Best Practices in Teaching and Learning Using ISO 9001:2000

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Introduction

The ISO 9000 Quality basically a model that provides a unique framework for any organisation to establish a customer satisfaction oriented quality system that is internationally recognised and can be independently assessed and certified. It complements TQM since quality is seen as a process, can be managed and can provide a methodology for continuous improvement. The system can also be regarded as one of the approaches towards achieving best practices in teaching and learning. In adopting this system any higher education institution (HEI) could ensure that its teaching and learning processes are of creditable standards and quality.

Declining quality of graduates, increase competition and growing mandates for accountability by accreditation associations, legislatures, and funding bodies, and the increasing concern for applying best practices in the teaching-learning services, has caused many HEIs to focus on quality, a concept originated from the manufacturing sector. The effectiveness of the quality concept in other sectors provided the momentum for higher education institutions to adapt this concept and practice it in their own domain (Kanji *et.al*, 1999). The successful acceptance and implementation of quality into higher education are often assisted by externalities such as conducive government regulations, economic conditions, confident leaderships and a certain level of stress to initiate a need for a change (Idrus, 2001; Packard, 1995).

Implementation of ISO 9000 Quality System

In the United Kingdom, the first university to implement and obtain ISO 9000 certification for its full scope of activities was Wolverhampton University. The

University's initial adoption of the TQM approach to quality produced high expectation but had very little to show at the end of the day because of the lack of focus (Doherty in Subramaniam, 1988). It switched to the ISO 9000 quality system mainly because it was felt that an independently certified quality system would place the university in a better market position as compared with its competitors. With the adoption of the ISO quality system in guiding the best practices in the education institution such problems as rigidity in the teaching-learning process could be ironed out. The university also felt that the discipline of writing the quality manual, identifying procedures and writing work instructions would provide a much better grasp of the University's internal processes, and the links with the internal and external customer or stakeholder. The Quality Management System was intended to form the base for a TQM culture of continuous improvement across the university. Kanji (1998 in Kanji, 1999) says that ISO 9000 could be integrated with TQM for the development of a total quality system where quality improvement can be achieved by examining the organisation's processes in terms of process definition, process improvement and process design.

It is obvious that there are some differences in the application of ISO 9000 quality management system in the manufacturing sectors and in higher education institutions. In the HEI, education management is usually divided into two principal divisions of operation, namely academic and administration. Adopting the system in education administration is much easier compared to the academic area, where certain adjustments are necessary. However, the latest ISO 9000 series that is ISO 9001 Version 2000 introduced in October 2000 is more generic and flexible in nature, and embraces both customer requirements and customer satisfaction as an integral part of the standards. With the inclusion of elements such as customer requirements and customer satisfaction in the model for quality and continuous improvement, the use of the process-based model could guide best practices in teaching and learning.

Process-based Model of ISO 9000: 2000

The ISO 9001:2000 quality management system is a 'process model' with the integration of four major clauses as shown in Figure 1.

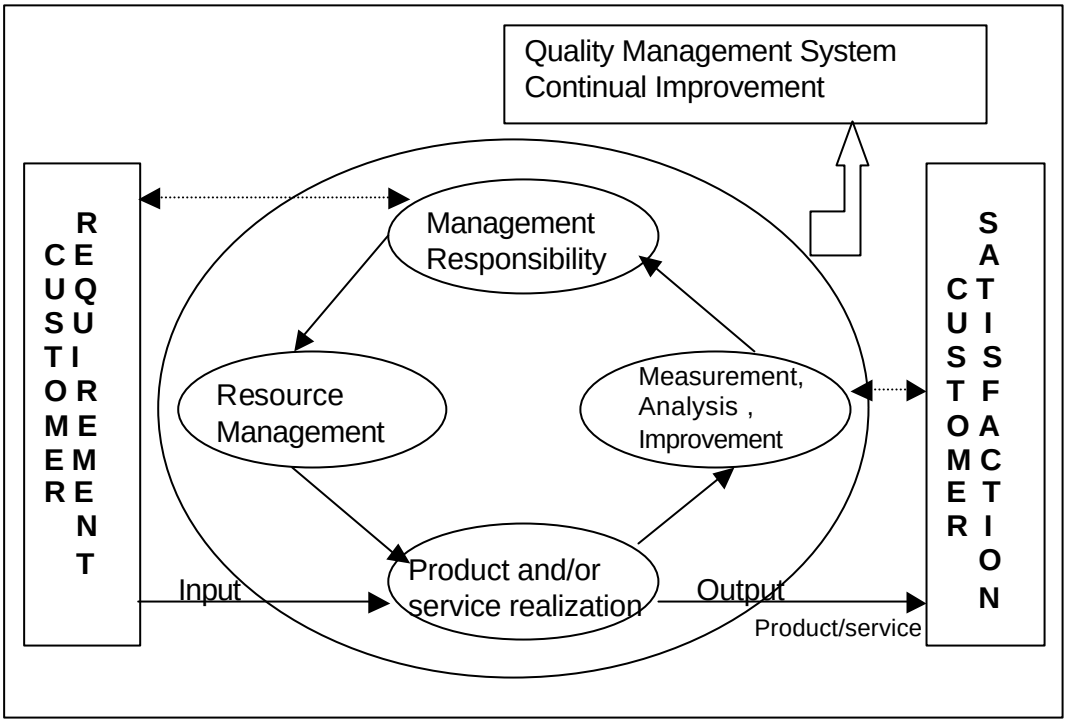

Figure 1 : Quality Management System Process Model
(Source : MS ISO 9001 : 2000; Requirements)

In brief, management requirements are defined under *Management responsibility,* necessary resources are determined and applied within *Resource management*; processes are established and implemented under *Product/service realisation*; while results are measured, analysed and improved through *Measurement, analysis and improvement* (MS ISO 9001 : 2000). An important clause in the model is the opportunity for *continual improvement*.

