

# **CHAPTER 7 : A MODEL FOR THE MANAGEMENT OF INTERNAL QUALITY ASSURANCE IN THE TRAINING OF STUDENT TEACHERS IN TEACHER TRAINING INSTITUTIONS IN THE GAUTENG PROVINCE**

## **7.1 INTRODUCTION**

The literature study (Chapters 2, 3 and 4) indicated clearly that the existing situation regarding teacher training in South Africa is a matter of grave concern among educational authorities and practitioners. It further became evident that most of the attributes that characterise a profession are not hallmarks of the educational practices in South African schools.

Teacher training is central to the transformation of education and to the reconstruction and development of South Africa. However, the products of teacher training institutions are ill-prepared for the realities of South African schools. The above scenario creates an immediate focus on quality and quality improvement in the training of student teachers. If education is to become a true profession, it is vital that high-quality pre-service education be delivered to prospective teachers.

In attempts to address the weaknesses and shortcomings that characterise teacher training in South Africa, government has launched a comprehensive number of initiatives, including policy and legislation. However, there is no sustainable evidence of these initiatives being successful in improving the quality of teacher training. According to the researcher, far too much emphasis is placed on external regulatory measures. Policies and regulations are merely external guidelines and parameters within which teacher training has to take place and can as such not guarantee quality or quality improvement. In order to achieve quality in teacher training, the execution of policies and regulations should be supported by a robust system of internal quality assurance.

Quality assurance initiatives in South African educational institutions are mainly concerned with how an institution can organise itself to ensure that quality is continuously maintained and improved. However, it is not enough to lay down procedures without ensuring that they are being followed and that they provide the

desired results. To be effective and sustainable, the process of internal quality assurance should be managed. The researcher is of the opinion that institutions generally adopt and implement quality assurance models, without considering a system through which the process can be managed. The literature study highlighted the fact that educational institutions are notoriously vague about quality processes and control mechanisms and about the position of authority and responsibility in terms of these processes. In an effective quality management system, processes and the associated responsibilities, procedures and resources are established and maintained in a consistent manner.

Quality assurance is basically a simple idea. With the aim of assuring the customer of quality, requirements or standards are set for a product or service and production or delivery is organised so that these requirements or standards are met consistently. However, although the idea is simple, its implementation is not.

It is therefore necessary to design a model that could be used by the management teams of teacher training institutions. The proposed model for the management of internal quality assurance in the training of student teachers intends to provide teacher training institutions with a readily usable tool for developing and managing an internal quality assurance system.

This chapter sets out to design such a model for use by teacher training institutions in the Gauteng Province. Since the aim of this chapter is to design a model for the management of internal quality assurance, it is essential to give an exposition of nature and scope of the concept *model*.

## **7.2 THE CONCEPT "MODEL"**

Confusion often surrounds the meaning of the concept "model". In some cases the concept "model" is used synonymously with the concept "theory" although the two are conceptually different. In brief, it may be argued that theory is judged by its truthfulness in portraying reality while a model is judged by its usefulness in explaining reality (Mouton & Marais, 1990:142). A model is a representation of an object, system or idea in a form, which differs from the object itself (Mouton & Marais, 1990:143). Nadler (1989:4) describes a model as a representation of the

reality of those who have developed it. Mouton and Marais (1990:143) state that a model attempts to represent the dynamics of a phenomenon in that it provides a simplified indication of relations between the main elements in a process. A model is thus a mode of representation, within which not all its features correspond to some characteristic of its subject matter, but rather draws attention to specific themes, relations and dimensions.

Mouton and Marais (1990:144) advocate that most models have certain characteristics, namely:

- models identify central problems or questions regarding the phenomenon to be investigated;
- models limit, isolate, simplify and systematise the domain of research;
- models provide a new language within which the phenomenon can be discussed; and
- models provide explanation sketches and resources for making predictions.

A good model can help the user to understand what is actually a complicated process (Nadler, 1989:5). Although models are only representations and should not be confused with reality, models have many benefits for the user. These benefits or advantages will now be presented.

### **7.3 ADVANTAGES OF MODELS**

The following advantages of the use of models should be considered by researchers (Nadler, 1989:5; Vermaak, 1999:212):

- Research results can be presented in text-form within a specific framework.
- The meaningfulness of the research results can be presented and evaluated within a specific framework.
- The problem that has been researched can be presented in a reduced and summarised form.
- The gap between the theory and the empirical research can be closed.
- What is known through research and observation can be integrated.

- Observation is guided.

Although a good model can help the user to understand what is essentially a complicated process, there are also limitations or disadvantages of models.

#### **7.4 DISADVANTAGES OF MODELS**

The following disadvantages of the use of models should be considered by researchers (Nadler, 1989:6-7):

- Models can only represent reality and should thus not be confused with reality.
- In reducing a complex process to a one-dimensional representation, information can be lost.
- The utility of models depends on the user's own understanding of reality.
- Feedback in an open model is not automatic.
- The closed model gives few options for the user's own interpretation.

#### **7.5 MODEL DEVELOPMENT**

There are various ways to build models. Vermaak (1999:210) identifies the following steps in the development of a model:

- Problem identification.
- Making assumptions through the identification and classification of variables and through determining the inter-dependence of variables and sub-models.
- Design the model.
- Verify the model through ensuring that the model has addressed the problem, the model is meaningful and the model can be applied in practice.
- Implement the model.
- Maintain the model.

Because a model focuses on a certain aspect of reality, a variation of models can be applicable in building one specific model (Vermaak, 1999:208). Nadler (1989:5) identifies a number of questions that should be considered in the choice of a model, namely:

- What is its purpose?
- For what kinds of learning is it appropriate?
- Does it help the user to anticipate what he or she will find?
- Does it provide alternatives?

The design of a model will depend on the application value of that specific model. Nadler (1989:4) states that in the designing of a model, the fact that other models already exist, should be recognised as such models can be extremely useful in an attempt to build a new model. For the purpose of this research two kinds of models will be discussed, viz. the closed model and the open model.

## **7.6 TYPES OF MODELS**

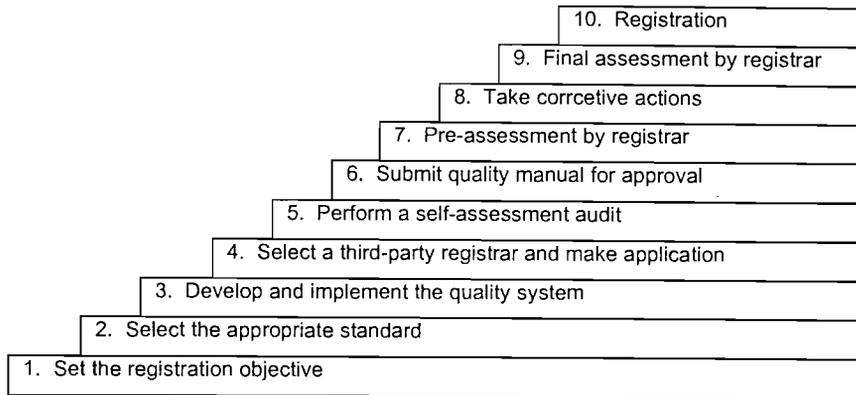
### **7.6.1 The closed model**

A closed model is based on the assumption that all inputs can be identified. Closed models endeavor to build all the possible variables into the model. Anything that can have an impact on the design process should have been previously identified and integrated into the model (Nadler, 1989:6).

When using a closed model, the designer is being assured that the conclusions and outcomes are predetermined. If the designer therefore uses the model as indicated by the model-builder, the programme will evolve exactly as promised by the model. According to Nadler (1989:6) the designer has few options, for if he deviates from the model, it is not used for the purpose for which it has been developed. The linear movement in a closed model is depicted in Figure 7.1.

This closed model might be a logical path for the management of an internal quality assurance system in the training of student teachers as it provides a sequential progression through the various stages of quality assurance certification. However, it fails to recognise the complexity of the process as well as the management thereof. It presupposes a smooth and successful progression through the various steps and does not explicitly allow for feedback and follow-up mechanisms for corrective action. The component of training is also not recognised .

**Figure 7.1 : Ten basic steps to ISO registration (Craig, 1994 : 20)**



Teacher training institutions would thus have to deviate from the model, which would lead to a situation where the model is not used for the purpose for which it has been developed.

However, because a model focuses on certain aspects of reality, and a variation of models can be applicable in building one specific model, it would be meaningful to combine some of the characteristics of the closed model with the characteristics of the open model in designing a model for the management of internal quality assurance in the training of student teachers.

