rapid evolution of web editing software tools. Previously (and unfortunately still in some cases) code was written by IT staff to produce web pages. In many institutions now, non-technical staff use a desktop web publishing package to produce pages and load them onto the web server. The pages are then displayed using a preset template thus keeping the style consistent. The templates have usually been designed by an external specialist graphic designer. Staff no longer have any need to understand or write code and instead are able to concentrate on the content, which is the most important part.

A last example of the changes brought about by technology improvement is the use of data projectors in teaching. When these first became common in schools and colleges they needed technical assistance to configure both the projector and workstation so that they could work together. The next person to use the projector often then found that their PC would not work correctly until either the PC or projector settings were changed by a technician. Now, with the latest systems, the PC and projector can communicate with each other and completely configure the connection every time automatically. This removes the need for specialist technical help as teaching staff are quite capable of connecting equipment. Indeed with wireless technology beginning to appear in projectors, even this requirement is disappearing.

New technologies and services

As some of the older products of the computer industry have matured, new applications and systems have appeared. In particular the rise of the Internet and its applications has brought a new set of opportunities and threats into the educational IT world.

Security, which used to consist merely of locking the computer room door and running the data backup operation, is now a very complex area. The threat to a network from viruses, hackers and other internet related problems is very real and needs careful attention. Within a small to medium institution though, can it really be justified to spend large amounts on local staff resources to deal with these threats? An alternative approach would be to outsource the design and implementation of security for the network and its applications to a company specialising in this area. They will have expertise and experience of all the latest systems and more importantly the latest threats, a capability that is almost impossible to replicate using internal staff. If necessary they will also manage and keep up to date the various security solutions they have provided.

One change that the Internet has brought is the availability of external hosting services with very competitive charges. This has direct implications for those institutions running their own email, web and application servers.

Many institutions think that systems they would like to implement such as a VLE or Learning Platform can only be run on their own systems and the cost of doing this is a disincentive. This is no longer the case as there are service providers for most of the systems on the market, including the 'free' open source packages. Many local authorities already provide shared services. This may be a particularly attractive idea for an initial trial as it enables the teaching staff to evaluate systems without incurring any overheads within the IT department. An alternative approach might be to use a service shared by several institutions as a collaborative venture. Indeed this is already used by several FE colleges and universities.

As another example, it is now possible to rent a mailbox on an externally hosted Microsoft Exchange server for as little as £4-5 per month. This provides all the facilities of MS Outlook/Exchange without the considerable overhead of running an in-house server. For many installations, this consumes a significant amount of the IT budget, consisting of:

- Hardware and Software expenditure
- Staff costs in maintaining, upgrading and trouble shooting the Exchange software.
- Backup of the file store (including backup devices and tape consumables)

- Virus and Spam blocking software.

All these costs can be avoided by using an external service. For an institution of around 200 teaching and ancillary staff, the cost for an external service is likely to be around £12,000 per annum, with no capital costs involved. Running an in house Exchange server is likely to cost at least £20-£30,000 per annum (mainly staff costs) with a capital cost every two to three years of around £3-5,000 to upgrade the hardware and software. It can be seen that in this area alone, considerable savings can be made. Another advantage of the hosted approach is that the service provider will have technical support staff on duty - no more worries when the only resident expert is on holiday or leaves for another post.

Changes in users skills.

For much of the early uses of IT in educational establishments, users in many areas had considerable problems in using the equipment or systems they were provided with and needed regular local support. Very few had any experience of IT outside the institution. This has changed radically. Staff at all levels now use a PC with their own internet connection from home. Training has been implemented for most staff and the general level of their IT skills has undoubtedly increased. These two factors mean that most staff are now comfortable using technology. In addition, younger staff generally have well developed IT skills gained whilst at college or university and are often found acting as local IT support to other staff in their particular area.

This has removed much of the low level advice needed from IT Help desks but replaced it with much more specific questions about getting the best result from a particular piece of software, a task that IT staff are usually ill equipped to provide. Traditionally IT staff are not trained in secretarial, database querying, graphic design skills or marketing issues, which means that many end users do not feel the IT department are able to help, and conversely that the IT department feel they are being asked about areas that are not their concern. What is needed is specific help matched to particular applications. This can come through better training of existing users and access to skilled external support services.

Changes in the external environment.

Administrative IT systems at many institutions have usually evolved over some years in distinct departments, each with their own applications (e.g. Enquiries, Accounts, Alumni and Student Records). Few people would argue that these systems have not become essential in the day to day running of teaching and administration. However, they have usually been implemented by the IT department and the area concerned in a piecemeal fashion as each procurement has been approved and funded, without necessarily thinking about how they are to be integrated.

