

## Chapter 6

### *Findings:*

## *Process-based Quality Management System*

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### 6.1 Introduction

The research target stated in chapter 1 highlights the need to diminish the divide between the discourses of quality assurance and web-supported learning. This problem led directly to research question 3:

**What lessons were learnt in applying standard quality assurance theory to the instructional design process for web-supported learning?**

The conceptual framework for this study (chapter 2, Figure 2.5) indicates that a process-based quality management system (QMS) is a holistic and complex *system*<sup>1</sup>, incorporating at least inputs, processes, outputs, measures and distant outcomes. In this case study, the major *process* under analysis is the *instructional design process*. The *products* that result from this process are web-supported courses (learning opportunities). These products are subjected to formative and summative *evaluation procedures* in the course of usual instructional design practice. The *evaluation procedures* are documented formally in the process-based QMS, as are all the procedures in the Project Timeline (Appendix F1).

The process-based QMS in this study was designed and developed according to a conscious decision to concentrate on self-evaluation and improvement, rather than accountability requirements placed on practitioners by an external

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<sup>1</sup> The term *system* is used in the broad sense of the word, namely “a powerful bundle of ideas” (Checkland, 1999, p. A4); or the “discipline of seeing wholes” (Senge, 1990, p. 68).

quality assurance agency (see perspectives on the debate presented in section 2.4.1). Jeliaskova and Westerheijden (2002) describe the dangers of a culture of compliance as “routinisation, bureaucratisation and window dressing” (p. 434). Fourie (2000) confirms the need for practitioners to develop their own meaningful efforts at continuous improvement “at various levels of the institution and in various areas” (p. 51) (for example: web-supported learning).

For the above reasons, it was decided not to seek ISO 9000<sup>2</sup> certification for the QMS in web-supported learning. Rather, the approach adopted was a commitment to the human aspects of quality assurance, which emphasized training in quality assurance theory and sought the involvement and support of all participants.

The uniqueness of the intervention lies in the fact that it is a documented, online system for managing the quality of instructional design processes and procedures for web-supported learning. The literature review did not reveal a fully documented online QMS in the field of web-supported learning in higher education (see chapter 2, section 2.7).

The findings are presented in this chapter in the form of eight lessons learnt, each of which contributed to understanding the application of quality assurance theory to the instructional design process. Being an exploratory study of a particular case, the eight lessons are reported as outcomes of the journey of reflection and development on which the instructional design team embarked. The list of eight lessons learnt is not intended to be unique or exhaustive – instead they offer advice for application in similar web-supported learning scenarios.

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<sup>2</sup> ISO 9000 requirements were taken into account, so that the system may be adapted for certification, should this be desired at a later stage (Boyd, 2001a).

## 6.2 Overview of methodology

The methodology for research question 3 was presented in chapter 3, sections 3.4.3 and 3.4.4, and is revisited briefly here. The data sources were documentation, archival records and artifacts (Yin, 2003a):

- documentation: communiqués, agendas, notes and minutes taken by hand during the task team sessions;
- archival records: administrative documents such as policy documents, guidelines and other internal records;
- artifacts: procedures and supporting documentation generated by the task teams and the paper-based prototype of the online QMS<sup>3</sup>.

The data sources provided guidance which contributed to the design and development of artifacts in the QMS. Some of the data sources *became* artifacts in the system, for example administrative documents and guidelines that were already in existence. In this sense, the data was not *analysed* according to any formal data analysis techniques, but rather was collected, updated and incorporated into the system where applicable.

Expert consultation and task teaming were used to gather, organise and generate data and artifacts. The research procedures included four steps: training the participants in quality assurance theory, conducting QMS Steering Team and task team sessions, producing a complete paper-based prototype of the QMS and developing the online version of the QMS in WebCT (see chapter 3, section 3.4.3). The online QMS is an internal departmental tool, designed for the use of e-learning<sup>4</sup> practitioners in a support department at a higher education institution.

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<sup>3</sup> The final online QMS itself became an artifact to be used in practice.

<sup>4</sup> The term *e-learning* is used here, rather than *web-supported learning*, since the practice may include other electronic media as well as online media.

## 6.3 Findings

The findings from the data sources and the reflective journey are presented in this section in the form of eight lessons learnt. The following reporting structure is used for each lesson:

Table 6.1

*Reporting structure for findings: research question 3*

<b>Lesson:</b>	The finding, or the lesson learnt as a result of the research activities.
<b>Evidence:</b>	Evidence and records to support the lesson.
<b>Resulting artifacts in the formal QMS:</b>	Artifacts which contributed to building the formal QMS. The artifacts are described here and included in detail in Appendix F.

In the conceptual framework for this study (Figure 2.5), two of the input categories are *instructional design factors* and *lecturer factors*. Lecturers are role players in the instructional design process, since being subject experts, they provide the content for web-supported courses. A summary is given in section 6.4.1 of all the artifacts produced as a result of the lessons learnt.

### 6.3.1 Lesson 1: Instructional design model

**Lesson:**

**Adopt a fundamental instructional design model to serve as the main process in the quality management system. Subdivide it into its constituent procedures to be analysed and documented in detail.**

Human nature is such that hindsight often reveals what should have been done at the beginning of a project or how a web-supported learning production unit should operate. Informal practices that might have worked with a small group of practitioners in the early days of such a unit soon need to be formalised, documented and streamlined.

Exhibits 6.1 and 6.2 show that in 2000, a formalised instructional design model had not yet been adopted by the E-Education Unit<sup>5</sup> at the University of Pretoria.

**Exhibit 6.1: Tabular timeline**

**Note in my Minutes file, October 2000.**

As a project manager<sup>6</sup>, I feel rather insecure without having a clear instructional design model to follow. I asked the deputy director and an instructional designer what instructional design model was in use by the team. They produced a timeline in tabular format (Lazenby & Drysdale, 1999). Although it mentioned analysis, design, development, evaluation and people responsible for each step, it only implicitly implied an instructional design model.