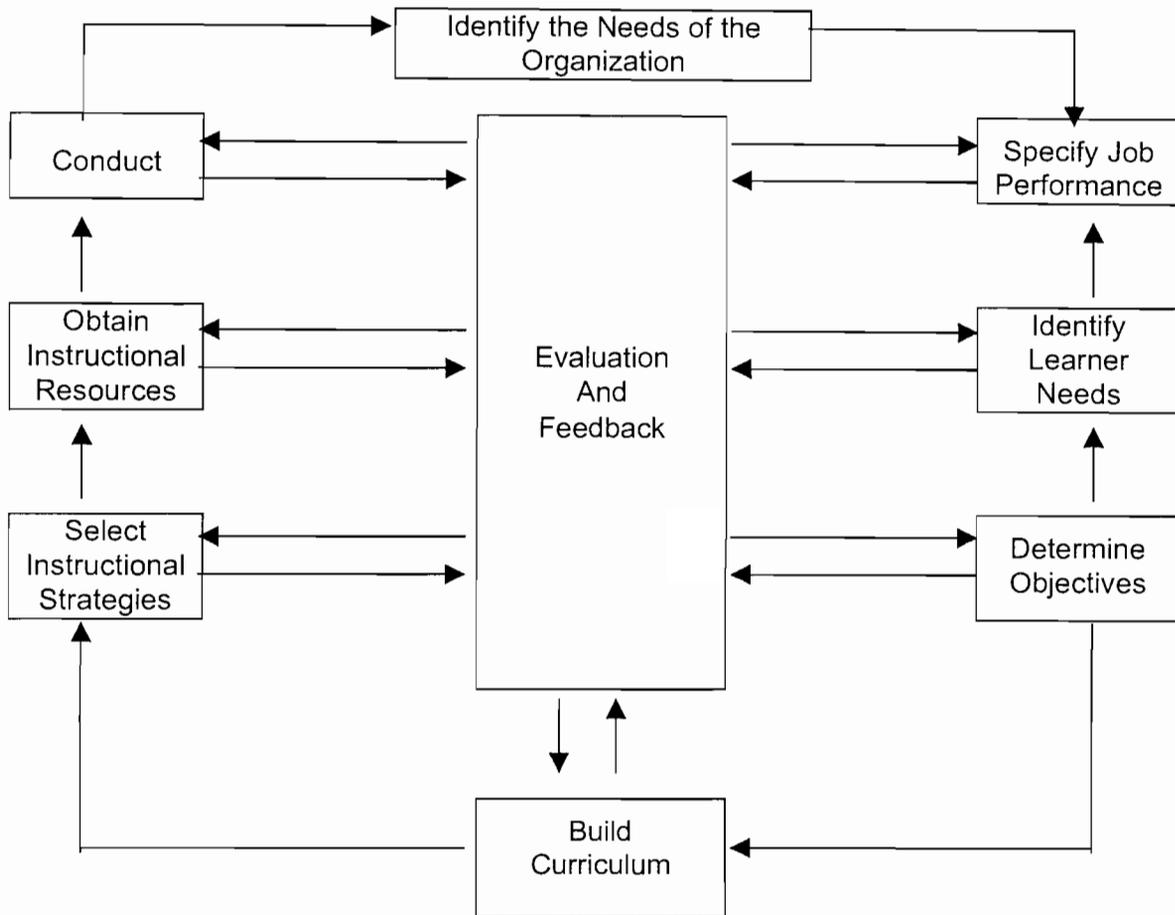
### **7.6.2 The open model**

An open model is one that considers that outside factors, which can have an impact on the design process, exists. In creating an open model, the model-builder is accepting the fact that some outside forces may be beyond the scope of the model but should still be considered in the design process. The open model therefore provides the designer with possible courses of action and anticipation of outcomes (Nadler, 1989:6).

The open model endeavors to describe what will happen if the model is followed. However, it provides no guarantees as to outcomes and the design process should thus be carefully observed as it unfolds. According to Nadler (1989:6) feedback in an open model is not automatic but the assumption is made that the user will recognise the need for feedback. There is, however, nothing to restrict an open model from

having a feedback component build into it. In Figure 7.2 an example of an open model is presented.

**Figure 7.2 : An example of an open model (Nadler, 1989 : 18)**



The strength of this model seems to be located in its simplicity, i.e. it can be easily implemented because it progresses through few and understandable phases. It does, however, not recognise the complexity of the process of development or the management thereof. The model recognises the importance of an environmental analysis in order to identify the needs of the organisation and to determine objectives to be achieved. It emphasises the vital role of evaluation and feedback throughout the process of development. The model stresses the importance of job specifications based on valid data regarding current job performance. The learning and training needs of those who are doing the job are recognised. It further highlights the need for adequate resources to be available.

The fact that many of the crucial elements involved in the management of internal quality assurance are recognised in this model as well as the fact that the process of development is illustrated as circular process, makes the model quite appropriate for the management of internal quality assurance in the training of student teachers.

However, there seems to be a number of limitations in the model. The simplicity of the model might lead to a perception that the implementation of a system for the management of internal quality assurance would be a smooth, uncomplicated process. The model fails to take cognisance of the complex nature of the management of internal quality assurance in that it fails to address a number of essential elements, for example:

- management commitment;
- a strategic approach;
- customer expectations and needs;
- setting standards for a good service or product;
- involving consumers in setting and monitoring standards;
- monitoring performance against standards;
- remedying shortfalls; and
- the importance of managing the system.

The above mentioned elements are essential in the process of managing internal quality assurance. Any model for quality assurance should clearly indicate the central role of the management team of an institution. The author is of the opinion that this model is too simplistic as it presupposes successful implementation and does not cater for a number of basic elements of the management of internal quality assurance.

It can be concluded that the management of internal quality assurance seems to involve more than have been exposed by the two models that were presented. It involves the total system of activities that is implemented within the quality system. Quality assurance systems, when effectively managed, are systems which provide

the basis for systematic methods of working and a disciplined approach to the performance of tasks.

The model proposed here includes characteristics of both the closed and open models. Since this model is based on systematic methods of working and a disciplined approach to the performance of tasks, it is aptly termed the *Systematic Internal Quality Assurance Approach*.

## **7.7 THE SYSTEMATIC INTERNAL QUALITY ASSURANCE APPROACH (SIQAA)**

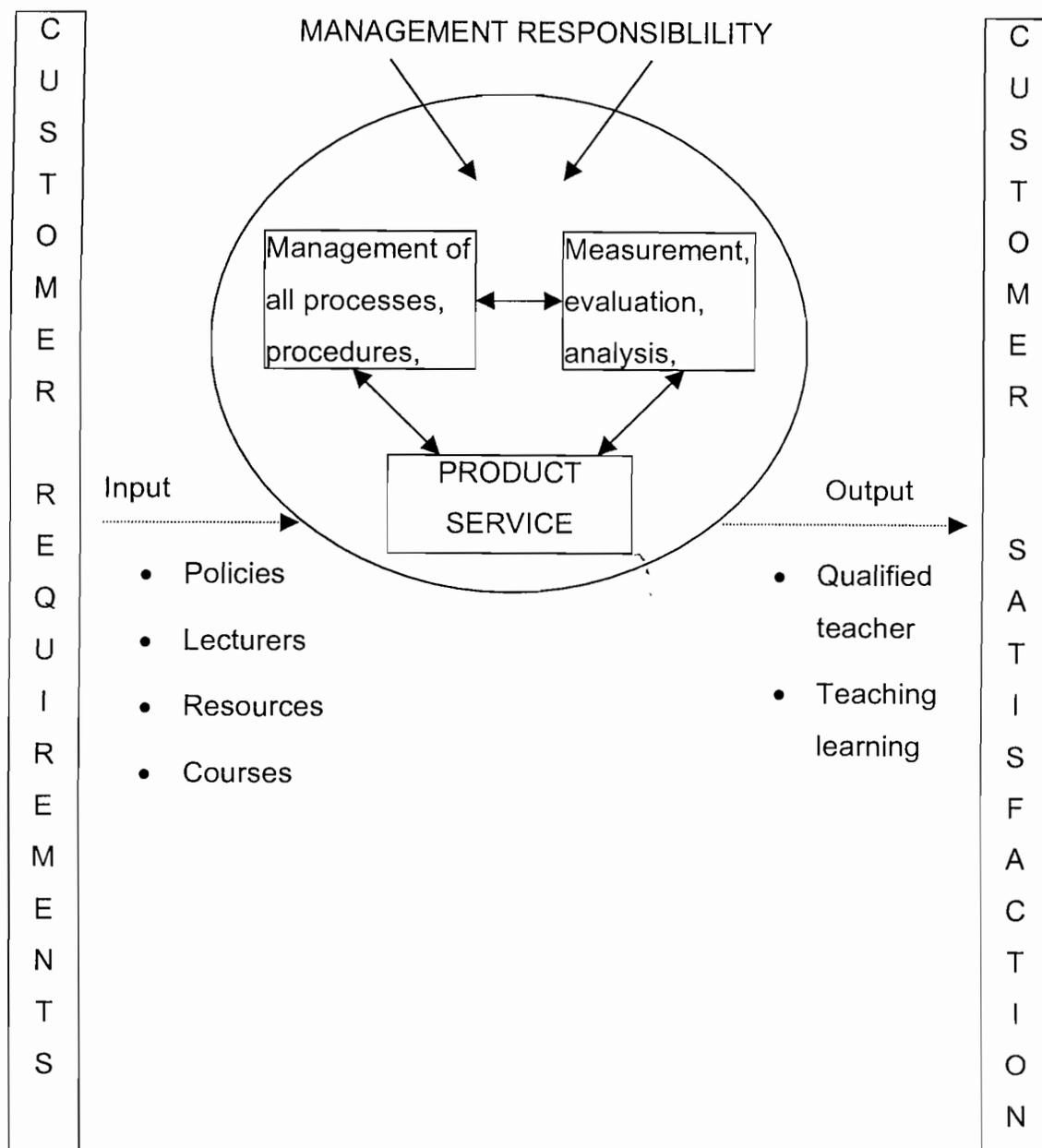
### **7.7.1 Orientation**

The SIQAA, as illustrated in Figure 7.3, is premised on the need to develop an effective internal quality assurance management system, focusing on strategic issues, continuous improvement rather than periodic improvement efforts and the integration of daily management practices to support the implementation of a strategic plan for quality improvement. The SIQAA presents a *system* through which quality assurance can be *managed* and does therefore not refer to the details or contents involved in the training of student teachers.