Unfortunately as systems have been implemented and replace paper based processes, a new problem has emerged. This is the often unforeseen issue of

'islands' or 'silos' of data, each needing to be created, very often with a large peak at the beginning of the academic year, and then maintained. For many institutions this in turn creates problems, particularly ensuring that any changes are reflected in all the systems as soon as possible. An additional complication may be that no one person has an overall or complete picture of the total data holdings in an institution.

Until recently this may not have been a problem since much of the reporting to external bodies carried out by institutions was required to be of a general fixed format which seldom changed. However, the picture now is very different, with the requirement for institutions to respond quickly to constantly changing requests for detailed information from government agencies, students, financial bodies, teaching staff and many others. In addition there are also moves for information to be transferred automatically between institutions and other bodies. An example of this is the UCAS application which is moving away from being paper based to be completely electronic.

The only realistic solution for small to medium institutions is to use a modern integrated system, of which there are several, from one of the specialist educational back-office system suppliers. This will provide a strong foundation in which the data required by an institution is stored once and processed by different areas as needed to meet their requirements. In addition, many systems will import and export data in standardised forms suitable for use with internal subsidiary systems (e.g. a Virtual Learning Environment or Library package). This saves large amounts of clerical effort by removing the need to enter data more than once. It also greatly improves data accuracy.

Where do all these changes leave the traditional IT department?

The traditional IT department is now caught between several conflicting pressures.

Firstly the knowledge and experience that they needed in the past have largely been overtaken by technological advances which have deskilled many of their tasks.

Secondly the knowledge level of users has increased and they now need help in applying IT in their professional roles at a level which most IT staff are ill-equipped to provide.

Thirdly, they are now expected to take on responsibility for all the latest technology and systems (eLearning, Mobile working, Wireless networking, mobile phones etc.) to ensure that the institution is seen as being modern and progressive.

Finally, and in common with most parts of education, they are faced with strict financial controls.

An alternative model for the future.

The future IT department needs to be changed to be focussed on helping users get the best value out of the systems installed in an institution and less on technology issues. Some local systems and functions should be considered for outsourcing to reduce costs.

This will need changes in the role and skills of the staff, particularly of the IT Manager who will need to manage contracts and monitor Service Level Agreements with external suppliers. In addition, they will need to become skilled project managers to work with suppliers to deliver new systems on time and within budget. They will no longer need to have a deep technical knowledge.

Technician level staff may still have a valuable function to perform, depending on the needs of individual institutions, but their skills base will need to be changed and broadened. They will need to become more service oriented to ensure maximum availability of systems, rather than 'fixers' of obscure problems.

Small to medium sized institutions will no longer need IT department staff at the programmer level as these functions can be handled more effectively either by external suppliers or by training of existing staff in specific functional areas.

How should institutions approach this problem?

In tackling this, the management of an institution will need to use internal staff, borrow suitable staff from another institution or local authority or use an external specialist consultancy. Whichever is used, the steps are the same:-

1. Develop an effective IT Strategy derived from the overall strategy of the institution. It is vital that it has the approval and support of the senior management team and has been developed in consultation with the teaching and support staff. It must aim to improve the effectiveness of IT in supporting the teaching and learning activities and the administrative functions of the institution.
2. Review the existing infrastructure (including all staff, hardware and software) - is it capable of supporting the new IT strategy? Is there anything that needs to be done to improve or replace it?
3. Examine every aspect of the work of the IT department. Are there any activities which could cease as a result of adopting the new strategy? Are there activities which more properly belong in other departments (e.g. website maintenance)?

4. Look at the real economic costs of each remaining activity. Could this be better or more economically run by using external suppliers? In carrying this out, ensure that all staff time is properly accounted for as this is usually the largest cost.
5. For internally or locally developed applications, carefully consider the support costs (now and in the future). Could they be replaced by a commercial system with an external support contract? What would happen if the local developer(s) left the institution?
6. Develop and implement a training plan for staff, both within the IT department and those in users departments who will become their application system experts.
7. Review and refine the strategy as time passes and ensure that new IT systems or activities are only implemented when a real economic cost has been established.

Conclusions

ICT is now an indispensable part of the modern education world, but many institutions are struggling with an IT department which is still functioning in a traditional fashion. What is needed is a complete reappraisal of the functions and service it provides. This can only be accomplished by using the approach outlined above.

Some institutions will not be ready to go this far in one step, but still need to ensure that their current IT department is delivering what they need. An evolutionary approach may be considered more appropriate as equipment, systems or staff change.

If you would like to discuss this further and how it could be applied in your institution, please contact me:

Laurence Fouweather

Email: enquiries@oxact.com

Phone: 01865 451670