**Exhibit 6.2: Lack of an instructional design model in the E-Education Unit**

**Extract from Minutes of a brainstorming session held with the instructional designers on 28 November 2000.**

**Present: Six instructional designers; one Project Manager**

1. Discussion revealed that there was no formal instructional design model in place, although most of the team members have studied instructional design at postgraduate level and are knowledgeable about the process.
2. Estelle produced a triangular diagram, showing the activities involved in creating a web-based course. However, the group agreed that the apex at the top allows the misconception of finally 'arriving' at a solution or 'perfect' product.
3. Existing ID models were considered, e.g. Hodgkinson's Daisy model and Willis & Wright's R2D2 spiral model. The idea of the spiral was popular, since it implies continuous improvement and ongoing quality assurance.
4. It was finally agreed to adopt the standard ADDIE model. Jill offered to design a one page visual representation thereof, so that project managers could easily discuss the process with lecturers during planning meetings.

**Resulting artifact in the QMS: Project Timeline (Appendix F1)**

Standard instructional systems design (ISD) recommends that practice should be based on an instructional design model (Gery, 1987). In response to the evidence above, the instructional design team decided to adopt the traditional "ADDIE" Instruction Design Model: **Analysis, Design, Development, Implementation, Evaluation** (Gustafson & Branch, 2002; Hall, 1997).

<sup>5</sup> The term *E-Education* is used, since it was the name of the unit within TLEI at that time.

<sup>6</sup> A project management methodology is followed in the E-Education unit. Therefore any reference to *project* implies an e-learning project.

The ADDIE instructional design process was operationalised as a customised **Project Timeline**, a one-page visual representation of steps involved in the instructional design of web-supported and multimedia learning products.

Quality assurance theory dictates that processes are subdivided into procedures, which may be further subdivided into detailed work instructions (Boyd, 2001b). The Project Timeline is the main *process* of the QMS. It consists of various 'boxes'. Each 'box' or step is a *procedure*, with inputs and outputs, roles and responsibilities and supporting documents (see Appendix F4 for an example of a fully documented procedure).

### 6.3.2 Lesson 2: Analysis and Evaluation phases

**Lesson:**

**Focus attention on the Analysis and Evaluation phases in instructional design in order to avoid expensive re-work<sup>7</sup>, wasted work or development whose instructional effectiveness is not measured.**

It is well known in the field of instructional design that the Time – Cost – Quality tension often necessitates tradeoffs in one or more of these aspects (Lee & Mamone, 1995; Lowe & Hall, 1999). In this case study, the time factor and demands of clients (see Lesson 7) often dictate that design, development and production take precedence over analysis and evaluation.

Supporting evidence of the *lack of analysis* is illustrated by Exhibits 6.3 to 6.5 and the *lack of evaluation* by Exhibits 6.6 and 6.7 below. The lack of attention to needs analysis led to significant resources being allocated to projects which were later abandoned due to insufficient student numbers, or insufficient access to computers. The lack of attention to summative evaluation of web-supported courses means that practitioners are unable to measure whether the learning intervention contributes to student learning.

<sup>7</sup> Historically, quality *assurance* assumed preference over quality *control*. The latter rectified errors at the end of the production line, whereas the former is intended to minimise errors during the course of usual practice (Boyd, 2001b).

The inference in both cases is that attention should be paid to needs analysis and summative evaluation in order to avoid the problems mentioned.

### **Analysis phase**

Exhibit 6.3 shows that in 2000, it was assumed that academic departments were expected to conduct their own needs analysis with respect to web-supported learning.

#### *Exhibit 6.3: The analysis phase was not done by instructional designers*

**Personal notes taken at an e-management meeting on 16 February 2001:**

The researcher asked about the Analysis phase. The answer given by the deputy director and the other project manager was that the academic department is expected to do the analysis, in terms of the need for web-supported learning and the size and nature of the target population.

In reality, academic departments are ill equipped to do any sort of needs analysis. Very often they do not know until after their students register for a particular course, details of student numbers, the nature of the target population, or the extent of their access to technology. Even then, their information is incomplete or inaccurate. In two particular departments, many hours went into designing and developing web-supported courses, only to find out afterwards that students either had no access to computers at all, or otherwise had to drive long distances to find a computer with access to the Internet (see Exhibit 6.4).

#### *Exhibit 6.4: Lack of student access to technology*

**Extract from Minutes of a Project Meeting with the Department of XXX<sup>8</sup>, held on 11 November 2002.**

**Present: Project Leader, Project Manager, Instructional Designer, Library specialist, Lecturers**

The project leader explained that only 5 students registered for this programme. Two of them live in the Kruger National Park and have to travel for over two hours to reach a computer with Internet access, located at Skukuza.

continued...

<sup>8</sup> Names of clients and departments are withheld for reasons of confidentiality.

Decision: Further development of the WebCT modules is to be put on hold. The learning materials will in future be provided to the students on paper. They may submit their assignments by post or by fax.

Besides the possible lack of student access to computers, the small number of students in some courses renders it neither feasible nor cost effective to design and develop web-supported materials. Exhibit 6.5 shows that an entire undergraduate programme had to be put on hold due to small student numbers.

*Exhibit 6.5: Low student numbers*

**E-mail message**

**From:** Project Leader in the Department of ZZZ  
**Sent:** 04 February 2004 09:34AM  
**To:** Jill Fresen and cc's  
**Subject:** Discontinuation of programme

Colleagues

I just received instructions from Professor X stating that we will not take in new first year students for 2004. The idea is to market the programme during 2004 to see if we can't get 10 or more students enrolled - the minimum allowed to continue with this programme in the future.

Thank you for your support.

As a result of problems of access to computers or small student numbers, the development of web-supported courses had to put on hold, very often after several modules had already been developed. The wasted time and effort could have been avoided if a thorough needs analysis had been done before the start of the web-supported learning project.

### **Evaluation phase**

The growing demand for the production of modules in WebCT meant that little attention was given to evaluation of the resulting products. Some formative evaluation took place in the form of "shredding sessions" (later renamed "peer evaluation sessions") attended by peer instructional designers.

No formal summative evaluation was in place until the QMS was implemented in 2004. The *summative evaluation procedure* was analysed and documented



by one of the task teams. The objectives of a formal summative evaluation procedure are to enable regular feedback from clients in the interests of continuous improvement, to provide management information in terms of the impact of e-learning, and to evaluate the contribution of the learning intervention to teaching and learning.