The SIQAA is based on the ISO 9000 series of international standards as one of the most significant influences on the advancement of the global quality movement. Despite objections to its suitability for educational institutions, the international standard requires properly defined responsibilities and authority, presents clear tasks and objectives and, if achieved, allows an institution to claim "quality" in a manner which is internationally understood. The researcher believes that ISO 9000 is a generic quality management system standard applicable to any organisation, regardless of the product or service it produces. It can therefore be applied in teacher training institutions to ensure that:

- the institution's mission and aims are clear and known to all;
- the systems through which work will be done are well thought through and communicated to everyone;

**Figure 7.3 : The Systematic Internal Quality Assurance Approach**



- responsibility in terms of tasks is clear;
- the institution's perception of quality is well-defined and documented;
- systems to check that everything is working according to plan are in place;
- there are agreed ways of correcting errors;
- a wide sense of ownership of quality exists across the whole institution; and

- there is one quality management system for the whole institution.

Quality and quality related concepts are the pillars of the SIQAA. The fact that much has been written about quality, with varying views on its definitions, requires that the dimensions of "quality", as it is used in the SIQAA, be clarified and understood.

### **7.7.2 The concept quality**

In Figure 7.4 broad categories or dimensions of quality, as it is conceptualised in the SIQAA, are depicted:

The concept "quality" is thus related to the following:

- quality assurance;
- quality assurance systems;
- quality management;
- quality control; and
- total quality.

Achieving total quality in the training of student teachers requires that an institution commits itself to the process of managing an internal quality assurance system.

Setting up and managing an internal quality assurance system will largely depend on a number of essential elements. These elements, referred to by the researcher as *Essential elements of internal quality assurance systems*, will be exposed in the next section.

### **7.7.3 Essential elements of internal quality assurance systems**

The essential elements of internal quality assurance systems is depicted in Figure 7.5.

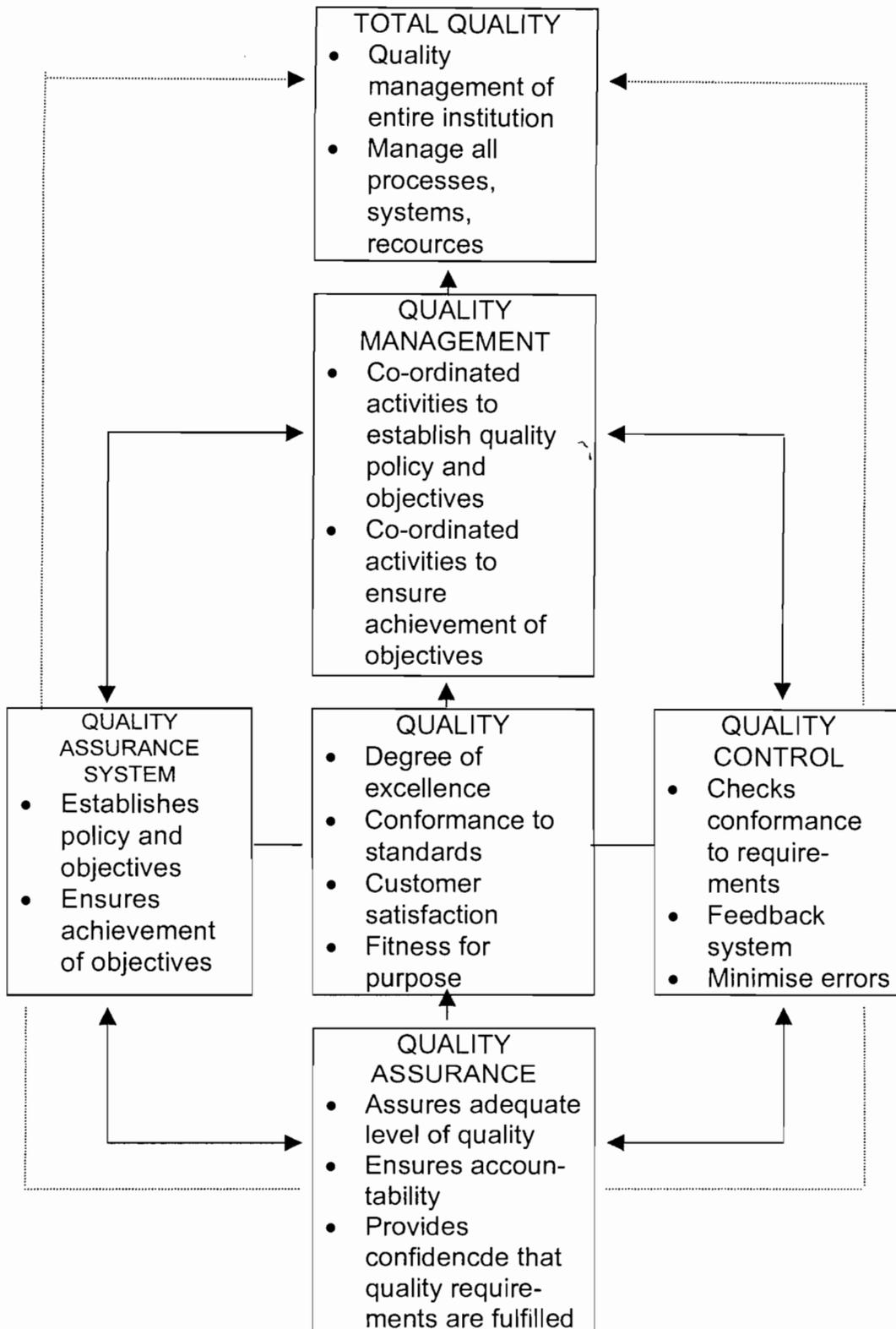
The essential elements of internal quality assurance systems will now be discussed.

#### **7.7.3.1 Management commitment**

The success of implementing the features of a quality management system is a direct responsibility of the management team of an institution. All major writers on quality and quality assurance conclude that quality management requires a solid and

visible commitment from management level (cf. 3.2). The following factors usually contribute to the realisation of a need for quality assurance in teacher training:

**Figure 7.4 : Dimensions of quality**



- Customers' perception that the quality of teacher training is generally poor.
- Customer dissatisfaction with the irrelevance of the teacher training curriculum.
- Increase in cost without an increase in value.
- External demands for accountability.
- Ignorance of community and market needs.
- The public view that an institution is insufficient.
- Misplaced satisfaction with an institution's own services and products.

Management's decision to implement a formal quality assurance system is thus initiated by a perceived need to provide quality services and products. Management should understand and believe the benefits of implementing a quality assurance system and should continually demonstrate its commitment to the effort. Along the road of implementation, the institution will encounter numerous barriers that only management can remove. Management's commitment will be tested regularly and any wavering will certainly cause a major setback in the quality assurance effort and will most probably render the resulting quality system ineffective.

### **7.7.3.2 Developing mission and vision statements**

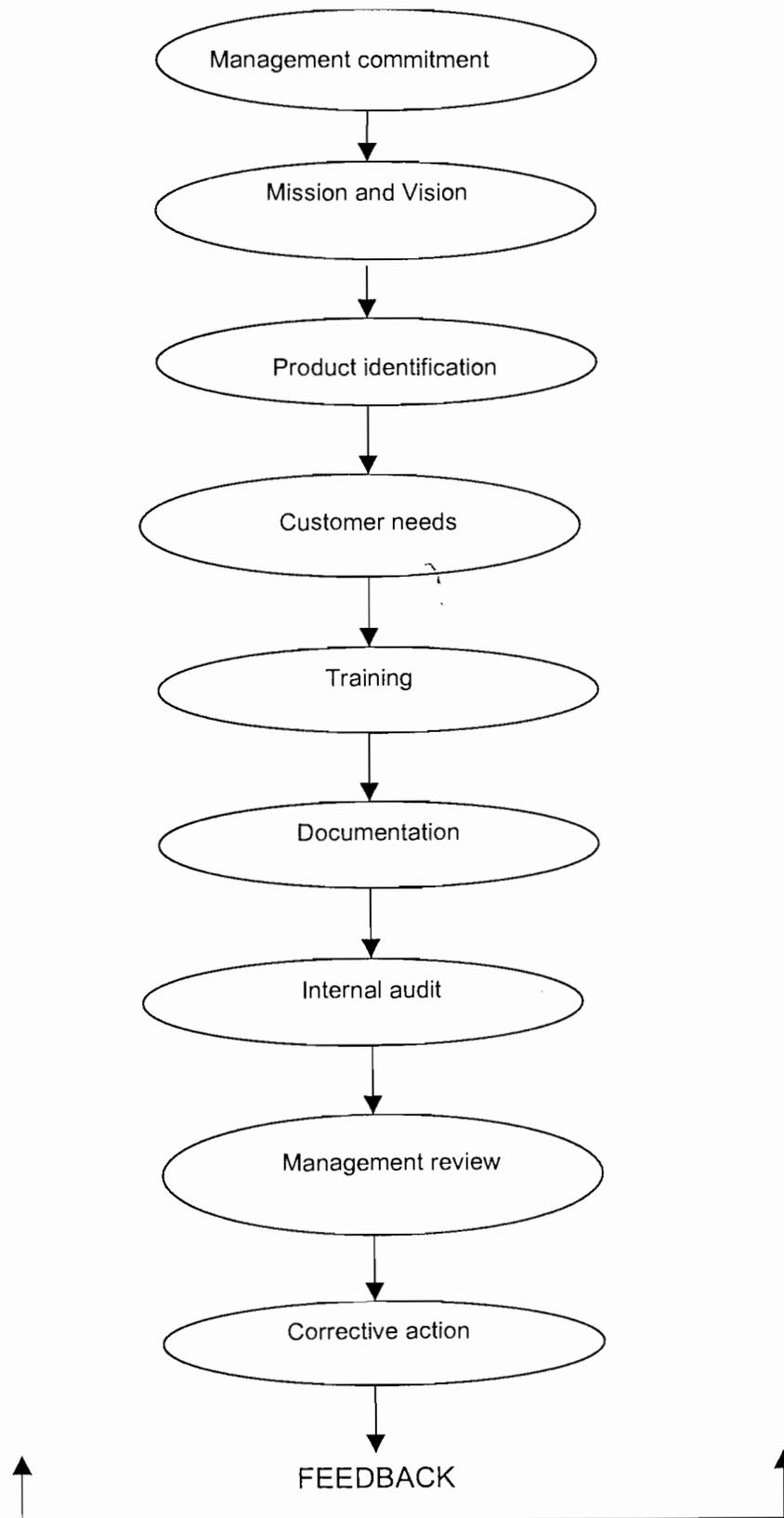
Quality assurance starts with a clear sense of what the institution wants to achieve: its mission. Clear mission and vision statements are crucial in the success of setting institutional quality targets. To implement a quality assurance system in an institution where no shared view of what quality constitutes exists, will be a futile exercise.

