

Quality in Web-Supported Learning

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Are we meeting the needs of our learners? Are we fulfilling our vision of excellence in learning? How do we marry the theory of Quality Assurance with the services we offer, with particular reference to the Web-supported courses we design, develop, and deliver? The Department of Telematic Learning and Education Innovation (TLEI) was established at the University of Pretoria in 1997. The Department believes that it has the support of top management and from small beginnings is now becoming a showpiece of the University. Concomitant with such responsibility and visibility is the necessity to produce results, not just in the quantity of telematic courses developed and managed, but also in the quality thereof.

Introduction

One of the fathers of the Quality movement, Dr. Joseph Juran, often said that the 21st Century would be the Quality Century (SAQI, 2000). The thrust of Quality Assurance has extended beyond the hands of Quality specialists, to the public domain of operators, managers, entrepreneurs, and educators. As traditional trade and knowledge barriers fall, Quality becomes "not only a business imperative but also an essential life skill that is as fundamental to the success of individuals and companies as literacy and numeracy" (SAQI, 2000, p. 1).

The word QUALITY brings to mind terms such as *inspection, process control, compliance, auditing, standards, and ISO 9000*. While quality indeed includes these principles, it also includes, for example, basic management practices, quality management systems, continuous improvement, customer satisfaction, market focus, and teamwork. These principles are all critical to success, whether in health care, education, manufacturing, the service industry, or the public sector. Quality is the critical success factor

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in providing a competitive edge, especially in the face of globalization.

Ensuring Quality in online courses is a topic unto itself. The design, development, and implementation of online course materials form an intrinsic part of the wider development of educational programs. Viewed systemically, any educational system consists of several interdependent and interrelated parts, each of which performs a specific function which contributes to the overall purpose of the whole, much like a human body. In comprehensively documenting the processes involved in delivering online learning, it is possible that we are breaking new ground. Certainly, the newly launched Higher Education Quality Committee (HEQC) in South Africa is hoping to learn from us, rather than the other way around! The key, we are finding, is to be critically aware of the dual aspects of the pedagogical issues, such as staff and curriculum development and the optimal use of instructional technology.

Background

The University of Pretoria is the largest residential university in South Africa. The University's mission statement includes a commitment to the maintenance of teaching and research that are relevant and of the highest standard, while simultaneously pursuing internationalization. The University's core considerations in determining priorities are internationalization, diversity, relevance, and Quality (<http://www.up.ac.za>).

Recent legislation in South Africa requires that universities establish Quality Assurance units. A Unit for Quality Assurance was formally established at the University of Pretoria in 2000. This unit moves primarily on the strategic level, steering the university in new directions. It works closely with stakeholders, such as Government and Government units like the Council for Higher Education (CHE), the South African Qualifications Authority (SAQA), and the South African Vice Chancellors Association (SAVCA). Restructuring of the teaching and learning model into programs based on a structure of credit-bearing modules means that all programs are subject to a validation process. A comprehensive self-evaluation document is completed annually by all academic departments and a student feedback questionnaire for contact courses has recently been implemented.

In higher education today, and at the University of Pretoria in particular, there is an ever-increasing tendency towards a full-cost approach in running all departments in the institution. Campus "companies" have been established, which operate as independent business units. There is increased pressure on management to be able to demonstrate the impact of the institution as a player on the global education stage.

The Department of Telematic Learning and Education Innovation (TLEI) has embarked on a research project to explore and document the concept

of Quality in telematic learning, with particular reference to Web-supported learning. We extend the semantic definition of the word "telematic" (*tele*—over a distance; *matic*—by means of) to incorporate a flexible learning model delivered through a variety of media and enhanced by technology. TLEI consists of two sections, Education Innovation and E-education. It is within E-education that we collaborate with academic staff to design, develop, implement, and evaluate Web-based courses.

Without a Quality Plan in place, we have found that different perceptions and expectations on the part of academic staff and students led to differing levels of satisfaction with our telematic learning offerings. Our approach in implementing a Quality Management System for E-education is to begin with the immediate and real needs experienced within our department, but also to work towards later accreditation with national and international standards bodies, such as ISO 9000.