*Exhibit 6.6:*

The summative evaluation phase was not done by instructional designers

**E-mail message**

**From:** Lesley Boyd  
**Sent:** 3 November 2002 23:10PM  
**To:** Jill Fresen  
**Subject:** Learning outcomes

These issues have been circulating around in my mind for some time and as you know I frequently refer to the way we have scoped the project. It came particularly to the fore on our long Friday afternoon discussion when you observed that E-education is not directly concerned about the subject-specific learning outcomes of the course. I would argue that you cannot do any meaningful summative evaluation without being concerned about the learning outcomes and how well the instruction contributed towards them.

-----oooOooo-----

**E-mail message**

**From:** Lesley Boyd  
**Sent:** 8 November 2002 09:58AM  
**To:** Jill Fresen  
**Subject:** Summative Evaluation

My original question remains ... should you concern yourselves in e-education about the learning outcomes of the course and if not, what happens during your summative evaluation? Is summative evaluation in fact something that should be done after 'Student Feedback', not before, to assess the overall worth of the telematic product? What do you actually do during summative evaluation at the moment?

The answer to the latter question at the time was that no summative evaluation was being done in practice. Vigorous discussion took place in some task teams about the extent to which instructional designers might be expected to promote the accomplishment of specific learning outcomes. Most designers felt that this is the domain of the subject expert. One instructional designer suggested that Bloom's taxonomy might be used to generate generic

learning outcomes<sup>9</sup> by which the effectiveness of a web-supported learning product may be evaluated (Exhibit 6.7).

*Exhibit 6.7:*

Should web-supported learning products be evaluated according to the achievement of student learning outcomes?

**E-mail message**  
**From:** instructional designer D.S.  
**Sent:** 12 November 2002 11:28AM  
**To:** tlodesign@kendy.up.ac.za  
**Subject:** Generic learning outcomes

Hallo all  
I have been thinking (Yes, it does happen sometimes ;0)...  
We cannot really assess the specific learning outcomes of the lecturer. Should we not have a look in the beginning of a project at their specific outcomes, then formulate our own GENERIC outcomes that will be pertinent to TLEI and the way we structure everything to enhance the outcomes of the lecturer?

The above comment reflects not only the need for summative evaluation after implementation of the web-supported course, but also the need for proper analysis and planning at the beginning of a project. The comment succinctly reflects the essence of instructional design – how to take the learning materials and design an effective learning experience for the student.

### **Resulting artifacts of the QMS:**

#### **Needs Analysis and Summative Evaluation Checklists**

(Appendices F2 and E1 respectively)

As a result of the fact that the analysis and summative evaluation phases of the instructional design process were not carried out by the instructional design team, two artifacts were designed and incorporated into the QMS:

- **Needs Analysis Checklist** (Appendix F2): this was designed according to the standard items: goal analysis, target population analysis, media analysis and performance analysis. The instrument should be used in the exploratory stage of a web-supported learning

<sup>9</sup> Subject-specific learning outcomes and/or generic web-supported learning outcomes are referred to, not the cross critical outcomes prescribed by SAQA.

project, with the education consultants assisting lecturers to provide the required information.

- **Summative Evaluation Checklist:** this was later adapted and renamed the 'Lecturer Experience and Satisfaction Survey' (Appendix E1), to be congruent with the terminology used in the student feedback survey.

Both the client experience surveys (for students and lecturers) are supporting documents in the summative evaluation *procedure* in the QMS.

### 6.3.3 Lesson 3: Quality assurance training

**Lesson:**

**Train e-learning practitioners in the basics of quality assurance practice. Do not allow too much time to lapse between workshops and procedure writing.**

It was difficult to prioritise the development of the QMS during peak web-supported learning development times, when the instructional design team had to focus on their core functions. The training workshops were held in November 2001 and May 2002, yet the QMS Steering Team and task team sessions were only held in 2003. As a result, many months had passed after the training workshops before procedure writing began. This meant that e-learning practitioners had retained little of what they had learnt and additional support materials and guidance had to be produced.

Exhibit 6.8 shows evidence of both these issues, namely the heavy load of the instructional design team which led to the delay in the start of procedure writing, as well as the resulting need for refresher training materials. Exhibit 6.9 shows the planning for the first QMS Steering Team meeting, which incorporated a review of some of the concepts previously dealt with in the training sessions.

*Exhibit 6.8: Booking the first QMS Steering Team meeting, February 2003***E-mail message**

**From:** Jill Fresen  
**To:** Instructional Design Team  
**Sent:** Wednesday, January 29, 2003 3:15 PM  
**Subject:** Jigsaw and pizzas

Hello everyone

I have booked a QMS 'Jigsaw Puzzle' session (Steering Team meeting) at 09:30 on Tuesday 25 February. We plan to make it a practical, interactive worksession / brainstorming / **refresher session on procedure writing.**

We are sensitive to everyone's heavy workload and yet it is becoming critical that we put something on the table and show some progress very soon. I have chosen the last week in Feb, because I think a lot of the initial crisis management will have passed, and we can fit it in before all the March activities.

*Exhibit 6.9: Preparation for QMS Steering Team meeting***Telephone conversation between QA consultant and the researcher on 27 February 2003**

**QA consultant:** I think it will be necessary to provide a copy of the QMS triangle from the training workshop, to put it all in context again.

**Researcher:** Yes, and we should explain again about processes and procedures. We can provide an example of one of the procedures we have already documented. I'll print out the Project Proposals procedure.

**QA consultant:** Good, that one is in the format that we agreed last week with the education consultant. Actually, it will be a good idea to provide a template, with the required structure and the document control data. I will work on that.

The QA consultant developed a template in MS Word, so that task teams could create their procedures according to the required structure and layout.

**Resulting artifacts of the QMS:****Template for and example of a procedure**

(Appendices F6 and F9 respectively)

As a result of this lesson, two artifacts (supporting documents) were provided to task teams to assist with procedure writing:



- a template of a procedure;
- an example of a completed procedure.