If an institution's intention to deliver quality products or services is clearly stated in its mission statement, the mission statement in itself becomes a quality statement.

The mission statement should be accompanied by a vision statement, which is a description of the institution and involves aspects such as the size, basic structure and sphere of influence of the institution.

Together, the mission and vision statements act as a cornerstone for decision-making and enable all in the institution to focus energy for achieving sustainable quality improvements.

Figure 7.5 : Essential elements of internal quality assurance systems



### **7.7.3.3 Defining the product of a teacher training institution**

In order to decide on the applicability of a specific quality management system, it is imperative that an institution defines its product. For the purposes of this model, it is advocated that teacher training institutions design new programs and learning experiences, but also provide a service to its learners and other customers. The products of teacher training institutions are the learning process, the qualified teacher and the award given to the student by the institution.

### **7.7.3.4 Establishing customer needs**

The literature study (Chapters 3 and 4) indicates that decisions in educational institutions are rarely made on the basis of a systematic evaluation of options and that changes are rarely made on the basis of skilled and systematic data-based evaluation. It is of vital importance that an institution, by means of an external environmental analysis, determines what its market wants. However, before an environmental analysis can be done, the institution should be sure of who its customers are.

The customer is the purchaser of the product of an institution. The clients of teacher training institutions include the student, the employer, parents, the government and others. The researcher wants to advocate that the primary clients of a teacher training institution are the enrolled students, the employer or government and the school where the teacher will be employed.

The external environment determines the right of existence of an educational institution. The total external environment of the institution should be reviewed and the major determinants of the institution's future survival and growth should be identified. A systematic analysis of customer needs should, however, strongly focus on governments' requirements for teacher training and on the school where the student will be employed.

The external environmental analysis should center around the following basic aspects:

- How satisfied are customers with the institution's existing services?
- How satisfied are customers with the product of this institution?

- Which other institutions can provide the institution's customers with training and education services?
- Are existing customers intending to purchase more or less from the institution?
- Who are potential new customers of the institution?
- What would new customers expect from this institution (eg. less expensive services, higher pass rates, better services, improved quality)?

Conclusions about these determinants will serve as cornerstones for building the educational institutions quality assurance system.

Once data has been gathered regarding customer needs, the institution should implement a process of identifying gaps between the desired needs and the current strengths and weaknesses of the institution. Action should then be taken to close the identified gaps.

#### **7.7.3.5 Training**

To implement the quality assurance system successfully, two distinct aspects of training should be addressed. Firstly, a training programme should be developed to familiarise the entire institution with the general principles of quality assurance.

Secondly, the training element of the ISO 9000 series should be implemented. This training element requires that all personnel be thoroughly trained in all aspects of the quality assurance system for which they have responsibility.

The author is of the opinion that adequate staff training is perhaps the most important element in the implementation of an internal quality assurance system in teacher training. A lack of knowledge and understanding in this regard has been one of the primary factors contributing to unsuccessful attempts at quality assurance. As the staff will have primary responsibility for applying the procedures and performing the tasks necessary for the success of the quality assurance process, they should be equipped with the required skills.

#### **7.7.3.6 Comprehensive documentation**

Documentation including documented manuals, procedures and records, is at the heart of the quality management system and documentation is recommended for all

quality assurance efforts. The requirement of documentation is derived from the need for communicating the intent to implement an internal quality assurance process, for consistency of action and for providing objective evidence of results.

Top management is responsible for the institution's **quality manual**. The quality manual represents a statement of management's policy and objectives for each of the elements and requirements of ISO 9000. It specifies how each of the requirements will be addressed by the quality management system.

**Procedures** form the bulk of the quality management system, describing how the policy objectives of the quality manual are met in practice and how the institutional processes are controlled. Procedures describe the purpose of the process, how it operates and the controls in place to ensure conformance.

**Work instructions** describe how specific activities, directly related to quality, are to be performed.

The manner in which quality management system documentation fits together, is illustrated in Figure 7.6.

#### **7.7.3.7 An effective internal auditing system**

The process of internal auditing is essential to the effectiveness of the implementation of the quality system as it provides an objective evaluation of all activities and processes in the institution and forms the basis of corrective action and continuous improvement. It is both a mechanism for measuring progress and a source for future enhancements to the overall quality system.

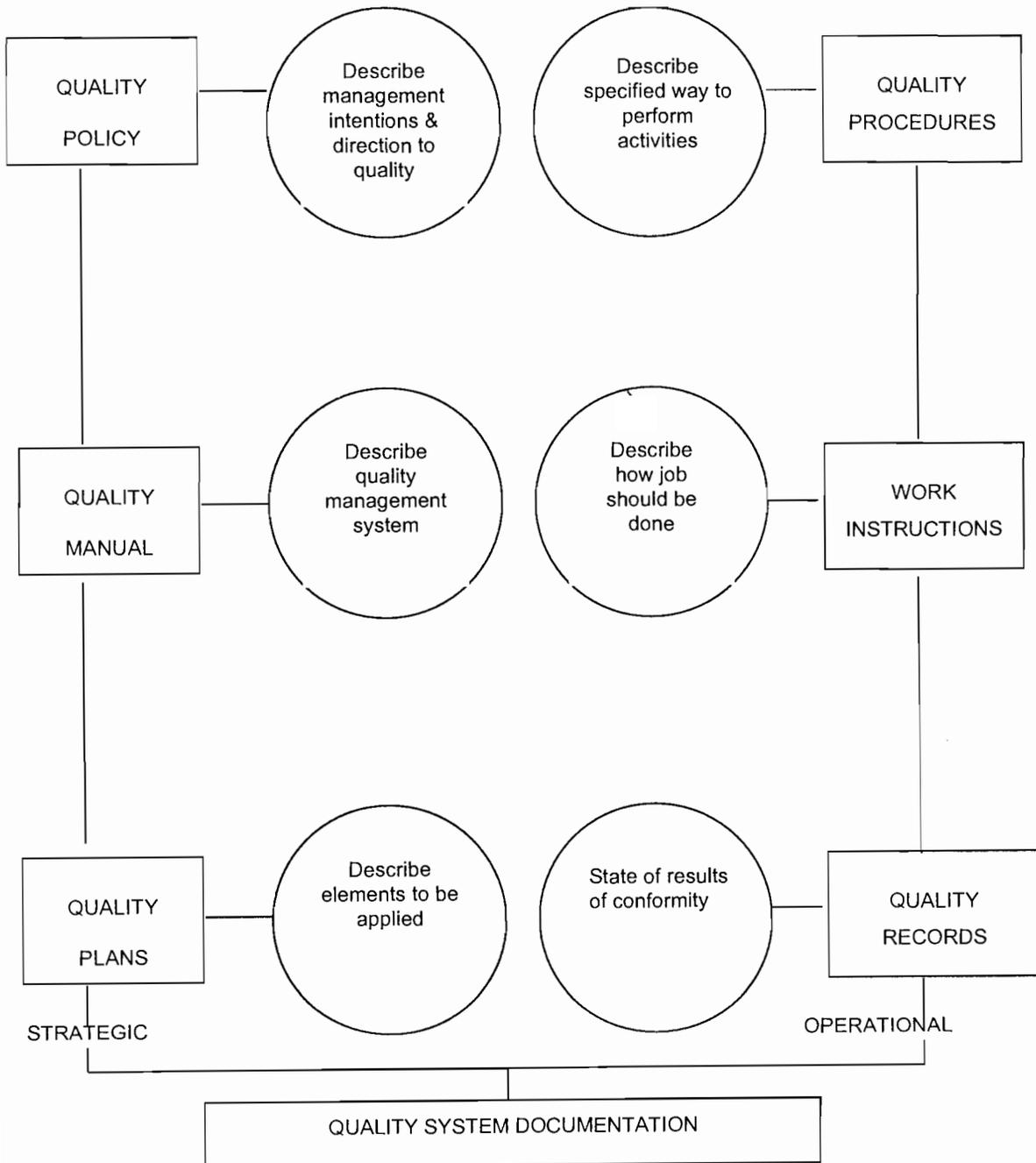
Internal audit reports might include the strengths and weaknesses of the quality management system, processes and product or services as well as positive institutional performance. Internal audit reports and improvement suggestions should be communicated.