Evaluation of Courseware

Those of us who have been involved in the field of instructional systems design (ISD) know that one of the vital steps in any instructional design model is evaluation. Whether one follows a traditional linear instructional design model, or perhaps an R2D2 spiral model (Willis & Wright, 2000), no one disputes the fact that an essential step somewhere along the line (or around the spiral) is evaluation—formative evaluation, summative evaluation, ongoing review, and maintenance of our courseware offerings. But what do we do with these findings? Do we plough them back into continuous improvement? Do we use them to eliminate faults, to streamline the instructional design process in the future, to guarantee greater customer satisfaction and enhanced competitive advantage? What is the connection between the notions of Evaluation, Validation, Standards, Review, Quality, and ultimately Return on Investment? These are some of the questions which prompted the study reported in this article.

Quality Philosophies

Before we delve deeper into Quality in educational courseware and, in particular, in Web-supported learning, it is necessary to study the concept of Quality—its meaning and its application to higher education. Herselman *et al.*, (2000) summarize from recent literature the following three philosophies of Quality:

Quality as exceptional: This philosophy of Quality refers to exceptionally high standards that can be attained only in limited circumstances, with academic staff and students of exceptionally high caliber. As such, this notion of Quality is usually dominant in high-powered companies or highly developed educational institutions with more than adequate resources.

Quality as efficient production: This is the common philosophy of Quality based on the production line, whether it is motorcars, computers, or whatever consumer items are being produced. Since the 1960s, this approach has typically been associated with the absence of defects ('zero defects') or conformance to specifications. Related to this notion of quality are the ideas of fitness for purpose, customer satisfaction, and value for money.

Quality as transformation: South Africa's recent history is characterized by transformation in all walks of life—politics, lifestyles, economic aspirations, and equal opportunities for all. In the educational arena, students entering higher education institutions come from a wide variety of backgrounds. The notion of Quality here refers to enhancing the performance of students, regardless of their initial level of competence. The key objective is to add value to the educational experience of all students. An institution that manages to enhance the performance of under-prepared students is considered to be an institution of higher quality than one which focuses on more advanced students yet adds little to their intellectual development.

We suggest a fourth philosophy of Quality, namely:

Quality as innovation: It is not enough to have satisfied customers, they must be loyal and return again and again for your products and services. It is not enough to have satisfied and loyal customers, since this view concentrates on past demand and doesn't predict what the customer will want in the future. The most productive and successful companies endeavour to stay one step ahead of the customer by coming up with fresh and enticing innovations that will inspire customers and users (Gabor, 1990). Ultimately, management should embrace holistic management initiatives so as to "make the leap from continual improvement to continual innovation" (Gabor, 1990, p. 10).

This philosophy of Quality is particularly applicable to the field of higher education. As educators, we resist being likened to Seymour Papert's time-travelling teachers from 100 years ago, who could fit with ease into a traditional classroom where little has changed (Papert, 1992). Rather, we wish to be acknowledged as educational innovators, constantly changing and improving the face of teaching and learning.

Quality Definitions

The multifarious nature of Quality makes it difficult to describe so as to ensure a common understanding of the concept without relying on intuitive connotations of the everyday word. Quality means different things to different role players. The business person interprets quality in terms of market share and profitability; the consumer looks at quality from a value-for-money point of view, and a manager expects a Quality Management

System to provide him with management information to assess the impact of his division on the organization.

In trade and industry, the notion of Quality is relatively easy to grasp, in that one is dealing with products and services. In higher education, however, it is not easy to discern well-defined end-products, since it is a process which continues to make an impact on people's lives long after the completion of a formal study program.

We have considered various definitions of Quality and are still in the process of synthesizing one that works as a basis for the services we offer in providing Web-based learning opportunities. The concept of 'fit for purpose' was proposed by Dr. W. Edwards Deming in the early 1950s (Carruthers, 1999). This can be thought of as a basic definition of Quality—to achieve fitness for purpose on time and within budget. It is also a fundamental fact that no customer is prepared to pay for any product or service that is not, at the very least, fit for purpose, and so fitness for purpose is a prerequisite for quality.

The first step up the ladder in pursuit of Quality is **Quality Control**. Quality Control can be described as a procedure for checking work after it is done and then correcting it if faulty, much like checking the functionality of a product at the end of the production line. In Web-based learning, this could be interpreted as ensuring technical adequacy and robustness of the Web-based course—does it function as it should, without technical hitches?

Quality Assurance attempts to prevent faults and inadequacies from occurring in the first place. Quality Assurance can be defined as "a planned and systematic set of procedures which are designed to build quality into a product or service, that is, to carry it out correctly the first time" (Boyd, 2001).

