

## **The New Product Development Process - On-Line Education: Changing the University towards a Continuous Quality Management Approach**

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Open and Distance Education (ODL) has enormous potential for freeing education from the traditional boundaries of school, college or university and making it available to all through the use of Information and Communications Technology (ICT). This has raised concerns amongst the academic community about the breakdown of the academic links between staff and students.

Organizations are changing their new product development processes in order to introduce improvements to innovation performance.

Change is the main feature of *university education* today: What the culture of higher education should be in the new, technological world?

To form a convincing structure for the university in the new age, we must develop both the pedagogy and the means to produce quality material, the institutional policy and practice such that students are enabled to study on-line, to reward properly the academic staff, to involve all employees in the school organization, to develop partnerships with other institutions, etc.

The purpose of this study is two-fold. First, we wish to characterize the changing process to examine whether the principles of TQM approach represents a continuous quality improvement in this new academic age. Second, we wish to consider some issues in this process, according to these principles.

In Portugal, case studies in some institutions of higher education are being developed, in order to contribute to the quality improvement.

We agree that the actual changing process tends to consider components of quality improvement, but we are finding some significant gaps between practice and theory.

**Keywords:** ODL, New Product Development, TQM, Certification, Benchmarking

### **Introduction**

Open and Distance Learning (ODL) systems have generally been introduced during the past 40 years to meet the increased demand for educational opportunities at all levels by supplementing face-to-face provision while striving to balance the access-cost equation by reducing infrastructure and full-time faculty costs.

The best single - mode ODL providers have been acutely conscious of the need to devise processes that can assure the quality of learning outcomes and thereby defend the legitimacy of their programmes and awards. Dual-mode (distance and face to face) institutions, for their part, have been required to develop quality assurance protocols that demonstrate that their open and

distance offerings are of equal quality to these offered in parallel by traditional classroom-based methods.

In this new, flexible learning environment (three-way convergence of distance and face-to-face education and electronic technologies), the instructor or teacher is no longer the sole (or even the main) source of knowledge. The internet-based technology provides opportunities for both synchronous and asynchronous communications and he plays the role of facilitator, supporting active technology-mediated student learning. The methodologies used embrace the available new technologies and provide opportunities for using a range of methodologies concurrently in order to meet the different learning needs of students.

We can consider benefits for students and staff. In Internet environments users can move from being consumers of information to being producers of information. When an individual first ventures into the virtual space of the Internet (the Net), and particularly that section known as the World Wide Web (the Web), they typically explore in relatively random ways. They move from site to site following links that interest them at that time. They are browsing. As their skills in searching the Web and in downloading files develop they become "hunters and gathers" of the information resources for which they have a use. They have become managers of the information. These are necessary stages for Web users to pass through. As they join the community of users of the Web they become publishers. They may contribute to a chat site, send messages via e-mail or set up their own home page. In these and many more ways they help create the Web as it evolves.

Jonassen (1998) poses two views of instruction which he says are often viewed as incompatible but are in fact complementary. These are Objectivist and Constructivist conceptions of learning. Jonassen argues for a Constructivist perspective on instruction so that learning potential of students is maximised. For example, the lecturers who designed the subject intended to create a computer mediated public communication space to encourage a public discussion of the issues within their subject.

### **Changing the University - Some Reasons**

The most significant influencers of change have been globalisation and technology. Technology has clearly been the main reason for the accelerated globalisation we have witnessed.

Globalisation means that commerce/business is now conducted on a world stage rather than a local one. E-commerce is the mechanism by which enterprises deal directly with their customers and business partners. Education itself is a major business in our world and increasing opportunities are available for students (customers) to learn via this medium.

Within this global context the need for educational organisations to work with enterprises becomes apparent. Operating in a competitive global arena demands education and training 'courses' that are relevant in the market place.

Constructing partnerships which achieve relevancy and successful outcomes for students requires careful consideration of the nature of the relationship.

A core issue in constructing successful partnerships with industry is the need to develop a shared understanding of the alliance: no one organisation should dominate or presume hierarchical mechanisms. Each must be valued for their expertise and developments should be based on a shared vision for the alliance.

We need more and better partnerships to help to deliver lifelong learning for the social and economic improvements that we all want to see.

There has been a major shift from institutional, centrally controlled curriculum and delivery to collaborative partnerships between education organisations and industry. The following are some of the issues that have influenced this shift:

- International competition and the growth of global markets;
- The growth and effect of information and communication technology on education and industry;
- The development of new industries and new types of jobs;
- Changes to the way in which work is organised and to the type of work available;
- Unemployment issues;
- Expectations that industry will assume a greater role in identifying training needs and in resourcing them;
- Expectations that all people will have access to education and training;
- Expectations from industry, enterprises and individuals that education and training will be available in a range of flexible options.