Task teams then documented all the procedures in the Project Timeline according to the template. All these procedures and their supporting documents are artifacts in the online QMS. They form the evidence of the self-evaluation exercise that the task teams undertook and document the decisions made by the task teams.

The format of each procedure is as follows:

- the title of the procedure;
- an overview of the procedure;
- the objectives of the procedure;
- list of numbered procedure steps;
- responsibilities of role players in TLEI and in the academic department;
- list of supporting documents and outputs;
- footer showing document control data to control version numbers and date of issue.

Each procedure is a maximum of two to three A4 pages (Arial, size 11). The team agreed on a system of icons in keeping with the building metaphor, to indicate which supporting documents are mandatory and which are optional. Optional documents may be used at the discretion of either the project manager or the instructional designer:

mandatory:	
optional:	

*Figure 6.1:* Icons indicating mandatory or optional supporting documents

The dynamic nature of instructional design implies that the procedures will need to be frequently updated in order to remain an accurate reflection of instructional design practice in this case study.

#### 6.3.4 Lesson 4: Doubts about usefulness of the QMS

**Lesson:**

**Participants (in this case, e-learning practitioners) and managers sometimes doubt the need for a formalised quality management system or fail to realise its usefulness.**

A great deal of time and energy was required from the task teams to brainstorm and document details of each web-supported learning procedure. Efforts were made to place the work in context, yet none of the Steering Team sessions was attended by the full instructional design team. Members of the team were reminded why they were being asked to contribute their time and energy and why procedures were being documented in detail. Ultimately the instructional designers responded well and committed themselves to the task.

*Exhibit 6.10: Confidential discussion*

**Confidential discussion with a senior member of the team  
(June 2003):**

"I am a bit worried about what is going into the QMS. It is taking a lot of time from the instructional designers and it appears to be nothing more than a document management system. How will it ensure that the quality of our web-supported courses is enhanced?"

Replying convincingly to this challenging question was a lesson in itself for me as the researcher. As a result of ongoing discussions with the QA consultant and developing my own understanding, I have been able to formulate what I think is a convincing response, which follows below:

The *online* QMS is but one tool to streamline and formalise processes and procedures in the interests of consistency and continuous improvement of instructional design practice. By implication, improved practice should contribute to improved products, e.g. instructional designers are now expected to follow agreed guidelines such as screen design guidelines and conversion conventions when creating \*.pdf versions of lecturers' electronic slideshows. Further than that, the QMS does not *per se* guarantee improved quality of the

resulting web-supported learning products. The reason is the complex nature of instructional *systems* design (cf. Checkland's (1999) "rich pictures") and the many role players involved in contributing to the quality of web-supported learning products<sup>10</sup>.

In order to dispel doubts about the usefulness of the QMS, attempts were made to organise refresher training in quality assurance, with particular emphasis on the implementation of the online version of the QMS. The QA consultant composed a motivating letter summarising the benefits of the QMS for the TLEI management team. Although there was money available in the budget, implementation training was not viewed as a priority, as shown by Exhibit 6.11.

*Exhibit 6.11: No time for implementation training*

**Discussion with a senior member of the team  
(November 2003)**

"I discussed the suggestion for implementation workshops with the management team. Although there is still money in the budget for this year, there is no available time for group training sessions. Furthermore, everyone is exhausted at this time of year and will not be able to focus on the implementation of the QMS."

**Resulting artifacts of the QMS:**

**Sanity checks** (Appendix F5)

As a result of this lesson, the QA consultant developed 'sanity checks' for procedures and checklists - Why are we doing this? (Boyd, 2003, Appendix F5). These are practical reminders of the reasons for and benefits of formally documenting procedures and creating checklists. They are a common sense check to promote the commitment of team members and to ensure that value is being added and unnecessary documentation is avoided. The sanity check for procedures was ultimately used on the home page of the online QMS (see Figure 6.2).

<sup>10</sup> The quality of the resulting learning products is investigated further in the first research question of this study: What factors promote quality web-supported learning?



Figure 6.2: Home page of the final online QMS

(The details of the bulleted list are clearly readable in Appendix F5.)

### 6.3.5 Lesson 5: Reflection on own practice

#### **Lesson:**

**Instructional designers and project managers in a busy production department need to make time to reflect on their own practice.**

It became clear that requests to task teams to submit their draft procedures had to be handled sensitively and timed according to the pressures on instructional designers in the course of their normal duties. The beginning of each semester is a peak development time for instructional designers and focus group / task team sessions had to wait until production was quieter.

Responses from some of the team members are shown in Exhibit 6.12.



*Exhibit 6.12: Pressure of development takes precedence***E-mail message**

**From:** Instructional designer H.W.  
**Sent:** 11 August 2003 0005:06 AM  
**To:** Jill Fresen  
**Subject:** QMS procedures still on Draft1

Jill

I'm working on the PNI project. The deadline is the 18<sup>th</sup> of August. From the 19<sup>th</sup> of August, I must work on the Mmed, Family Medicine and MSc Sports Medicine projects. I will schedule the task team meeting in September.

I'm sorry, but my projects are priority now.

-----oooOooo-----

**E-mail message**

**From:** Instructional designer E.D.  
**Sent:** 07 October 2003 08:58 AM  
**To:** Jill Fresen  
**Subject:** Re: Sorry, lost my brain somewhere..

Hi Jill

Will you please excuse me from the Task Team meeting on 31 October, I already have another appointment. I also still need to send you the updated Maintenance procedure.

-----oooOooo-----

**E-mail message**

**From:** Education consultant R.D.  
**Sent:** 05 December 2003 03:51 PM  
**To:** Jill Fresen  
**Subject:** QMS

Dear Jill

The consultants wish to spend more time on the issues in the QMS that relate to education and consultation - this time of the year is a bit difficult for all of us. Please expect our feedback in February or early March.

The exhibit above is evidence of the pressure on e-learning practitioners to deliver according to the needs of clients. As a result, there is little time to reflect on how instructional design and educational consultation are practised or how procedures may be standardised or improved. Yet, in the interests of continuous improvement of practice, products and services rendered, a great deal of benefit was ultimately gained from critically analysing and documenting every aspect of the instructional design practice in the unit.