The concept of **Total Quality Management** is a holistic management philosophy which harnesses the efforts of everyone in the organization, to achieve *continuous improvement and, we might add, ongoing innovation*. Quality is a people business and without the commitment and involvement of every manager and every worker, it will be unattainable. Total Quality Management is the ultimate organizational goal for which to strive. It is doing the right things, right first time, on time, every time (Boyd, 2001). The commitment to 'doing the right things' should be a precursor to 'doing things right,' thus achieving both efficiency and effectiveness (Carruthers, 1999).

Definitions of Quality and associated terms can be synthesized into the hierarchy shown in Figure 1.

Phase I:

Implement a Quality Management System

What is a Quality Management System? A Quality Management System (QMS) is a way of formally ensuring that an organization is consistently in control

of the quality of product or service which it provides to its customers. It is formal because it consists of a system of controlled, documented processes and procedures which can be audited (Boyd, 2001).

What will the establishment of a Quality Management System involve? We have engaged a Quality Assurance consultant who has submitted a proposal specifying the objectives of establishing a QMS, as well as the scope of the work required. The proposal clarifies the functions of the consultant, and those to be carried out by our staff within E-education. The work required will include, among other things, the following:

- Run a series of workshops for all in E-education, plus lecturers in academic departments, to work through general Quality concepts, and definitions, to ensure "buy-in" to the QMS.
- Visit other higher education institutions in South Africa which have people active in the field of Quality in Higher Education to ascertain whether they have formalized Quality systems in E-education.
- Analyze, organize, and formalize all materials and documentation that have been intuitively developed so far, such as our Project Timeline and E-education Instructional Design Toolkit. Our Instructional Design Toolkit includes a Service Level Agreement, Roles and Responsibilities, a Six Star Course rating system (adapted from Merrill, 2001), and Minimum Requirements for Web-supported courses.
- Using our Project Timeline as a base, expand each of the time blocks into a fully-fledged **procedure**. This will require the definition of additional procedures, especially in the Design and Development phases. (A **procedure** is defined according to the inputs, activities, and outputs required or produced.)

Who are our customers? For the purpose of this project, we have two 'customer' populations: Lecturers and Students.

1. Lecturers

We provide the following services to Lecturers to equip them to offer Web-based courses:

- Staff training in WebCT (two courses: WebCT High Impact and WebCT Designers) and the use of Front Page for WebCT.
- Design and development of Web-supported courses.
- Graphic design and production.
- Photography (e.g., photographs—digital or film—developing, etc.).
- Video production and editing.
- Workshops on demand, addressing topics such as the changing role of the lecturer and how to facilitate online learning.

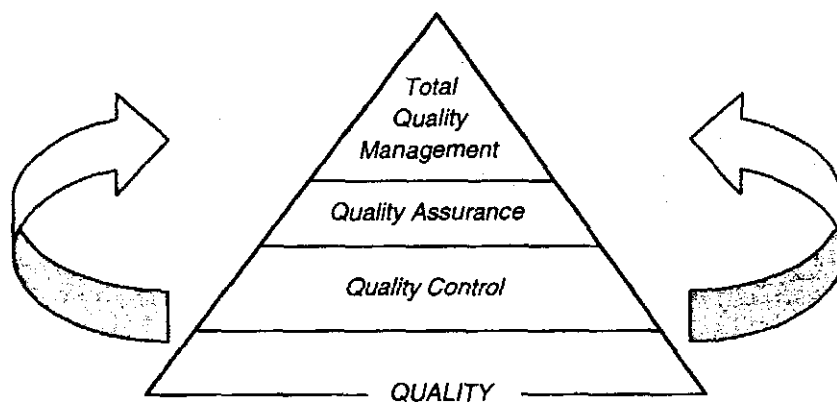


Figure 1. Hierarchy of Quality Terminology.

2. Students

We provide the following support services to registered students enrolled in Web-based courses:

- Student orientation sessions in WebCT.
- Student technical support via telephone and e-mail.

What are our Products? E-education produces various products:

- Videos, posters, electronic slideshows, overhead transparencies, photographic material, CD-ROMs, and video conferencing sessions.
- "Learning Opportunities," which are optimized through the creation of online course materials and multimedia CD-ROMs. This includes all processes, materials, skills, and professional expertise required to develop and deliver a learning opportunity which provides added value to a learner.

Phase II:

Measure the Impact of Telematic Projects

In order to measure the impact of the input of the E-education group into Learning Programs, we need to develop data collection tools and techniques.

We have two online student feedback questionnaires in place, namely a Pre-course survey and a Post-course survey for students taking Web-supported modules. A lecturer survey is currently being developed.