In addition, the issue of ensuring that the labour force is lifelong learners, able to upgrade and update their skills throughout their working lives, involves:

- Employers, committed to training and developing their employees;
- Individuals, committed to their own development through training;
- Providers, of which the largest are in further and higher education, who respond rapidly to the needs of employers and individuals.

Spender (1995) believes that communication and information technologies have changed the basis on which society rests. She believes that we are witnessing a move from a print based society to a computer based one. The universities will have "to change their purposes and their practices. Scholarship, knowledge, research and teaching are significantly different when done electronically" (1995, p. xxiii). Le Grew and Calvert describe the changing political and economic climate in which universities operate and suggest that the key factor stimulating changed practices in universities is a "dramatic rise in participation" (1998 p. 5). Three reasons for the rise in participation are changing aspirations of an increasingly diverse student population, an increasing need for university qualifications in order to gain paid employment and a need to participate in *life long learning* in order to maintain credentials in a rapidly changing employment environment.

Virtual academies construct rooms as an environment of exchange for prospective students. These virtual rooms are expected to induce traditional classroom conduct through the cultural associations evoked by a rudimentary simulation of such an environment. It is a challenge that seeks to translate the solid to the ethereal. Similarly, it is not possible for an organisation operating under modernist frameworks to mimic the structures of commercially orientated virtual organisations. The loose application of extending boundaries through the application of information technology (Olson 1997) does not automatically predicate a virtual organisation.

The changes in the past ten years and the forthcoming ones demand a transition from a 'traditional' professional organization to a modern one. The changes demand enhancement of the 'transparency' of the organization as well as of the education, the acceptance of external accountability, the introduction of integral management and some form of total quality management and above all a high level of organizational learning. The changes also demand working together as interdisciplinary teams from a shared point of view and the necessity to accept the consequent interdependency and mutual influence. It also asks for cooperation of teachers and students in the process of learning.

### **Quality improvement in the Virtual Academy**

Large-scale, mature open universities are systems-driven organisations. From their establishment, in order to gain acceptance in the higher education community, they consciously adopted and adapted quality assurance measures from the conventional sector and sought to demonstrate the rigour and dependability of the systems which underpinned the key educational processes: programme planning, course design, course development, course delivery and student assessment and award. To provide stakeholders with the necessary reassurance, quality assurance protocols in ODL tend to focus on output measures which are able to demonstrate the value to the student by participation in the process.

A growing tendency in respect to quality has taken place during the last decades in managerial organisations as a consequence of the higher demands in the markets.

The consolidation of the Quality Systems took place as a result of the appearance of the Standard ISO 9000 in 1987. This Standard constitutes an international reference.

Later on, in 1991, the E.F.Q.M. established the European Standard of Total Quality. In this context, some experiences applicable to educational service quality control for companies' criteria have arisen and national plans for Quality in the Schools were established.

All institutions that use information and communications technologies (ICTs) need to review and revise their quality assurance protocols to ensure that they are focusing on appropriate inputs, processes and outcomes.

Moreover the application of new technologies in the learning environment is not only removing the distinction between conventional and distance education, it is also eroding political and geographical barriers to the movement of knowledge. The growth of the export trade in educational products during the last 10 to 15 years has alerted countries which are net recipients of such products that there is a need to erect barriers in order to safeguard their citizens and institutions against the worst excesses of some entrepreneurial providers, whose major concern is the financial bottom line rather than the educational experience of the students on the course.

The last step forward in technological progress – giving birth to the web-based customer service - transfers the customer experience of people-mediated physical interactions to dependence and convenience of web mediated virtual interactions. This change both decreases interaction costs and constrains even further the flow of understanding of quality expectations. Thus, in the unending pursuit of progress, customers are driven even further apart from the intimate understanding of quality, and come to depend instead, for all their choices and experiences, upon the simulated creations of web-mediated technology; in particular, as the forces of globalization, deregulation and technology sophistication blur the norms of expected quality (Reis et al. 2002 pg. 371).

Thus, for any course or programme, irrespective of the mode of delivery, an institution must be able to demonstrate that:

- Learning outcomes have been set at the appropriate level and clearly communicated to students;
- Content and design of the curriculum and the teaching methodologies employed are effective in enabling the student to achieve the outcomes in terms of both the acquisition of knowledge and the development of related practical skills and abilities;
- Assessment is appropriately designed and rigorously administered to measure the achievement of outcomes.