**Resulting artifact of the QMS:****Guiding questions** (Appendix F6)

The QA consultant assisted task teams in reflecting on their practice, since as a novice in the field of instructional design, she was able to pose pertinent questions which stimulated discussion and caused team members to ponder what they do, how they do it and why they do it. She compiled a list of guiding (self-evaluation) questions for task teams to consider when reflecting on and documenting their practice.

**6.3.6 Lesson 6: Guidance for lecturers****Lesson:**

**Lecturers need guidelines in order to prepare learning materials for electronic delivery. They also need guidance on the roles and responsibilities of all role players in the design and development team, including their own.**

Lecturers who attended the WebCT staff training courses expressed the need to know where to start and what materials they should supply to the instructional design team, as shown by Exhibit 6.13.

*Exhibit 6.13: Basic requirements for a web-supported course***Notes taken during the WebCT High Impact staff training course on 19 February 2001:**

**Participant A.v.Z.:** "That's all very well - I like the look of WebCT and I can now use some of its communication tools. But what do you guys expect me to bring to you for the development of my module and in what format? I am not very competent in the layout of MS Word documents, such as tables, bullets, fonts etc."

The team approach to instructional design (Gustafson & Branch, 2002) means that various role players, from lecturers to graphic artists and information specialists, have different roles and responsibilities, which need to be defined. Lecturers need to understand that they have certain responsibilities in the project team, such as committing themselves to providing well-planned

content, ensuring the accuracy of the content and applying for copyright permission.

*Exhibit 6.14: What about scanning and copyright?*

**Notes taken during the WebCT High Impact staff training course on 28 August 2001:**

**Participant B.v.V.:** "I would like to prescribe one chapter from an Anatomy text book, but I don't want my students to buy the whole book, which is very expensive. May I have the chapter scanned in to put on WebCT? Who does that and what about obtaining copyright permission?"

The above exhibit shows the need for lecturers to understand the role of the information specialist at the Academic Information Service (Library) and to have clarity on whose responsibility it is to obtain copyright permission.

*Exhibit 6.15: Clarity on roles and responsibilities*

**E-mail message**

**From:** Lesley Boyd  
**Sent:** 28 October 2002 4:04 PM  
**To:** Jill Fresen  
**Subject:** Responsibilities

In answer to your question, I do not feel that it is necessary to have a line of responsibilities per paragraph in the procedure. However, where it is not self explanatory, it should be very clear about who is responsible for doing what.

**Resulting artifacts of the QMS:**

**Minimum Requirements and Roles and Responsibilities**

(Appendices F7 and F8 respectively)

As a result of this lesson, two instruments were incorporated into the instructional design toolkit, which is one of the artifacts accessible from the online QMS:

- **Minimum requirements**

The need to specify basic requirements for the development of WebCT courses had been addressed in 1998, when one of the lecturers active in the roll-out of WebCT designed the *Minimum Requirements for Web-based Support* (Visser, 1998). The study guide is the basic building block on which the development of a web-supported course is based.

The minimum requirements were extended and enhanced by the instructional design team, in consultation with the education consultants, to reflect the suggested structure for the study guide.

- **Roles and responsibilities**

A clear statement of an organisation's roles and responsibilities is generally required by international standards bodies, such as ISO 9000. Besides a brief sentence in the tabular version of the Timeline (Lazenby & Drysdale, 1999), guidelines about various role players and their functions had not been documented prior to 2001. Therefore a *Roles and Responsibilities* document was developed (Fresen, 2000) and later enhanced with inputs from the team.

### 6.3.7 Lesson 7: Unrealistic expectations

**Lesson:**

**Lecturers often expect immediate completed web-supported learning products, even if they are submitted at extreme short notice.**

Even with clarity on the roles and responsibilities of team members, including their own, lecturers tend to produce their study guides and other learning materials only a short time before students are required to access them in WebCT at the beginning of a semester (Exhibit 6.16).

*Exhibit 6.16: Immediate service expected by some lecturers*

**Notes from a project meeting held on 2/2/04.**

**Present: Lecturer: C. R., project manager, education consultant, instructional designer.**

The lecturer produced his study guide, which was still incomplete and confusing. He required it to be on WebCT immediately and for us to provide student training the very next day. He apologized and explained what had prevented him providing the study guide before the end of last semester. However, this does not change the fact that the instructional design team cannot promise to complete this project at such short notice.

-----oooOooo-----

**E-mail message**

**From:** Jill Fresen  
**Sent:** 6 February 2004 10:12 AM  
**To:** Project Manager D.J.  
**Subject:** Please take this one over

Hi D.

Lecturer H.L. popped in today without an appointment. Last year he delivered his two study guides on diskettes with the request for them to be put on WebCT. We did so and notified him to come to the QA session. He did not respond.

He does not read his e-mails (admitted to me today that he has over 200 unread); he has been away for two weeks and does not have voice mail on his phone. Sounds like our other "friend" who pops in at peak times, yet never delivers ;-). I asked him to make an appointment with you, since you are now the project manager for that faculty.

(I know you have nothing to do and are just playing with your fingers ☺)

### **Resulting artifact in the QMS:**

#### **Service Level Agreement (Appendix F9)**

A service level agreement (SLA) with lecturers was implemented during project meetings and staff training from 2001. However, in order to avoid alienating our clients, the instructional design team had been hesitant to enforce it or to have lecturers sign their acknowledgement of its terms and conditions. In the light of continued lack of awareness of the stipulated development time, especially during peak periods (see Exhibit 6.16), it was decided in February 2004 to enforce the SLA (Exhibit 6.17).

**Exhibit 6.17: SLA is now to be enforced**

**From:** Senior team manager  
**Sent:** 06 February 2004 10:27 PM  
**To:** Instructional Designers list  
**Subject:** Laat studiemateriaal / Late study material

Hallo Almal

Dit klink vir my asof dit regtig baie rof gaan met almal en dat die dosente materiaal baie laat bring. Julle moet asseblief met julle projektebestuurders gesels sodat ons die diensvlakooreenkoms kan 'afdwing' waar nodig. Anders kan dit elke jaar slegter word omdat ons die dosente net altyd akkommodeer.

