Quality assurance issues and process relating to ICT-based learning

Eveline Fallshaw   &   Carmel McNaught
RMIT University   The Chinese University of Hong Kong

Many Australian universities differ from those in other parts of the world in their administration – their students live and work over large geographical areas and various state-based structures are well entrenched in Australian experience. Quality assurance of distance education using traditional methods with little or no face-to-face contact is therefore not new. However, the appropriate adoption of the various types of ICT for flexible delivery poses a new challenge to build on what has been learned in the past and to develop relevant new processes which will satisfy students by delivering high quality learning outcomes. It involves for the first time a reliance on robust technology which is simple for students to use and easy for academics to adopt and integrate in ways which enrich the learning. The demands ICT place on staff development accompany the need to rethink ways to assess and assure the quality of the courseware produced using these technologies, and of assessing and evaluating the student learning outcomes.

Quality and organisational structure

An understanding of the importance of organisational culture in universities is important in designing quality assurance processes to apply to the use of ICT in teaching and earning, in making sure they are appropriate, and in being confident they will gain acceptance. Effective management of universities is improved when the values of professional groups with strong-shared cultures align with the organisational culture of the university. The design of quality assurance processes in teaching needs to take account of the values and roles of such groups, and to build on them from the top down and the bottom up, to maximise the effectiveness of such quality assurance processes. Universities traditionally work through coordination of collective decision-making processes, and this provides an important basis upon which issues relating to quality are played out (Millet 1962 and Taylor 1983, cited in van Vught 1989[a], p.14). Quality assurance systems should therefore reflect and build in processes that are empathetic to

- Seniority and expertise as sources of authority that place high value on individualism
- Self-management
- Discretion over work
- Self-regulation
- Development of the profession

- Strong belief in, and need for, autonomy

Academics can comply grudgingly with quality assurance processes because "it is the rule"; or they may comply because they have internalised the system as a reflection of their own values. It is only in the latter way that compliance will become self-sustaining without enforcement or policing (Handy, 1993). It is from such self-sustaining compliance that high quality teaching and learning outcomes will come. The challenge is to design a system in such a way that it will become self-sustaining.

Quality begins with IT planning

The Royal Melbourne Institute of Technology University (RMIT) is one of Australia's major universities. It has a national and international reputation for its learning culture, the performance and employability of its graduates, the standards of its awards, its impact on a wide range of industries, and the outcomes of its applied research and development programs. As budgets shrank and the demands of information technology grew, RMIT determined it was important that there was a coordinated and planned approach to maintaining and developing the significant investment already made in information technology and the supporting infrastructure to support its education and training activities.

RMIT and other universities confront similar issues concerning IT resource management and planning. IT in universities is a strategic asset which is increasingly critical to the delivery of teaching and learning. Increasingly new students come to university prepared with a broad range of computing skills and with expectations of the provision of on-line services similar to those offered by other industries. The use of network and distance learning technologies allows RMIT to provide an anytime, anywhere, interactive and collaborative learning environment, but brings with it the need to evolve appropriate organisational models to meet the learner's technology needs and assure the quality.

An organizational plan for how to proceed is an important starting point. RMIT's Strategic IT Plan delivered a vision for organisational, technological and application strategies together with an implementation plan identifying a timetable and funding requirements. It provided a systematic approach to guiding RMIT's IT investments over time with the goal of achieving the desired teaching and learning outcomes. This Plan coordinated the requirements of the units within RMIT responsible for all aspects of ICT in education and training and identified those functions which need to be coordinated through the development of policy to ensure effective and efficient integration of central and local IT systems and the optimum allocation and use of scarce resources. The importance of a stable technological platform in delivering student satisfaction with the use of ICT in learning cannot be underestimated.

In developing the IT Plan, an IT Alignment Project was undertaken to define the IT and process changes needed to allow RMIT to take advantage of the opportunities of the changing marketplace within education and training. The outcome of this project included a high-level process model, and identification of existing initiatives and of the gaps – in staff capabilities, in technology infrastructure, and in content and application systems - between the planned future

and what was already being done. The second phase of the IT Alignment Project focussed on implementing IT strategies and developing objectives, timeframes, and resource requirements for education and training, and to bring coherence to existing initiatives. This included architecture and delivery platforms, user requirements for new student, and product delivery and management systems, and developing a coherent process for planning and implementation applicable to current initiatives and future projects. The planning methodology adopted in the development the overall plan included certain stages These provide a useful checklist for the development of IT plans to support the adoption of ICT:

- Identify the external factors that will affect and influence strategic directions
- Identify IT trends and emerging technologies that the university could take advantage of over the next 3 to 5 years
- Review and assess the current IT environment
- Revisit the relevant aspects of the university's teaching and learning strategy that cold be specifically enabled by IT
- Identify and document a vision for IT
- Identify the strategies and actions required to implement this vision, together with policies, projects, funding and resource requirements.