Consumer Based Quality Guidelines for Learning Technologies and Distance Education (Barker, 2001) list the desirable features of a high quality course or programme and are structured to reflect the hierarchy of concerns described above, starting with quality outcomes:

Acquired content skills and knowledge should be:

- Relevant;
- Transferable;
- Specific for the purpose;
- Blend traditional education and applied technology skills.

Necessary learning skills are acquired for:

- Course/programme completion and success;
- Lifelong learning;
- Self-directed learning management.

Completion takes the form of credit or credentials that are:

- Recognised by professional accreditation bodies and employers;
- Recognised by other educational institutions;
- Of the same value whether acquired though on-site or distance learning;
- Transferable within programmes and institutions, locally, nationally and internationally.

Return on investment of the learner's time, finances and energy meets expectations for:

- Accessibility as needed and when needed;
- Objectives benefits and utility;
- Effectiveness: subjective achievement of personal goals;
- Efficiency: best use of resources;
- Customer satisfaction with all course programme elements.

To achieve the output standards listed above, the provider must have in place systematic quality processes and practices implemented to the all organisation.

The new demands prompt staff in student support and professional development to explore new ways of working together to maximise their various skills and experiences. TQM and Business Excellence Concepts help to cope with future challenges in the educational sector. The vision of Business Excellence must generally not be pursued in separate projects limited in scope and time. Instead, it has to become an integral part of corporate planning and culture -

thus embedding the continuous strive for the better in the organisation's value system (Mendonça, 2001).

Robin Mason sums up the enormous shift in definitions of quality that has already taken place as a result of the massification of higher education by reference to the issue of access. "No issue so exemplifies the relative nature of educational standards as the subject of access. Where once the quality of an educational programme was defined by the number of the students it turned away, in today's lifelong learning climate, equality of access to the traditionally disenfranchised is a much more highly regarded attribute than exclusivity" (Mason, 1998).

Speaking of transnational education at university level Randall (2001) suggests that "individual decisions... to participate in transnational higher education are driven by history, language, cost and recognition. Recognition of the qualifications gained, by governments, employers or professional bodies, is the single most important consideration for the individual". The generic performance indicators proposed by Randall reflect the current preoccupations of quality assurance agencies seeking to ensure that today's graduates possess the skills and competencies necessary to enable them to become knowledge workers in a global economy.

### **Benchmarking in Distance Education**

Benchmarking is a highly respected practice in the business world. It is an activity that looks outward to find best practice and high performance and then measures actual business operations against those goals. Benchmarking in education follows the same principle. It is appropriate at a time when education reforms are focused on raising student and school performance.

Benchmarking can be defined as "an ongoing, systematic approach for measuring and comparing the work processes of one organisation to those of another. This approach is valuable for providing objective, fact based information to be used in the prioritisation and decision-making processes of the institution. Benchmarking is more than just gathering data. It involves adapting a new approach of continually questioning how processes are performed, seeking out best practices, and implementing new models of operation.

When an institution uses the benchmarking process and data on an ongoing basis, it helps the managers see the broader picture by allowing them to examine these measures longitudinally over a number of years.

The EQW (Quality Education Work) has its roots in the ideas of Deming, Baldrige. Massy (2001) postulates that the framework for quality management based upon EQW should empower and stimulate faculty to continuously improve teaching and learning.

The five key domains of EQW are familiar from the current literature:

- The determination of learning outcomes;
- The design of curricula to meet the learning outcomes;
- The design and use of student assessment measures;
- The implementation of quality assurance.

Generic or best in class uses the broadest application of data collection from different industries to find the best operations practices available. The selection of the benchmarking type depends on the processes being analysed, the availability of data, and the available expertise at the institution.

In this methodology, institutions and departments exemplifying best practice should be able to demonstrate that they:

- Define Educational quality in terms of learning outcomes;
- Focus on the process of teaching and learning to strive for coherence in curricula and educational processes;
- Work collaboratively to achieve mutual involvement and support;
- Base decisions on facts wherever possible (evaluation);
- Minimise controllable quality variation;
- Make continuous improvement a top priority.

Benchmarking can be a tool for improving Quality. After processes are selected for analysis, the appropriate personnel, who have a working knowledge of the area undergoing the benchmarking analysis, should then be chosen to conduct the study. Once the benchmarking data is collected and analysed, it can be distributed in a benchmarking report internally within the institution and externally to benchmarking partners for implementation of improved processes. The overall goal is the adaptation of the process enablers at the home institution to achieve effective quality improvement.