Translation:

Hello All

It sounds to me as if you are all really having a rough time and that lecturers are very late in bringing materials. Please talk to your project managers so that we can 'enforce' the service level agreement where necessary. Otherwise it will become worse every year because we simply accommodate the lecturers all the time.

The SLA is now negotiated with and signed by the deans of all faculties.

When applying online for the creation of a WebCT course, lecturers are now required to click on the "I Accept" agreement before they may submit their application.

**6.3.8 Lesson 8: Auditable artifacts of an ISO 9000-compliant QMS****Lesson:**

**A formal quality management system requires at least a quality policy, document control conventions and a master document list in order to move towards ISO 9000 compliance.**

It was not the brief for this particular QMS to be ISO 9000-compliant, as mentioned in section 6.1. Nevertheless, where the specifications of that standard were considered to be helpful and relevant, they were complied with. Exhibits 6.18 to 6.20 present evidence of ISO 9000 requirements that were incorporated in the system. The evidence was generated through communiqués during expert consultation with the QA consultant.

The foremost requirement for a QMS is a *quality policy*, stating an

organisation's strategic intent with regard to quality assurance. Figure 3.1, the theoretical framework for a QMS, shows the elements of a QMS, with quality policy the starting item at the apex of the triangle. The QA consultant provided guidelines on such a policy, with regard to its structure and intent, as shown in Exhibit 6.18.

*Exhibit 6.18: Requirements for a quality policy*

**E-mail message**

**From:** Lesley Boyd  
**Sent:** 08 October 2001 11:34 PM  
**To:** Jill Fresen  
**Subject:** Quality Policy

Hi Jill

Here is the confirmation of the requirements of a quality policy. It should:

- \* be defined and documented
- \* indicate objectives/goals for, and commitment to, quality
- \* be relevant to organisational goals and expectations and needs of customers
- \* be understood at all levels of the organization.

You could have it as part of another document, e.g. vision, mission or strategic intent, if there is a concern about a proliferation of different strategic statements.

This is something that I thought you might usefully spend time on in advance of the training workshops. A quality policy arises from defining your customers, which you have already done in your Quality Action Plan, and defining their expectations and needs at a strategic level.

The development of TLEI's customised quality policy is described after Exhibit 6.20, since it became an artifact in the QMS.

The online QMS is the repository for the latest versions of all documentation. Users may be working according to hard copies of certain documents, e.g. screen design guidelines. Ongoing consultation with the QA expert highlighted the need for strict document control conventions (Exhibit 6.19). These are items in the footer of a document which clearly identify its name, draft or version number and date of generation. Document control ensures consistency and currency of all documentation in any formal quality management system.

*Exhibit 6.19: Document control conventions***E-mail message**

**From:** Lesley Boyd  
**Sent:** 28 October 2002 4:04 PM  
**To:** Jill Fresen  
**Subject:** Document control conventions

A general comment about document control...

We should only issue things as Version 1 once they have been circulated (or loaded on the QMS) for comment, and the comments have been incorporated as required. Up until that point everything should be First Draft, Second Draft etc as each new set of comments is included. It's better to stick with one Version No. and then have additional drafts of that version, e.g. Version 6 First Draft, Version 6 Second Draft etc.

I know this is about as interesting as boiled cabbage, but it hopefully does make sense.

Document control does make provision for you to use the word 'Definitive' alongside a Version which is not a draft, if you wish.

Once all the procedures had been documented and linked to their supporting documents, a *master document list* was required. This is a list of all procedures and supporting documents in the QMS, showing their latest version number and date of generation, so that users may see at a glance what the latest version of each document is. The evidence for this artifact is given in Exhibit 6.20.

*Exhibit 6.20: Need for a master document list***E-mail message**

**From:** Lesley Boyd  
**Sent:** 30 May 2003 12:56 PM  
**To:** Jill Fresen  
**Subject:** Master Document List

I will do the Master Document Control List showing the correct draft number of each proc and checklist as soon as I possibly can, maybe over the weekend.

continued ...



**E-mail message**

**From:** Lesley Boyd  
**Sent:** 07 August 2003 04:56 PM  
**To:** Jill Fresen  
**Subject:** Tidied up Master Document List

Hi Jill

I just tidied this up and put the date right at the top. I've made it Draft 3 until you are ready to load it into the system. Then you can go to Version 1. Every time it is changed in the live system you should increment the Version number.

It might seem like wheels within wheels to have document control on the master document list, but I think we need it for the same reason as all the other documents.

**Resulting artifacts of the QMS:****Quality pledge, document control conventions and master document list**

(Appendices F10, F4 and F11)

As a result of this lesson, the following artifacts were incorporated into the QMS:

- quality pledge;
- document control conventions;
- master document list.

The QA consultant provided examples of quality policies from other organisations. I coordinated the creation of a customised quality policy for TLEI via a workshop and a draft document, which was discussed, circulated, translated into Afrikaans and agreed upon by the TLEI management team. It incorporates the notions of fitness for purpose, client satisfaction, cost effectiveness, defined standards, negotiated time frames and continuous improvement of the department's processes and functions (Appendix F10).

The team decided to call the resulting statement a *quality pledge* rather than a quality policy, since the former implies commitment on the part of all team members. The quality pledge was signed by all members of the E-Education Unit. Besides being accessible from the online QMS, it appears on the departmental web site as well as in the annual report. The intention is to hang it in the reception area of TLEI so that all clients and visitors may see the department's commitment to quality.

Document control conventions in the form of a standard footer are used on all procedures and supporting documents, in order to control version numbers and dates of issue. These are visible on the example of a completed procedure in Appendix F4.

The master document list lists each procedure, its version number, supporting documents and date of issue so that team members may compare any hard copies they have with the latest online version. By implication, the master document list must be maintained and updated each time a version number changes on any of the procedures or supporting documents.

## **6.4 The formal QMS**

The artifacts reported in section 6.3 were incorporated into the online QMS.

The entire system is described here under the following sub headings:

- Synthesis of lessons learnt and artifacts produced;
- Analysis of the online QMS and its early use;
- Benefits of the QMS.