#### **7.7.3.8 An effective management review process**

The SIQAA describes a quality management system based on active management involvement. To ensure the continuing suitability, adequacy, efficiency and effectiveness of the quality management system, periodic management reviews at

appropriate intervals is required. Needs in terms of changes to the institution's quality management system, including policies and objectives, should be identified. Areas of management review should include the following:

**Figure 7.6 : Quality system documentation**



- performance of the daily operational processes;
- adherence to the audit schedule;
- results of internal audits;
- results of performed improvement activities to reach institutional policies and objectives;
- customer feedback;
- process performance and product conformance analysis;
- status of preventive and corrective actions;
- follow-up actions on previous management reviews; and
- changing circumstances.

Implementing the management review process at the outset of the quality assurance process will ensure that management ownership, which is essential for long-term effectiveness, is achieved.

#### **7.7.3.9 An effective corrective action process**

The processes of corrective action, internal auditing and management review are inter-linked in developing and improving the quality system. The inter-linked nature of these processes is illustrated in Figure 7.7.

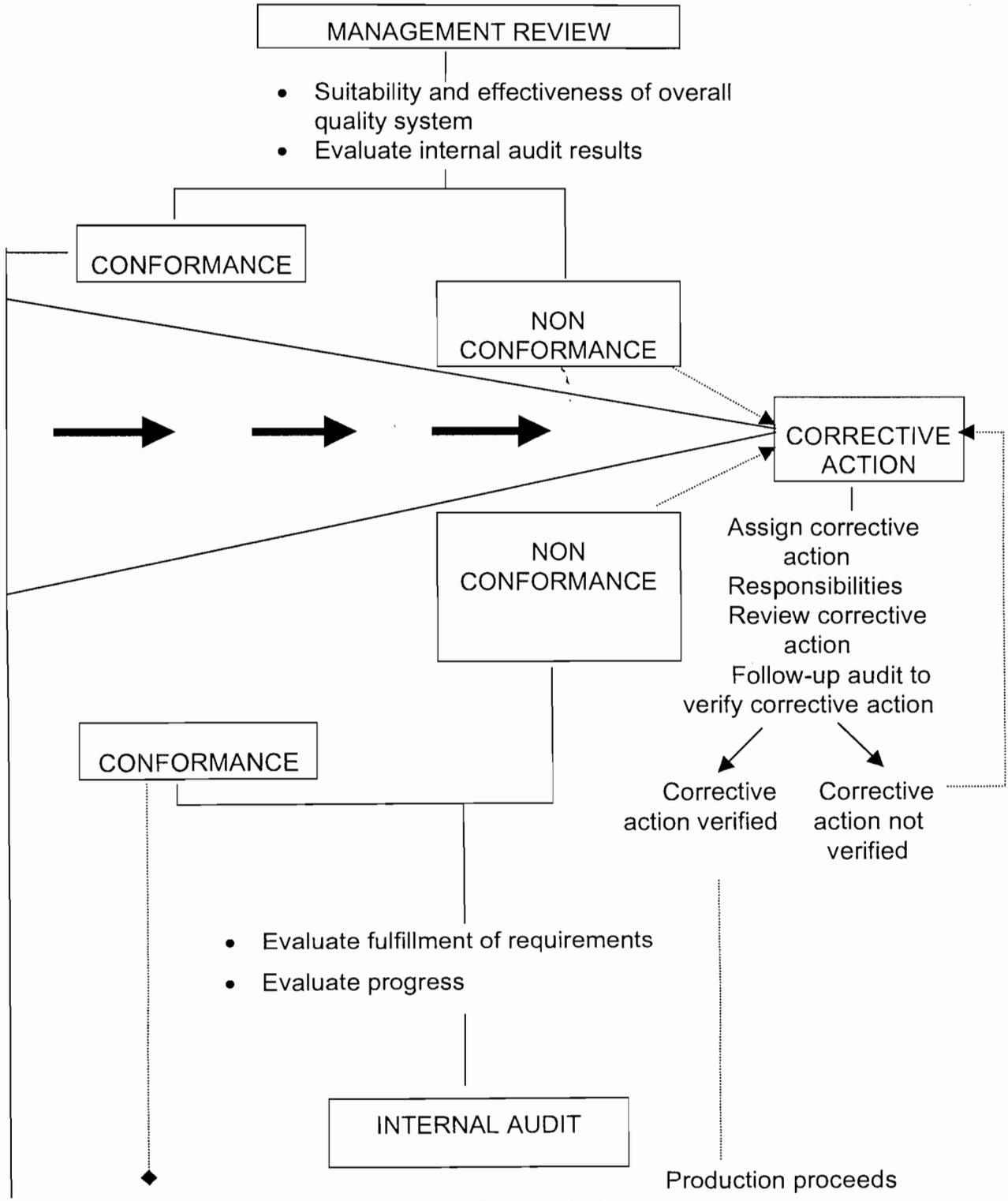
As the process that drives the implementation effort and monitors progress, corrective action should be management driven. The corrective action process should provide mechanisms for verifying the effectiveness of actions taken in the implementation of the internal quality assurance process.

In order to plan corrective action, sources of information should be identified and processes for the collection of information should be established. Sources of information might include the following:

- customer complaints;
- non-conforming reports;
- inputs from management review;

- internal audits reports;
- outputs from data-analysis;

**Figure 7.7 : The inter-linked nature of internal audits, management reviews and corrective action**



- input from work operations and relevant quality management system records;
- inputs from satisfactory measurements; and
- self-assessment.

Efficiency and effectiveness of processes should be emphasised when actions are taken and actions should be monitored to ensure that desired goals are met.

The above discussed essential elements of internal quality assurance systems are all addresses in the ISO 9000 series standards. The application of the ISO 9000, translated for teacher training institutions, provides a framework for establishing, documenting and maintaining an effective management system that will indicate a commitment to quality improvement and a willingness to satisfy customer needs. The ISO 9000 standards series and requirements will now be discussed.

#### **7.7.4 ISO 9000 standards series and requirements**

ISO 9000 is a management system based on the assumption that for any organisation the process of providing a product or a service should be planned, controlled and documented. The following twenty elements of ISO 9000 are interrelated to form the quality management system (cf. 4.4.4.2):

- Management responsibility
- Quality system
- Contract review
- Design control
- Document and data control
- Purchasing
- Control of customer supplied product
- Product identification and traceability
- Process control
- Inspection and testing
- Control of inspection, measuring and test equipment

- Inspection and test status
- Control of nonconforming product
- Corrective and preventive action
- Handling, storage, packaging, preservation and delivery
- Control of quality records
- Internal quality audits
- Training
- Servicing
- Statistical techniques

A brief description of the quality system elements and their requirements, translated for teacher training institutions, will now be given.

#### **7.7.4.1 Management responsibility**

Management responsibilities include the following:

- Management should have a clearly articulated and written quality policy statement of their commitment to quality. The quality policy should include a mission statement and objectives. This policy has to be communicated to all staff members. All staff members throughout the institution should understand, or should be trained to be able to understand the content and intention of it. The staff should also understand the commitment required by them to achieve these objectives.
- Management should make customers, including the student, government and the employer of the qualified student aware that the institution has a quality policy, whether these customers are the students consuming the education or employers consuming the qualified students.
- Management should clearly define the structure of organisational responsibilities and interrelationships that would be created for achieving the policy objectives. Personnel having the responsibility and authority to control the key elements in the quality system and processes should be identified and their job requirements

defined. Key elements include the prevention of quality deficiencies as defined by explicit standards; control of corrective action systems to prevent recurrence of quality deficiencies; control to ensure that corrective actions are effective; and ensuring that the quality system is regularly reviewed to check its relevance in terms of the institution's objectives.

- Senior management is responsible for verification of the quality system. Verification is the systematic inspection, checking and testing of products or outputs of all departments to ensure that they are meeting standards, and the testing of the satisfaction of consumers with these products and services. Consumers include both the external customers of the institutions and the customers within the institution. Reviews need to be performed by persons other than those producing the particular output under review. Management should thus ensure that there are verification or quality control procedures for all identified products and services.
- A management representative should be assigned to oversee the implementation and continuous improvement of the quality system.
- Management is responsible for reviewing the quality system, for assessing compliance with requirements and for identifying areas for improvement. This includes regular review of documented policies and procedures that define the system, and review of internal audit results.

#### **7.7.4.2 Quality system**

The requirements for quality systems are as follows:

- The institution should establish and maintain a documented quality system. The quality system should have two interrelated aspects, namely the institution's needs and interests; and the customer's needs and expectations. This is an important point since it will balance the meeting of customer's needs with the necessity to do so in the most economical way.
- Quality plans, describing the key elements in the product or service and the means by which they are provided and verified, should be developed. Key elements in teacher training institutions might include the following:

- identification of market needs;
  - turning needs into curricular or course specifications;
  - recruiting students;
  - monitoring the progress of students;
  - assessment of student achievement;
  - selection of staff ;
  - training and development of staff ; and
  - evaluation of courses.
- A quality manual should be developed to document the policy and the quality system requirements. Documentation of the quality system should include a description of the overall quality system as well as details about the supporting documentation.

#### **7.7.4.3 Contract review**

This requirement necessitates that a contract be drawn up between the institution as supplier and the customer. A system should be developed to ensure that customer needs are understood and that resources are available to produce a product or to provide a service that meet those needs. Contract review could include an explicit analysis of the student-lecturer relationship and of what both parties are expected to bring to the teaching-learning relationship; an analysis regarding the student-institution relationship and a contract between the institution and the employer as the consumer of the qualified student.

Contract review is also relevant in the case where an institution has received a contract to supply a training programme for a group of teachers. An analysis should be done to make sure that the customer's requirements are adequately defined and documented, that enough details regarding the current skills and knowledge of the learners have been provided and that the institution has the resources such as skilled staff, training rooms and appropriate learning materials to fulfill the contract.

