

Smart use of IT in the teacher training college and some potential barriers to its implementation.

Devadason Robert Peter

Unit Teknologi Maklumat, Jabatan Teknologi Pendidikan

Maktab Perguruan Batu Lintang

drobertp@tm.net.my

<http://members.tripod.com/~Devadason>

Abstract

As a nation moving towards the Information Age, IT is seen as an important enabler towards this goal. The teacher training college plays its part by preparing teachers who will directly be involved in preparing our children for this new age. This paper discusses some ways the college can adapt itself to fulfill this goal more effectively. It also discusses some current practices that may need to be reviewed for the full impact of the implementation of IT to be realized.

Introduction

As the nation progresses toward the goal of reaching the Information Age, IT is seen as an important enabler. Despite the economic slowdown, a lot of money has been invested in encouraging IT use in education. The Smart School Project, one of the flagship application of the MSC is a case in point. While so much money is being spent on IT, it is important that this investment is used efficiently to justify the high cost involved.

At the same time the teacher training colleges play an important role in providing to trainees a real model of how IT functions in education. Since most schools are beginning to play more serious roles in IT, they have no exemplary models to follow except for the models of other technologies like radio and television that they are familiar with.

This paper describes some areas where the teacher training colleges can contribute even more efficiently as well as provide models of smart living with technology for the trainees and others to emulate.

Management of resources

There are at least three characteristics of computer systems that together make them different from any other resources that are found in the college/school. Computer systems

- • are expensive investment
- • tend to go out of date quickly
- • need frequent maintenance

These characteristics effect its management in the following ways among others.

Smart Purchasing

Computer Systems: Computers are closely associated with IT. How does the college get computers? They normally either wait for computers to be given (e.g. the Teacher Training Division buys 30 computers for your lab or a local dignitary donates some computers) or purchase them using their own resources. Either way someone has to do the purchasing and what model do they follow?

The closest item which matches a computer system is other electronic equipment like television, and video players. The model used to purchase these equipment are 'buy the cheapest and keep forever' (Gates, 1996). Since computer systems are expensive as they are often bought in bulk, the tendency is to buy the cheapest. Cheapest may not necessarily be the answer as normally a cheap computer system is either one where it's technology is out of date (processor no more in production) or it is of inferior quality, resulting in need for excessive maintenance cost or altogether unable to work with newer hardware and software quickly. Even donors do expect some sense of permanency when they donate (doesn't telling someone who just spent RM90,000 buying you computers that these computers will have to be thrown away in about 3 to 5 years sound de motivating?)

There is thus a great need for the creation of new models of purchase to fit the three unique characteristics of computer systems.

Essential but sparingly used resources: What about resources like the CD Writer, Digital Cameras and special software that are used seasonally? Is it justifiable purchasing them? Even if they are provided free, is it justifiable for the college to having exclusive rights to using them sparingly? One solution would be to keep them centrally in say the district resource center to be accessed by a larger population.

IT related Books: One has to have access to books on IT to keep up to date on new developments and skills. IT related books are generally very expensive and go out of date very quickly and they do not fit well into the college library purchasing system, let alone college lecturers budget constraint. How can lecturers and trainees gain access to this source of information? I believe the answer lies outside the college wall. State and district libraries can play the part of stocking their shelves with current books and they will be more cost beneficial since more people have access to them.

Smart Maintenance

Televisions and other electronic goods seldom need maintenance but computers often do and since they are bought in bulk the maintenance requirements are increased that much. Some may argue that buying more expensive computers will help (yes, I know of computers that last at least a year running 24 hours a day) but then there is still software problems like corrupted software and system being attacked by virus. To make things even more difficult, you need trained personal to be able to perform the maintenance task effectively. It looks ridiculous to a casual observer not immersed in this new technology that specially trained personal be needed to maintain computers when other non computer electronic equipment have hardly given any problem. The US Policy Information Report (1996) reports that the cost of yearly maintenance comes to about one third of the initial lump sum investment in the technology. Sometimes an institution is fortunate to have self taught guru's who due to their efficient manner of handling maintenance give the illusion that maintenance is not a periodic and costly issue. While their contribution should be acknowledged and appreciated, it should be noted that they are giving a false impression to policy makers and would be adopters about the periodic and costly (man hours and financial) nature of maintenance.

Where there are sufficient hardware to warrant full time staff, qualified technicians should be employed and sufficient yearly finance be budgeted for maintenance.