### **6.4.1 Synthesis of lessons learnt and artifacts produced**

All the procedures and their supporting documents were saved by the task teams in electronic format. They were converted to \*.pdf format (Adobe portable document format) and built into the full online version of the QMS. Wherever possible, advantage was taken of the online environment, with respect to graphics, screen layout, navigation and links. Some supporting documents are available for editing in MS Word, for example the sample project proposal, so that project managers can forward it to lecturers for customisation to their own requirements.

The structure of the online QMS is as follows:

- TLEI Quality Pledge;
- Project Timeline (2-dimensional);
- QMS framework (3-dimensional expansion of the Project Timeline);

- master document list;
- all procedures and their respective supporting documents;
- glossary of related terminology;
- links to other useful sites involving standards and guidelines for web-supported learning;
- discussion tool for later user evaluation.

The lessons learnt during the research activities and the resulting artifacts in the online QMS are summarised in Table 6.2.

*Table 6.2:* Lessons learnt and the resulting artifacts in the QMS

	<b>Lesson learnt</b>	<b>Resulting artifacts</b>
1.	Adopt a fundamental instructional design model to serve as the main process in the quality management system.	Project Timeline
2.	Focus attention on the Analysis and Evaluation phases in instructional design in order to avoid expensive re-work.	Needs Analysis Checklist Summative Evaluation Checklist
3.	Train e-learning practitioners in the basics of quality assurance practice.	Template for a procedure Example of a completed procedure
4.	Participants (in this case, e-learning practitioners) and managers sometimes doubt the need for a formalised quality management system or fail to realise its usefulness.	Sanity checks
5.	Instructional designers and project managers in a busy production department need to make time to reflect on their own practice.	Guiding (self-evaluation) questions
6.	Lecturers need guidelines in order to prepare learning materials for electronic delivery.	Minimum requirements Roles and responsibilities
7.	Lecturers often expect immediate completion of web-supported learning products, even if submitted at extreme short notice.	Service Level Agreement
8.	A formal quality management system requires at least a quality policy, document control conventions and a master document list in order to move towards ISO 9000 compliance.	Quality policy (pledge) Document control conventions Master document list

#### 6.4.2 Analysis of the online QMS and its early use

The online QMS is an artifact that was built as a result of the self-evaluation exercise undertaken by the QMS Steering Team and task teams. The positive outcomes of the self-evaluation exercise are discussed in section 6.4.3:

##### *Benefits of the QMS.*

The online QMS is a central repository of documents, both theoretical and practical. The main theoretical document is the Project Timeline, which conceptualises the ADDIE instructional design model, subdivided into procedures. Each procedure was analysed and documented in terms of an overview, its objectives, detailed procedure steps, roles and responsibilities and supporting documents necessary for the operation of the procedure.

There are various types of supporting documents, for example:

- policy documents, e.g. funding policy, project proposal guidelines;
- pro formas which can be customised to a client's requirements, e.g. sample project proposal, funding application form;
- checklists, e.g. needs analysis checklist, multimedia evaluation checklist;
- client satisfaction instruments, e.g. Student WebCT Experience questionnaire and Lecturer Experience and Satisfaction interview schedule;
- protection devices, e.g. Service Level Agreement between TLEI and academic departments;
- standards, e.g. screen design guidelines, design principles and standards, minimum requirements for web-supported courses.

The different types of supporting documents illustrate the variety of items which contribute to a unit's quality management initiatives. The QMS ensures that documents are formalised, agreed upon and centrally stored and maintained, instead of relying on an informal and uncontrolled collection of documents residing on the computers of various team members, in various states of currency.

Some of the documentation is required at project management level, especially at the beginning of an e-learning project. For example, the policy documents, sample project proposal and needs analysis checklist enable project managers to support clients in scoping and initiating an e-learning project. The Service Level Agreement is negotiated with clients early in a project, as well as during WebCT staff training. The importance of such a mutual agreement is to protect both parties (TLEI and academic staff) against unrealistic expectations (see Lesson 7 and Exhibit 6.16).

Other types of supporting documents are used by instructional designers in the course of their normal practice. Indeed the standards and checklists have proved their usefulness in standardising practice, not only for the existing instructional design team, but also for the direction of student assistants, newly appointed instructional designers and lecturers who choose to be 'own designers'. Exhibits 6.21 and 6.22 present evidence of how such guidelines have proved their usefulness.

#### Exhibit 6.21: Referring a designer to the guidelines in the QMS

**E-mail message**

**From:** Instructional designer E.D.  
**To:** Instructional design team  
**Sent:** Tuesday, 29 June, 2004 10:12 AM  
**Subject:** Design principles

Hallo almal

Ek het gister saam met 'n dosent gesit en werk en besef dat die man die basiese ontwerpbeginsels benodig waarvolgens ons werk. Ek dink ons het "many moons ago" so iets opgestel. As julle dalk 'n ander document hieroor byderhand het, wil julle dit nie asb.vir my aanstuur sodat ek dit vir hom kan gee nie.

[Translation:

Hello all

Yesterday I sat and worked with a lecturer and realised that the man requires the basic design principles according to which we work. I think we compiled something like that many moons ago. If you perhaps have a document about this readily available, will you please send it to me so that I can give it to him.]

continued ...

**E-mail message**

**From:** Jill Fresen  
**To:** Instructional design team  
**Sent:** Tuesday, 29 June, 2004 12:27 PM  
**Subject:** RE: Design principles

Hello all

That is PRECISELY where the Quality Management System can help us. Go to tlo, access the QMS, select Project Procedures and then Design and Prototype Development. There are two supporting docs: Screen Design Guidelines and Design Standards and Principles. They are not specifically aimed at lecturers, but they should be "waarvolgens ons werk" ☺

**Exhibit 6.22: Referring other designers to the standards in the QMS****E-mail message**

**From:** Instructional designer E.D.  
**To:** Instructional design team  
**Sent:** Tuesday, 08 April, 2003 03:31  
**Subject:** Checklists

Hi All

I have merged the two checklists. I would just like to leave the following thoughts with you.