#### **7.7.4.4 Design control**

In order to ensure that customer requirements are met, it is required that procedures are established and maintained for controlling and verifying the design of new and modified products. This requirement emphasises the importance of identifying customer needs and translating these needs in a systematic and controlled manner into a specification that defines a product or a service. The specification should be of such nature that the product is producible, verifiable and controllable in the operating environment. It is essential that the institutional structure, responsibility and authority during the management of design control be clearly defined.

Design control involves anything that will be designed to satisfy customer's needs. In teacher training institutions this requirement might apply to areas such as curriculum plans, courses plans, learning materials, assessment materials and handouts. It would be valuable to design a standard checklist, specifying, for example, the skills needed for designing a curriculum or course. Such a checklist can then be incorporated as a work instruction for the procedure on design control.

It is essential to have a system for identifying when changes are needed and for making and recording those changes. Changes in design should be anticipated and carefully evaluated against the original contract, fitness for purpose and amenability to verification.

#### **7.7.4.5 Document control**

Document control has the aim of ensuring that everyone has most recent copies of those documents that they need. In teacher training institutions it might include the circulation of policy on curriculum structures, new syllabi outlines, examination procedures and specific work instructions.

Procedures should be established and maintained for controlling all documentation and data relating to the requirements defined in the quality manual. A formal and defined document control system should be developed. Such a system should indicate the following:

- the format of documentation and the staff members responsible for producing it,
- the manner in which it will be reviewed and approved;

- the personnel responsible for reviewing and approval;
- the method of review and updating.

Quality documentation should be brief while covering all the essential points. Documented procedures should reflect the actual working practices of the institution. Before documents related to the quality manual requirements are issued, it should be reviewed and approved by authorised staff members. Authorised personnel should also review and approve any changes to these documents.

#### **7.7.4.6 Purchasing**

A system should be available to ensure that all requirements for purchased items that directly impact the quality of the product or service provided are specified and communicated to the supplier. This might include the standard of the performance required; the selection process; the records that the institutions wishes the supplier to keep; and a resulting list of approved suppliers. The system should provide mechanisms for qualifying suppliers and verifying that requirements are met.

Purchasing in teacher training institutions involves a range of items that might include learning materials, consultancy services, external examiners and awarding body services. Each of these items should be subject to the principles of purchasing.

#### **7.7.4.7 Control of purchaser supplied product**

A system should be in place to verify that all customer-supplied products are acceptable prior to their use. This requirement refers to situations where the purchaser provides elements that are then built into the product supplied. In teacher training institutions the requirement might refer to the active involvement of the student in effective teaching and learning; to a situation where courses are provided to a group of teachers on the basis of a contract; and to a situation where a customer supplies training manuals and equipment to be used in a course.

The author wants to argue that the student entering a teacher training programme, is also a customer-supplied product in the sense that this student is provided by the formal school sector. Mechanisms should thus be created to verify that the incoming

student meets the institution's identified requirements for developing and delivering an output of quality.

#### **7.7.4.8 Product identification and traceability**

All products should be identified during all stages of production or service. This standard identifies the importance of being able to trace the cause of a problem back to an earlier point in the production process and is of critical importance in the achievement of good quality.

The principle products involved in teacher training are the courses, the qualified teacher and the award given to the student. Records should be kept of courses that have been presented. Product identification would involve linking the course titles with written specifications of what each course comprises. As courses vary from time to time, course identification would also include the version of courses.

Product traceability requires that student records, indicating which student have attended which course, be provided for.

#### **7.7.4.9 Process control**

The institution should identify all processes that directly affect the quality of the product or service and ensure that these processes are carried out under controlled conditions, including:

- Formal approval of process design and equipment;
- Documented procedures and work instructions;
- Development of quality plans describing how the process is to be monitored; and
- Documented quality criteria.

The element of process control is central to quality assurance. Whether the process is concerned with a product or a service, it is necessary to specify standards and process limits for each stage of such a process leading to the product or service. Written procedures or work instructions at each stage of the process should be used for the successful control.

Teaching training requires skilled performance, whether it involves lecturing, planning, designing courses, doing assessment, maintaining records of learner progress or research. The process includes everything that is expected from lecturers during the teaching-learning process. The process control list for teacher training would also have to cover standards for staff selection; ways of monitoring the continuing relevance of staff skills; and the manner in which staff development needs are met.

Traditionally institutions have simply appointed suitably qualified staff without rigorous selection procedures and with few continuing staff development initiatives. In future institutions will have to ensure that it delivers what it has promised to deliver. Making sure, is process control.

#### **7.7.4.10 Inspection and testing**

The institution has to verify that the product or service conforms to all appropriate specifications throughout the production process. This requirement applies to the teaching process as well as to the student as a teacher in making. All incoming products should be checked before it is used. In teacher training it would mean that all brought-in learning materials, e.g. textbooks, audio-visual items and assessment materials are inspected and tested. It would, however, also include the student that enters the teaching-learning process. Selection procedures through which the student's potential to meet the required standards can be identified, is of crucial importance if the institutions intends to deliver a quality product.

It is required that the product under development should be checked and set aside in the case of non-conformance. This might apply to an unsatisfactory course structure, an irrelevant syllabus or a student who continuously fails to meet the required standards for particular learning units. Final inspection and testing requires that conformance to specification be verified before a product is released for use. These verifications should be in accordance with documented quality plans and procedures. Records of all checks should be kept in order to aid traceability.

#### **7.7.4.11 Control of inspection, measuring and test equipment**

A system should be established to control and maintain all inspection, measuring and test equipment used to demonstrate that products conform to specified requirements. This element refers to the reliability and validity of testing and measuring practices and instruments, which are used to ensure that the planned learning takes place. Testing and measuring equipment includes assessment materials, examination practices, moderation systems and awarding or certifying systems.

#### **7.7.4.12 Inspection and test status**

Means for clearly identifying the quality status of all products at all times during the design to the delivery stage should be established and maintained. It should be clearly planned and documented when a product or service is to be inspected and there should be no doubt as to its status at particular times in relation to the system. This element requires, for example, continuous recording of the status of syllabi, as well as continuous recording of the student's test status in student records.

#### **7.7.4.13 Control of non-conforming product**

A system should be established for ensuring that any product, component or raw material that does not fully conform to requirements, is prevented from further processing or delivering. The system should specifically address the identification, documentation, evaluation, segregation and disposition of non-conforming material and the notification of all involved functions.

Once a non-conforming item is identified, this identification should remain until documented action is taken. It is important that there should be clearly documented procedures for dealing with non-conforming items, including the identification of responsibility in terms of particular actions. The cause for non-conformity should be traced and remedial action should be taken and checked. The entire process should be documented.

Non-conforming products might include the student who has failed a test or examination, outdated syllabi, damaged books, teaching materials which do not fit the latest syllabus and assessment items that are incorrect or not applicable.

#### **7.7.4.14 Corrective and preventive action**

A process for investigating the root causes of non-conforming products and for taking corrective actions that will prevent future occurrences should be established and maintained. The quality system should include a defined method for eliminating the causes of non-conforming products or services by initiating appropriate corrective action designed to remove the root cause of the problem. This process should specifically verify that the corrective actions taken have been effective.

In teacher training non-compliance can be regarded the same as in industry. The institutions procedures specify exactly what needs to be done and the work instructions specify how tasks are to be done. Discrepancies in, e.g. the teaching-learning process, course development, the provision of teaching materials, as well as causes of student failures, should be diagnosed and made subject to corrective action.

As customer complaints will be a primary source of information regarding non-conformity, all such complaints should be recorded and dealt with. A regular analysis of complaints from student teachers and employers should enable the institution to identify any trends and to trace these trends to problems within the institution. Causes for these problems should be identified and corrective action should be taken to eliminate them.

#### **7.7.4.15 Handling, storage, packaging, preservation and delivery**

A policy should be established and maintained to prevent damage during the handling and storage of learning materials, equipment and assessment materials. An effective system for controlling the movement of critical commodities in and out of inventory should be developed. Recording, labeling and identification of course delivery, course completion and student records will be important in providing evidence that the service has been performed.

#### **7.7.4.16 Control of quality records**

All records demonstrating that the quality system elements are being adequately addressed should be retained. Although the records should be designed to demonstrate the achievement of the required quality, the type and extent of the

records should reflect the nature of the processes or products involved. These records should be legible and should be stored in a manner which prevent damage. Records should be easily retrieved.

Quality records might include learner records of courses taken, tests written and results obtained; staff records indicating qualifications held, appraisals done and development activities; and course design records and evidence of how it matches market needs.

#### **7.7.4.17 Internal quality audits**

This element requires regular internal quality audits. Quality audits are planned and systematic checks aimed at ensuring that the defined quality system is being operated effectively and efficiently. Quality audits are designed to ensure the following:

- that the quality system documentation adequately defines the needs of the institution;
- that the documented procedures are understood and followed; and
- that training is adequate to ensure that personnel can understand and perform allocated responsibilities and tasks.

A formal schedule should be established for conducting these audits. A procedure specifying how the internal audit will be conducted, should be written. In terms of internal auditing the following measures should be taken:

- appoint internal staff members as auditors;
- ensure that the auditors have the necessary skills or arrange training if needed;
- have a schedule which ensures that the full range of procedures is audited and that audits are carried out on schedule;
- ensure that records indicating the deficiencies found, the corrective action required, the time agreed for corrective action to be carried out and the person responsible for carrying out the corrective action are kept; and
- ensure that audit progress is reported to those managing the quality assurance process.