Providing Smart Access to Resources

We know that IT infrastructure is expensive and will go out of date quickly. Yet realistically the person in charge of computers is often under pressure to 'keep all things clean, safe and in working order'. The common approach is to limit its usage. This is a reasonable model to follow in dealing with other electronic equipment. However, for this technology, we are dealing with the issue of justifying the high investment and the short span of time this investment is going to be useful.

Another way of looking at this issue is to look at what drives policy formation of access, management constraints or client needs? For example, when a policy is made that requires labs to be opened only during office hours to save on cost, the policy is determined by management constraints. The same issue when seen through client need could be, clients need access to the lab at least till midnight to fulfill the informal requirements of the course so how can the labs be open and yet the financial constraints are solved - perhaps students could chip in some money to sustain a lab attendant and pay the electricity bill, perhaps there are other methods. So we arrive at very different ways of dealing with access when using different view points.

Development of software solution

Basically one can broadly categorize software in education into those for office automation and those for teaching and learning. Software in the office automation categories include student information system, timetable system and library automation system. Software for teaching and learning would include among others, productivity tools and CAL systems. Most office automation software are generalizable to all colleges, some can be purchased, some can be developed for all colleges to use. Many software in the teaching learning category are customized and

can be purchased, but there are many that are specific to the college, class or individual need and have to be written locally.

Traditionally, some very innovative staff who saw the potential of the computer took the initiative in developing solutions for local consumption. So you see isolated cases of software being developed by an individual in different institutions. Nolan (Nolan, 1979; Nolan, 1977; Zisman, 1978 as quoted in Vischer, 1991) calls this the initiation stage. In stage two (expansion), Nolan explains, there is greater awareness among institutions and more applications are developed especially to deal with labor intensive activities like student registration. These application are also more efficient. However they are usually stand alone and do not work with other application. More importantly, administrators are unable to make use of various types of data to make intelligent conclusions since different applications are not compatible with each other. In the third stage (integration) attention shifts from management of computerization to management of information. Systems are developed to support management in planning, decision making and control activities like timetabling, analysis of absenteeism. The use of LAN and RDBMS make this shift manageable. In the fourth stage (stabilization) existing system are refined and modified to fit into newer developments in the organization.

I believe the teacher training colleges have many self taught programmers and have through their own initiative come up with some wonderful solutions. However using Nolan's description, the college system is in danger of keeping these industrious programmers at stages 1 and 2 if there is no systematic actions at the central level to get them together to work on generalizable office automation solutions at the 3rd and 4th stages. I mention central level because, then it is worth employing professionals (systems analysts and programmers) to work together to come up with efficient solutions while lecturers energies are spent on creating computer based solutions for improving teaching-learning. The Ministry of Education had the foresight to send some of our very talented staff overseas in this area so that they can contribute at stage 3 and 4 level when they come back.

Access to Internet Technology

How do you support new technology like the Internet which has potential in making our country a global player in education? How can lecturers and students study the internet as tools for teaching and learning? Many lecturers are excited about the potential of the Internet in teaching and learning and have invested a lot of time in it.

However there is another realm which offers immense possibility for educators (Robert, 1998); creating educational solutions in the web (e.g., on-line web instruction and computer mediated communication). Unfortunately, one has to have access to space in a dedicated web server to explore the full potential of this medium. The normal trend is for colleges to try to get a server, but it needs constant attention by competent technicians. A better alternative would be for the Teacher Education Division to set up a dedicated web server for use by the colleges which could be better managed by computer professionals. There are a number of reasons to this suggestion among which are that this technology is new and setting up a web server, let alone LANs is no small task for amateurs. Furthermore it should not be the domain of lecturers.

Doing the Impossible

The expensive nature of IT investment lend itself to the potential of neighboring communities joining forces together to share expensive facilities so as to make them affordable. For instance, it may appear not justifiable to afford broadband cabling systems for Local Area Networks and Internet Access. It may turn out feasible if neighboring schools and private bodies join together to work out a solution.

Sometimes working together with the local universities may benefit us greatly especially if opportunities are found for undergraduate technology students to do their internship. They periodically bring new ideas about technology to the education community and we offer them an opportunity for a good portfolio.

Conclusion

IT is an expensive commitment. The computer system necessary to support IT opens up new challenges. Five themes have evolved from the discussions above. They are

- There is a need for a change in the model used for IT management
- Roles in IT can be distributed to the community to optimize cost benefit
- Policy makers can be more aware of specific problems this technology creates
- Policies should be driven by client needs and not management constraints
- Some of the functions in IT are better done at a central level, where it would be more feasible to employ professionals for that purpose.

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