I realised the importance of these checklists while I was working on them, in that if you have such a document, it could be very easy to give it to another instructional designer to do maintenance on the module. The reason for this thinking is that when I give academic staff training, I have to make sure that the lecturers understand that there are different ways in which each programme has been designed. Because when a lecturer then has to start maintaining their own course, you can give them a copy of the checklists. That would help them to remember that if a Content Module has been included, they have to do certain things differently as opposed to when the original instructional designer designed their own navigation.

Furthermore, I feel we should give these checklists to the student assistants, because then we have something more formal to tell them that these are the specs and this is what I want you to do. If the product they then deliver does not comply with the specs, we can deal with it in a proper manner.

Tools such as standards and checklists contribute to standardising instructional design practice, which in turn contributes to higher quality web-supported learning products.

Finally the client satisfaction instruments are those that are part of the summative evaluation procedure, which evaluates client perceptions of the

value of web-supported courses after they have been implemented. The issue of client satisfaction was investigated in research question 2 in this study (chapter 5).

Galanti (2003) claims that a blended learning solution (such as WebCT together with classroom sessions) needs to work to align people, resources and processes within an organisation. He highlights the need for summative evaluation of learning interventions, to ascertain whether they have made a measurable impact on the organisation: “Remember to focus on tangible results such as how business processes have improved in terms of quality, efficiency and productivity. And, if the groundwork was properly executed, there is no reason why it shouldn’t deliver the expected results” (Galanti, 2003, online reference).

The overall self-evaluation exercise in the E-Education Unit at the University of Pretoria and the lessons learnt have contributed to aligning and improving the instructional design process, as shown in the following section.

#### **6.4.3 Benefits of the QMS**

The dynamic, iterative nature of instructional design and the complexity of the systems thinking involved, caused extensive modification of the Project Timeline. During the work of the task teams and the development of the paper-based prototype, the specifications and procedures evolved as they were analysed and documented. We learnt a great deal by questioning ourselves, under the guidance of the QA consultant, about exactly what our processes and procedures consist of, who does what and why. Not only that, but we were forced to pay attention to previously neglected areas of the Project Timeline, for example, Needs Analysis and Summative Evaluation.

In the early stages of implementation, it was found that the online QMS provides the following benefits:

- All documentation is stored in a central, online location.
- All documentation subscribes to regulated document control conventions.
- Updates to documentation are quick and easy, being a web environment.
- The latest version of procedures and supporting documents are available instantly to any member of the team, as well as to TLEI Management.
- Newcomers to the team are able to quickly and independently learn 'how things are done around here'.
- The processes and procedures of the E-Education unit have been streamlined and standardised as far as possible in such a dynamic and changing environment.

An elegant feature of the online QMS is that, being customised for the domain of web-supported learning, it is itself an example of an instructionally designed, interactive and resource-rich learning environment. The formal online QMS is accessible at the following URL, at least until December 2005: <http://www.up.ac.za/telematic/quality/quality.htm><sup>11</sup>.

## 6.5 Summary

Instructional design of web-supported learning interventions in higher education is a highly complex and volatile process, involving various role players with varying priorities and levels of commitment. In designing, developing and implementing a customised online quality management system in the E-Education unit at the University of Pretoria, expert consultation and task teaming methodologies were used. Staff training in quality assurance before and after implementation of the online system was provided. Input from team members was encouraged, in order to iteratively grow a formal QMS that is an attempt at self-evaluation, rather than providing accountability to external quality agencies.

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<sup>11</sup> Although originally designed in WebCT, the QMS has since been moved to the TLEI Internet site, to enable easy access for TLEI users as well as international visitors.



This chapter presented evidence of eight lessons that were learnt in attempting to apply standard quality assurance theory to the instructional design process for web-supported learning. In so doing, it answers research question 3 and shows that it is possible to bring together the two discourses in a sensitive way.

The eight lessons learnt are presented here and are summarised together with the artifacts produced, in Table 6.2.

**Five lessons were learnt in respect of the instructional design process:**

- **Lesson 1:** Adopt a fundamental instructional design model to serve as the main process in the quality management system. Subdivide it into its constituent procedures to be analysed and documented in detail.
- **Lesson 2:** Focus attention on the Analysis and Evaluation phases in instructional design in order to avoid expensive re-work, wasted work or development whose instructional effectiveness is not measured.
- **Lesson 3:** Train e-learning practitioners in the basics of quality assurance practice. Do not allow too much time to lapse between workshops and procedure writing.
- **Lesson 4:** Participants (in this case, e-learning practitioners) and managers sometimes doubt the need for a formalised quality management system or fail to realise its usefulness.
- **Lesson 5:** Instructional designers and project managers in a busy production department need to make time to reflect on their own practice.

**Two lessons were learnt in respect of lecturers and their needs:**

- **Lesson 6:** Lecturers need guidelines in order to prepare learning materials for electronic delivery. They also need guidance on the roles and responsibilities of all role players in the design and development team, including their own.
- **Lesson 7:** Lecturers often expect immediate completed web-supported learning products, even if they are submitted at extreme short notice.

**One lesson was learnt in respect of ISO 9000 compliance:**

- **Lesson 8:** A formal quality management system requires at least a quality policy, document control conventions and a master document list in order to move towards ISO 9000 compliance.

The main work *process* is the Project Timeline, which is based on the ADDIE instructional design model. This process was subdivided into various *procedures*, each of which was documented according to a standardised template and using document control conventions. Supporting documents were collected, updated or created where necessary, and linked to their respective procedures.

The result is a formal, online, instructionally designed QMS that has various benefits in formalising and streamlining the processes, procedures and documentation in use by the E-Education Unit. By implication, such guidance for improved practice should translate into improved web-supported learning products, although the dynamic contributions of all role players means that a system alone cannot guarantee improved products<sup>12</sup>.

Generalisability issues were discussed in chapter 1, section 1.9.3. Other similar support units at tertiary institutions may learn from the eight lessons and will be able to modify and customise the artifacts of this QMS for their own use in their own particular situations. Evaluation of the effectiveness of the QMS itself after implementation provides scope for further research.

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<sup>12</sup> The quality of the resulting learning products was investigated in the first research question for this study (chapter 4).