A student assistant will download the data collected from WebCT into Excel. A project has been registered with Statomet, the University's statistical analysis service, to do the analysis of the data on a regular basis at the beginning and end of each semester.

Case Study. We plan to use as a case study the MBA (Master of Business Administration) Program at the

University of Pretoria. This program is a high-profile one, and it is critical that it be viewed as a highly effective blend of Web-supported learning and contact sessions. The interesting opportunity that has presented itself is that a colleague, who is a professor of computer-integrated education, is registered as a student in the MBA program. With his cooperation, we have the unique opportunity for peer review, expert review, and student review all in the form of one individual. In a few short months of being an online student, he experienced his first 'E-tantrum'—in trying to obtain just-in-time online technical help, he had cause to lift his eyes heavenward in frustration. This in turn caused us to re-look at our student support services.

Identify Possible Quality Partners. We have established contact with various partners in this project, both internal and external; for example, the Unit for Quality Assurance at the University of Pretoria, the South African Quality Institute (SAQI), and the South African Institute of Distance Education (SAIDE).

We are pursuing closer links with other institutions of Higher Education, as well as with the Higher Education Quality Committee, established in 2000 by the Council for Higher Education.

Conclusion

Quality is an all-encompassing guiding light, which impacts on courseware development, staff development and training, student orientation, and daily practices and procedures. We need to ensure that quality E-education programs result from our combined efforts, which impact positively on the global reputation of our University and on the ongoing lives of our students. □

References

- Boyd, L. G. (2001). Quality Workshop for the Department of Telematic Learning and Education Innovation at the University of Pretoria.
- Carruthers, M. (1999). *Principles of management for quality projects*. London: International Thomson Business Press.
- Council on Higher Education. (2000). *Higher education quality committee—founding document*. Pretoria: Council on Higher Education.
- Gabor, A. (1990). *The man who discovered quality*. New York: Times Books.
- Herselman, M., Hay, D., & Fourie, M. (2000). Performance indicators in higher education teaching and learning: Imperatives for lecturers. *Vista Teaching and Learning*, 14(1), 4–13.
- Merrill, M. D. (2001). First principles of instruction. Under

- preparation. See online version at: <http://www.id2.usu.edu/Papers/5FirstPrinciples.PDF>
- Papert, S. (1992). *The children's machine*. New York: Basic Books.
- SAQI. (2000). *South African quality in a nutshell*. Pretoria: South African Quality Institute.
- The Institute for Higher Education Policy. (2000). *Quality on the line: Benchmarks for success in Internet-based distance education*. Washington, DC: The Institute for Higher Education Policy.
- University of Pretoria; <http://www.up.ac.za>.
- Wilkinson, A., Wilkinson, L., & Nel, G. (2000). Quality assurance in higher education: Will cybereducation pass the test? *Citte 2000 Conference on Information Technology in Tertiary Education, 2000*, University of Port Elizabeth, South Africa.
- Willis, J., & Wright, K. (2000, March–April). A general set of procedures for constructivist instructional design: The new R2D2 model. *Educational Technology*, 40(2), 5–20.

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Thus, your article should not be cast in the form of a traditional research report. The facts of your research, and the research of others, should be stated succinctly. Then you should go on to explain the implications of this research, how it can be applied in actual practice, what suggestions can be made to school administrators, trainers, designers, and others.

The style of writing should be on the informal side—an essay—since once again this is a magazine and not a formal academic journal. Authors are free to state their opinions, as long as the opinions are clearly identified as such. The use of specialized jargon should be kept to a minimum, since this magazine has a very wide interdisciplinary audience and what may be common words in one sub-field of educational technology will be considered unintelligible to others.

There are no minimum and maximum length restrictions. Make your article about as short as possible to do the job you intend. As a general rule, most articles are about 3,000 words, and one would require more words only in unusual circumstances.

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- 3 **Computer-Based Instruction: Design and Development.** Andrew S. Gibbons and Peter G. Fairweather. LC 97-34702. 560p. 1998. (Hardcover ISBN 0-87778-300-4). **\$89.95.** (Softcover ISBN 0-87778-301-2). **\$59.95.**
- 4 **Computer-Based Training Handbook: Assessment, Design, Development, Evaluation.** William W. Lee and Robert A. Mamone with Kenneth H. Roadman. LC 94-46482. 312p. 1995. (ISBN 0-87778-286-5). **\$42.95.**

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