The Portuguese higher education is, at present, assessing periodically its quality, namely regarding teaching (CNAVES, 2000a, 2000b) and research (MCT, 2000) activities. Nevertheless, some empirical studies, case studies, are undergoing, applied to higher education schools which concluded that in most cases there is no overall institutional assessment mechanism leading to a careful analysis of each institution as an organisational entity.

The need to have a holistic model, capable of serving as a quality tool for self-assessment and continuous improvement of Portuguese higher education institutions, resulted in the development of an excellence model tailored to these institutions (Rosa et al., 2001).

Prospective students will want to take the following steps to ensure that the course for which they register can meet their requirements: Check the accreditation, grade the school by checking out the courses, teachers and credit accumulation and transfer policies and procedures, look at the institutions web-site to see if it's up-to-date and well designed, use sample courses and determine whether the online format is what they want, read the fine print to check that it is what they expect from an online course.

The key respects in which appropriate quality assurance systems for technology-assisted learning differ from those designed for conventional face-to-face delivery are in their concern for the appropriate choice and effective management of the technology to meet the expectations of all of the stakeholders and in the emphasis they place on the need for faculty and student training and support systems to enable them to operate effectively in the new learning environment.

The story of the development of ICT assisted subject delivery should not be about the work of small isolated teams. It should be "about a holistic approach which encourages a critical reflective community in which new educational technologies are created to improve or enhance practice." (Evans & Nation, 98, p. 51)

## References

- Barker, K. (2001). Consumer-Based Quality Guidelines for Learning Technologies and Distance Education. FuturEd, document available at: <http://www.futured.com>.
- CNAVES, Conselho Nacional de Avaliação do Ensino Superior (2000a). Processo de Avaliação do Ensino Universitário – *Guião de Auto-Avaliação*.
- CNAVES, Conselho Nacional de Avaliação do Ensino Superior (2000b). Processo de Avaliação do Ensino Politécnico – *Guião de Auto-Avaliação*.
- Evans, T & Nation, D. (1998). Research and Staff Development in Open and Distant Learning. In C. Latchem, & F. Lockwood, (Eds.), *Staff Development in Open and Flexible Learning*, pp. 45-53. London: Routledge
- Jonassen, D. (1998). Designing Constructivist Learning Environments, In: Reigeluth, C. M., (Ed.), *Instructional theories and models*, 2nd Ed. Mahwah, NJ: Lawrence Erlbaum, document available at <http://www.ed.psu.edu/insys/who/jonassen/cle/cle.html>
- Le Grew, D & Calvert, J. (1998) Leadership for Open and flexible Learning in Higher Education. In C. Latchem, & F. Lockwood, (Eds.), *Staff Development in Open and Flexible Learning*, pp. 3-12. London: Routledge
- Mason, R. (1998). *Globalising Education: Trends and Applications*. London, Routledge
- Massy, W.F. (2001). Applying Business Quality Principles to Academic Audit: Hong Kong's Second-Round TLQPR." *Paper presented at the 6<sup>th</sup> biennial conference of the International Network for Quality Assurance agencies in Higher Education*, Bangalore, India
- MCT, Ministério da Ciência e tecnologia (2000). Descrição Sumária do modelo de financiamento Plurianual e de Avaliação das Unidades de Investigação, document available at: <http://www.fct.mct.pt/unidades/sumaria/index2.htm>
- Mendonça, M. C. (2001). Benchmarking in Higher Education: Improving Quality in Distance Education. In: *The Future of Learning-Learning for the Future: Shaping the Transition*, Poster at: 20th World Conference on Open Learning and Distance Education, ICDE, Düsseldorf, Germany
- Olson N. (1997). Virtual Organisations: Towards a framework for Understanding, document available at <http://www.cisr.swin.edu.au/announce/seminar/sem2/25october.html>
- Randall, J. (2001). Defining Standards: Developing a Global Currency for Higher Education Qualifications. *Paper presented at the 6<sup>th</sup> biennial conference of the International Network for quality assurance Agencies in Higher Education*, Bangalore, India
- Reis, D., Pena, L.& Milorad, N. (2002). Widening quality gap: a historical interpretation, *Total Quality Management*, 13 (3), pp. 365-371
- Rosa, M., Saraiva, P.& Diz, H. (2001). The development of an excellence model for Portuguese higher education institutions, *Total Quality Management*, 12 (7&8), pp. 1010-1017
- Spender, D. (1995). *Nattering on the Net Women, Power and Cyberspace*, Melbourne: Spinifex.