#### **7.7.4.18 Training**

A system should be developed to identify necessary skills, establish required training programmes, plan and conduct required training and maintain records of such training. This element identifies the importance of specific training to enable staff members to carry out specific tasks and to general training to heighten quality awareness and to develop positive attitudes.

There are obvious training implications for the staff of teacher training institutions. It would be advisable to start with general quality assurance system training. As quality in teacher training institutions depends primarily on the activities of lecturers, it is essential that formal identification of their skills is done and that training is provided to equip them for performing assigned tasks and responsibilities.

#### **7.7.4.19 Servicing**

A system should be established to define and monitor the quality of services provided after delivery. Although this element is set out with reference to material products, it applies to commitments in terms of after-course services. Training programmes, for example in-service training of teachers, should involve a review after the trainee has returned to the workplace.

#### **7.7.4.20 Statistical techniques**

The institution should be able to demonstrate that appropriate statistical techniques are used to ensure the quality of the product or service provided. Statistical techniques refer to systematic approaches to data collection, analysis and application. The aim of this requirement is to add a specialist view to determine whether or not production is going according to plan.

The implementation of the above discussed elements and requirements for quality assurance systems will vary from one institution to another. The existing quality assurance system maturity and especially the existing documentation status of the institution will to a great extent determine the effort and the time required for implementation.

The author is of the opinion that the implementation of a comprehensive internal quality assurance system should be based on full conformance to the ISO 9000 standards if any lasting achievements in terms of quality improvement were to be gained. This will necessitate a tremendous effort of which the full benefits to be derived will, according to experienced organisations, only be appreciated in a number of years. Extensive evidence, however, exists of immediate and visible quality improvements in organisations that implemented quality assurance systems conforming to ISO 9000 standards.

The proposed model begins with the institution's decision to deliver quality products and services and ends with the verification and validation of the installed quality management system. Setting forth on the quest for effective management of internal quality assurance in the training of student teachers will be similar to any other trip that a teacher training institution might consider taking. Few institutions would set out for a destination without a plan, a set of directions or a map to guide the way. The implementation strategy that will now be presented intends to provide a step-by-step approach that can lead teacher training institutions to successfully manage the process of internal quality assurance.

The author bases the proposed implementation strategy on a consolidation of the literature research (Chapters 2, 3 and 4), using the ISO 9000 series standards as the key document.

### **7.7.5 An implementation strategy for the SIQAA**

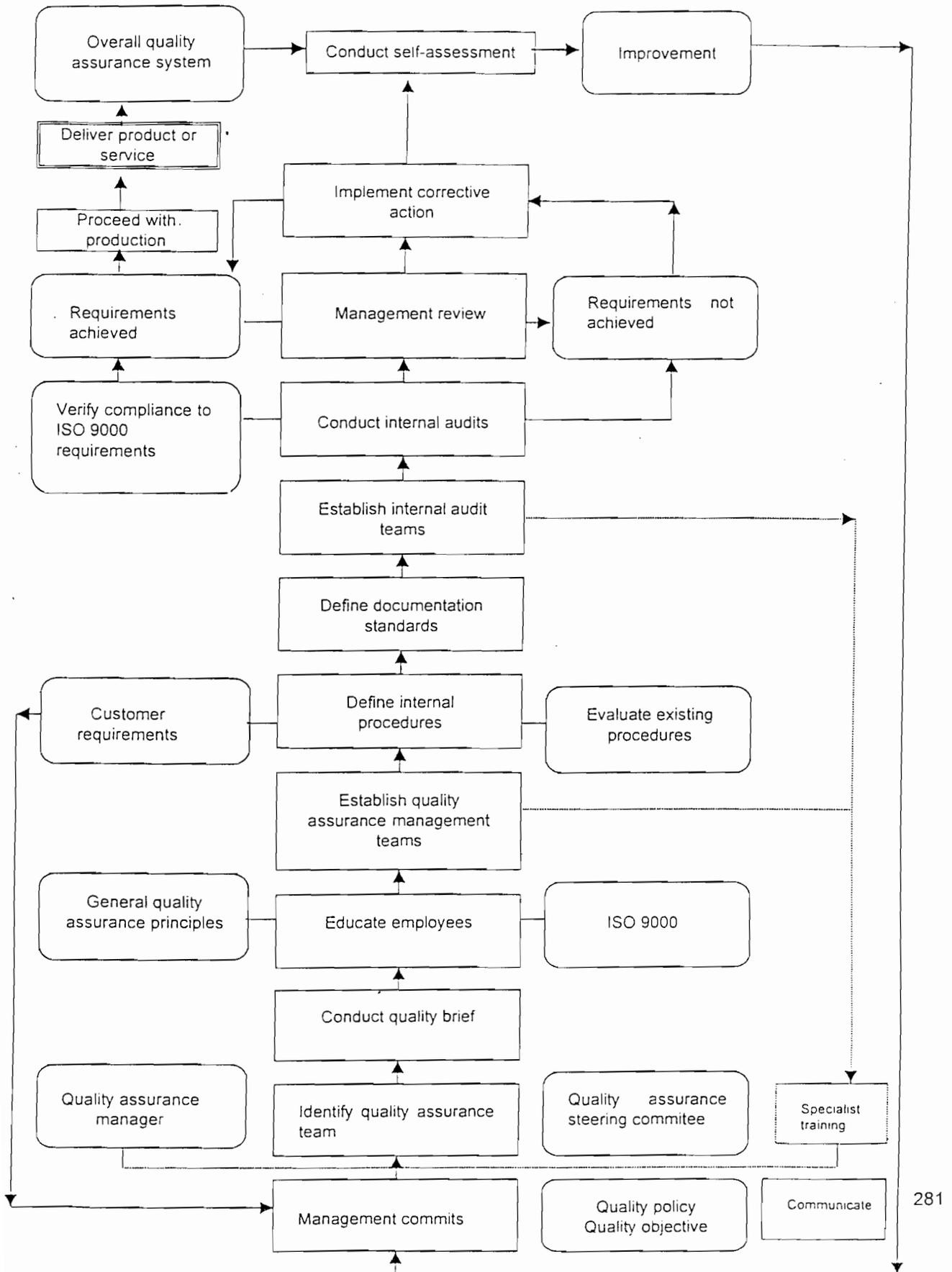
The implementation strategy for the systematic internal quality assurance approach is depicted in Figure 7.8.

A brief overview of the basic activities involved in the strategy for the implementation of the systematic approach to internal quality assurance will now be presented.

- **Management commitment**

Management commits to quality improvement through the implementation of a quality management system. Management should develop and document its quality policy, including objectives, and communicate this to the staff. The policy statement should be understandable by anyone with an interest in the institution.

Figure 7.8 An implementation strategy for systematic internal quality assurance



- **Identification of a quality assurance manager**

Management identifies and appoints a designated quality assurance manager or facilitator to drive the quality assurance process by guiding and assisting quality teams. The quality assurance manager will only be responsible for managing the project, not for developing or implementing the quality management system.

- **Establish a quality assurance steering committee**

Establish a quality assurance steering committee that will form the focal point for all quality assurance activities within the institution.

- **Quality assurance steering committee training**

The quality assurance steering committee should receive specialist training regarding the general principles of quality assurance as well as the principles of ISO 9000 and its twenty elements.

- **Quality brief**

In order to provide background information, literature regarding the process of quality assurance and its benefits for an institution should be circulated among the staff. A statement of commitment to quality assurance from the head of the institution should accompany the literature. A quality debate regarding the staff's perception of quality, the process of quality assurance and the intent of the quality assurance system to be implemented takes place. It is important that everyone understands the objectives of the quality management system and the effort required from each employee.

- **Define quality responsibility**

The quality assurance steering committee defines the responsibilities for quality in the entire institution. All activities for successful implementation should be subdivided into tasks detailing their schedule, the people responsible for these tasks and the allocated resources. Documented proof, detailing that the activity related to the defined responsibility has taken place, should be kept.

- **Educate employees**

Participation and commitment of employees at all levels of the organisation is essential in the implementation of a quality assurance system. Employees should thus fully understand the general principles of quality assurance as well as the requirements and advantages of ISO 9000. Employees who are trained and who understand the requirements and advantages of quality assurance and specifically ISO 9000 will be more confident and willing towards the effort.

- **Develop operational quality assurance management teams**

Quality assurance management teams are established to introduce information regarding the quality assurance effort into the institution and to generate the momentum required to execute the various elements of the program. The operational teams consist of staff members of the various departments in the institution.

- **Train operational quality assurance management teams**

Quality assurance management teams should be thoroughly trained in all aspects of the quality system for which they are responsible. Training plans should be developed and records of completed training should be maintained.

- **Define internal procedures**

The requirements and procedures, as laid down in ISO 9000, need to be formulated as the basis to create a quality management system. Existing quality procedures should be evaluated for commonality and hierarchy and areas where procedures are absent and/or require development and where procedures are present but not optimised and thus requires upgrading, should be identified.

It is important that customer requirements be incorporated into the process, focussing on the pro-active prevention of errors. The difference between customer expectations and the institution's ability to satisfy them should also be evaluated and strategies to close the identified gaps should be developed.

- **Define documentation standards**

As many documents as possible should be standardised. An organisation should attempt to develop generic documents, which can serve as many purposes as possible.

- **Establish internal audit teams to verify compliance**

Institutional quality audit teams should be established to review compliance to procedures as required by IOS 9000. Internal audit teams are composed from the different departments of the institution under the leadership of the quality assurance manager.

- **Train internal audit teams**

Internal audit teams should receive detailed training regarding the skills of internal auditing.