The factors fuelling the redefinition of education as distributed learning include re-skilling staff, growth of the non-traditional student markets, remote interactive technologies, and brokering arrangements with new partners. The challenge is to manage and meeting expectations in the face of rising demand, while providing optimal IT support in a complex networked environment. The critical success factors underpinning high quality learning using ICT lie in appropriate levels of standardisation, integration and reliability offering a seamless foundation for individualised local environments for innovations in teaching and learning.

Alignment with T&L

The strategies for managing IT need to be closely linked to the organisational structure, teaching, learning and business strategies of the University. For example, to maximize the overall effectiveness of IT in a manner aligned to RMIT's internal structure, it was determined that IT should continue to be managed differently depending on user needs in each Faculty rather than being centralised. However it also required strong mechanisms to provide an overall IT framework across the University as a whole. (Blanton, Watson and Moody 1992; Yetton et al 1997). The integration of Faculty IT plans with that of the Library was essential for access to digital information resources which nowadays underpin the curriculum. An effective integration mechanism was needed to promote feedback on IT performance and gain cross-functional participation in IT planning while facilitating communication among and between IT groups and user groups. This was particularly relevant to managing and developing ICT which require considerable coordination across multiple stakeholders.

While there is a demand for low cost, innovative, effective and efficient IT systems, this is likely to generate a natural tension as lower costs are normally associated with standardisation and centralisation, and innovation tends to be

associated with decentralisation and devolved control. The solution for RMIT was to seek a balance between centralisation and mandated adoption of standards, and devolution. It determined which activities and functions should be centralised and standardised and which should be devolved. The optimal model obtained the benefits of a centralised infrastructure without many of the disadvantages associated with a strong corporate control of IT. In particular RMIT is now obtaining the cost benefits of a common IT infrastructure without losing the benefits of user-driven IT innovation in teaching and research in the Faculties.

There are two features underlying this model – the shift from high cost, fragmented systems proliferation to a common infrastructure, and the empowerment of the users to run specialised local applications for teaching and research and the ease of embedding and maintaining ICT across the curriculum. A standardised infrastructure, once in place helps to maintain the users' current systems and their business unit independence, as well as giving them options for new courseware, and enabling integration and interoperability across the university where required. There is significant advantage in introducing such an enabling infrastructure as it meets the needs for certain common teaching and administrative systems across the university, while supporting autonomous innovation in the faculties in IT for both on-campus, and distributed, teaching and learning.

Planning for the use of ICT is a first critical step in assuring the quality of the learning outcomes for the students. In particular RMIT's original plan made a number of specific stipulations to assure the successful implementation of the RMIT Learning Management System. The aims were:
- To ensure that the student-centred teaching and learning focus was not compromised or subsumed by the technology
- To build teacher and learner competencies and confidence which in turn ensured the appropriate use of technologies as part of the teaching and learning effort
- To provide management processes to ensure quality outcomes and the effective deployment of resources to support associated design, development and evaluation activities
- To deploy appropriate infrastructure, systems and support services.
- It was therefore critical to ensuring a student-centred approach to teaching and learning that quality assurance guidelines and measurable standards and performance indicators were established top down to adhere to standards, and bottom up, to integrate with teachers' judgments on the appropriateness of the educational applications of the technology.

QA - Top Down and Bottom Up

While academic hierarchy is usually "democratic" and "bottom up", and that for administration is normally "bureaucratic" and "top down" (Mintzberg 1979), nevertheless university QA systems require a framework within which a large number of people, of more or less the same level of ability, work together in a common endeavour and share the same resources (Jaques 1976). In reality, there are a number of stakeholders in the work of universities and some of these have different priorities and values. They include students, employers, teachers, managers, accrediting bodies, and society as a whole (Vroeijenstijn 1991, Yorke 1991, Harvey 1992, Berg 1993, Frederiks 1994). Changes to ways of monitoring, assuring and assessing the quality of education are universal with increasing interest in value for money, accountability, and greater access being commonly observed. ICT has the potential to allow greater flexibility in access, in choice of pace and place and in student choice of preferred learning style. Whether the teaching is predominantly electronically delivered, or a mix of both electronic and face to face, the concerns of stakeholders are similar: increased accountability and quality assurance with effectiveness in achieving the desired outcomes, preferably for the right price.

In general, when education provides valued outcomes to those involved, quality is judged to be high. A corollary of this is that quality has no real meaning except in relation to purpose or function. (Ball 1985, Reynolds 1986 and others). To find a secure basis to define quality in the use of ICT in teaching and learning, it is helpful to describe programmes of study as goal directed. These goals then provide a framework by which quality can be assessed (De Weert 1990).

While teaching quality will be judged good by whether or not it contributes to the achievement of purpose, the key question is - who defines the purpose? If one's objective for a Programme is about producing a highly trained workforce then quality is measured by the ability of graduates to find work. On the other hand, if the Programme design is judged on the basis of the efficient management of teaching provision, then non-completion rates and unit costs are appropriate measures. The view of the group wielding overall control over the quality assurance process will determine what is considered to be the best set of measures to indicate whether their purposes have been met.

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