- **Management review**

Planning should be done regarding management review. A series of management reviews should serve as guidance to assure that the institution is successfully implementing the quality assurance system. Decisions should be taken in terms of what is critical and genuinely indicative of the status of the quality assurance system, as these will be the main areas of focus during the periodic management reviews.

- **Establish corrective action tracking**

The establishment of a corrective action process is a requirement of the ISO quality assurance system. Internal audit teams should document their findings in a quality corrective manual, which then becomes the primary method by which the strengths and weaknesses of the institution are to be identified. Corrective actions are documented in the quality corrective manual, providing a base to additionally track the status of the implementation effort.

- **Certification audit**

Teacher training institutions that wish to attain ISO 9000 certification enter into this process. This is a comprehensive process that can take up to twelve weeks to complete. The external auditors take up permanent office to investigate available

documentation. The quality assurance steering council members act as assistants during this process. Once certification has been achieved, regular pre-determined periodic audits would ensure continued ISO certification.

It is essential that quality management system criteria be evaluated in terms of performance successes and shortcomings. After implementation, the institution should do an internal assessment of the overall quality assurance system.

#### **7.7.6 Assessing the overall quality assurance system**

The purpose of institutional self-assessment is to provide fact-based guidance to the institution regarding where to invest improvement resources. Self-assessment should involve an analytical account of the activities, intentions, conditions, processes and performance of individuals or members of a group. The process of self-assessment should be conducted against all the elements and requirements of the quality assurance system.

Sets of questions that can be used to perform self-assessment against the elements and requirements of the quality assurance system are provided in the ISO 9004 self-assessment model. As these sets of questions can be used for evaluating quality assurance system maturity in any organisation producing a product or providing a service, the author suggests that it be adopted for assessing the overall quality assurance system implemented by a teacher training institution. The following set of questions can be used in the self-assessment process:

##### **7.7.6.1 Interested party needs and expectations**

This assures that the quality management system considers, in a balanced way, the needs and expectations of all parties to get an effective and efficient system. Self-assessment questions that might be used include the following:

- How does the institution identify customer needs and expectations on a regular basis?
- How does the institution identify people's need for recognition, work satisfaction, competence and knowledge development?

- How does the institution identify other parties' needs and expectations which influence the meeting of long term objectives?

#### **7.7.6.2 Legal requirements**

Legal requirements ensure that the institution acts in accordance with the laws of society. A self-assessment question that might be used is:

- How does the institution establish its legal requirements?

#### **7.7.6.3 Policy**

Policy ensures that all interested parties' needs are understood and provides direction to the total institution regarding visible and expected results. Self-assessment questions that might be used include the following:

- How does the quality policy ensure that customer and other parties' needs and expectations are understood?
- How does the quality policy lead to visible and expected results?

#### **7.7.6.4 Planning**

Through planning the quality policy is translated into measurable objectives and plans to provide clear focus on important areas throughout the institution. The following self-assessment questions might be used:

- How do the objectives translate the quality policy into measurable goals?
- How are the objectives deployed to each management level to assure individual contribution for achievement?

#### **7.7.6.5 Quality management system**

A quality management system provides an institution-wide, consistent and comprehensive approach. It also clarifies roles and responsibilities. Self-assessment questions that might be used include the following:

- How does the quality management system ensure that processes are optimised to give predictable results at minimal costs?

- How does the quality management system ensure clearly established responsibilities that are communicated to all levels?

#### **7.7.6.6 Management review**

Through management review top-management remains involved in the improvement of the quality management system. During management review assessment is done in terms of whether plans have been achieved or not. Appropriate action for improvement is thus indicated. Self-assessment questions that might be used include the following:

- How does management review lead to an operational system?
- How does the institution promote understanding of roles, responsibilities and involvement?
- How does the institution assure that the competence level of each individual is adequate for current and future needs?

#### **7.7.6.7 Information**

Information ensures better understanding of roles, responsibilities and goals. Through information involvement at all levels in the institution is enhanced. Information also encourages recognition and reward. The following self-assessment question might be used:

- How does the institution assure that appropriate information is easily available for fact-based decision making?

#### **7.7.6.8 Infrastructure**

The infrastructure should provide for effective use of resources other than human resources. A sound infrastructure enhances the understanding of restrictions and opportunities to ensure that plans are achievable. Self-assessment questions that might be used include the following:

- How does the institution assure that the infrastructure is appropriate for optimal achievement of the policy and objectives?
- How does the institution consider the optimal use of natural resources?

### **7.7.6.9 Work environment**

An analysis of the work environment provides better understanding of roles, responsibilities and goals and enhances involvement, motivation and satisfaction at all levels in the institution. A self-assessment question that might be used is: How does the institution analyse and manage the work environment regarding promotion, motivation, satisfaction, development and performance of its people?

### **7.7.6.10 Finance**

Sound management of planning, controlling and monitoring of financial resources is essential. The following self-assessment questions might be used:

- How does the institution plan, provide, control and monitor its financial resources to maintain an effective and efficient quality management system?
- How does the institution assure awareness amongst people in terms of the linkage between quality and costs?

### **7.7.6.11 Product and/or service realisation**

Customer satisfaction is ensured by producing, delivering and supporting products and/or services that meet customer needs and expectations. Self-assessment questions that might be used include the following:

- How does the institution define customer related processes to ensure consideration of customer needs?
- How does the institution define other interested party processes to ensure consideration of people?
- How are all interested party processes managed in practice?

### **7.7.6.12 Design and development**

This involves the structuring of the design and development process to achieve results that have value to customers. Self-assessment questions that might be used include the following:

- How does the institution define design and development processes to ensure consideration of needs?

- How are design and development processes managed in practice including the definition of design and development requirements and achievement of planned outputs?
- How are quality related activities such as reviews, verification, validation and configuration management addressed in design and development processes?

#### **7.7.6.13 Purchasing**

Institutions should ensure that suppliers are aligned with the institution's quality policy and objectives. Self-assessment questions that might be used include the following:

- How does the institution define purchasing and partnership processes to ensure consideration of needs?
- How are purchasing processes managed in practice?
- How does the institution ensure quality of products and/or services from specification through to acceptance?

#### **7.7.6.14 Production and service operations**

Through production and service operations sustained customer satisfaction should be ensured. Self-assessment questions that might be used include the following:

- How does the institution define processes and service operations to ensure consideration of needs?
- How are the production processes and service operations managed from inputs to outputs?
- How are quality related activities such as control, verification and validation addressed in production processes and service operations?

#### **7.7.6.15 Control of measuring and monitoring devices**

Control of measuring and monitoring devices provides facts for analysis and ensures accurate data for analysis. The following self-assessment question might be used:

- How does the institution control its measuring and monitoring devices to ensure that correct data is being obtained and used?

#### **7.7.6.16 Measurement, analysis and improvement**

Measurement and analysis provide facts for improvement. Self-assessment questions that might be used include the following:

- How is relevant data obtained for analysis and improvement?
- How is data obtained on products and/or services and processes for analysis for improvements?
- How does the institution use self-assessment methods to improve the system's overall effectiveness and efficiency?

#### **7.7.6.17 Control of non-conformity**

This provides for effective disposition of non-conformance in products and processes. Self-assessment questions that might be used include the following:

- How does the institution control non-conformities?
- How does the institution analyse non-conformities for learning and improvement?

#### **7.7.6.18 Analysis of data for improvement**

This involves the analysis for decision making. A self-assessment question that might be used is:

- How does the institution use analysis for identifying major trends?

#### **7.7.6.19 Improvement**

Improvement increases the effectiveness and efficiency of the institution and focuses on prevention and improvement based on trends. Self-assessment questions that might be used include the following:

- How does the institution use corrective action for evaluating and eliminating recorded problems affecting its performance?
- How does the institution use preventive action for evaluating the significance of potential problems affecting its performance?

- How does the institution use systematic improvement approaches, methods and tools to improve its performance?

The self-assessment questions should be used in a way that suits the needs of a particular institution. The self-assessment process should be followed by group-review and analysis and ultimately by group and management team consensus of improvement priorities and action plans.

In conclusion it can be stated that the SQIAA provides guidance for the implementation of a quality management system for quality assurance conforming to ISO 9000 requirements, and will in the achievement of its objectives, add value to the processes within any teacher training institution. It provides a framework for a quality management system, based on minimum requirements or specific standards which can form a solid basis for improvement towards TQM. By implementing the above discussed model, institutions will be enabled to remain ahead of its competitors by positioning itself as the preferred institution within its target market.

The SIQAA should be applied with a flexible approach to enable the implementation to be most effective and efficient, while simultaneously providing an opportunity to learn from experience gained in a cycle of continuous improvement.

## **7.8 CONCLUSION**

This chapter set out to develop a model for the management of internal quality assurance in the training of student teachers. Two types of models were discussed with a view to use some of their precepts in designing a model for the management of internal quality assurance in teacher training institutions.

It has been exposed that management commitment and participation are major determinants in the successful implementation of the model. The twenty elements and requirements of ISO 9000 have been translated for application in teacher training institutions.

Although the SIQAA is intended for the management of internal quality assurance in the training of student teachers, it has been highlighted that conformance with the elements and requirements of ISO 9000 will also enable a teacher training institution to formalise its quality practices by way of certification. ISO 9000 certification

signifies success in achieving quality management and will provide an institution with a competitive edge, giving confidence to customers that the institution's processes, relating to the quality of its product and service, are capable and under control. Certification is, however, not a prerequisite to the success of the management system.

The next chapter presents a summary, findings and recommendations of this study.

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