In general, this model emphasizes the importance of identifying and understanding customer needs and expectation to ensure that customer requirements are met. Measurements of customer satisfaction are then used as feedback to evaluate and validate whether customer requirements have been achieved. The management review will then provide feedback to top management for change authorization and improvement opportunities.

Relationship between Customer Requirement, Input, Product Realization, Output and Customer Satisfaction

Based on the ISO 9000 : 2000 process-based model as described in Figure 1, the relationship between customer requirement, input, product realization, output and

customer satisfaction, and elements of measurement, analysis and improvement is presented below in Figure 2.

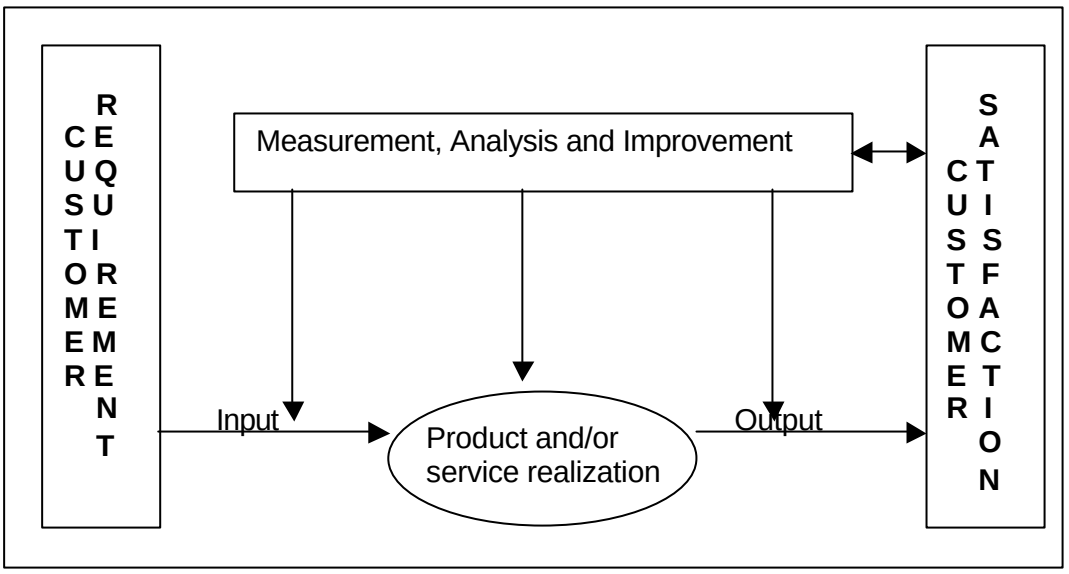

Figure 2 : Relationship between Customer Requirement, Input, Product Realization, Output and Customer Satisfaction
(Source : MS ISO 9001 : 2000; Requirements)

Customer Requirement

In ISO terms, an organization produces the product or service based on the requirements stated by the customer. The importance of customer requirements is that these serve as input for meeting customer satisfaction and should be incorporated into the best practices in product realization or service delivery.

Input

The customer requirement serves as vital input in terms of specifications that will influence the process to produce the specified product. If the organization provides services, the customer requirement will determine the nature of the services provided.

Product Realization

Product realization refers to the part of the process that will convert the customer requirements into an output that both meets the requirements of the customer and that would not jeopardize the quality. The whole organization, the people, the process

and the product are synergistically mobilized and coordinated towards product realization or service delivery.

Output

Output refers to the product and/or service that is a result of product realization but one that fulfills the customer requirements. Output could be categorized into two : the output of each sub-process in product realization and the finished or final output/product of the overall business process which fulfils customer requirement and achieve customer satisfaction.

Customer Satisfaction

Once a customer has purchased or used the product or services offered by the organization, the customer will be able to respond to whether the services or products fulfill the customer requirements.

Measurement, Analysis and Improvement

At each step of a quality management system, some form of measurement has to be conducted at every stage of the process and of each product/output. The customer needs to tell the organisation whether the services or product supplied is at the desired level or not. Once feedback is gathered, an analysis needs to be done to determine whether any corrective action has to be taken or not. If there is no need for correction to take place, the emphasis will be on efforts for continual improvement to ensure that the high standard is achieved and maintained.

Customer-driven and Process-focus Best Practices in Teaching and Learning

Based on the ISO process-based model conceptualized in Figure 1 and Figure 2 above, best practices in teaching and learning using this quality model should focus on the customer and the processes. It is believed that for such a model to be transportable and be effectively utilized in sectors that provide teaching and learning services it is essential that the whole system be customer-driven and process-focus. This is certainly the approach that FPPSM has taken in ensuring that the quality system defined in ISO 9001 : 2000 provides useful guidelines for best practices in its teaching-learning practices.

In the context of FPPSM, the whole system of best practices which is customer-driven and process-focus can be clearly conceptualized in the diagram below (Figure 3).

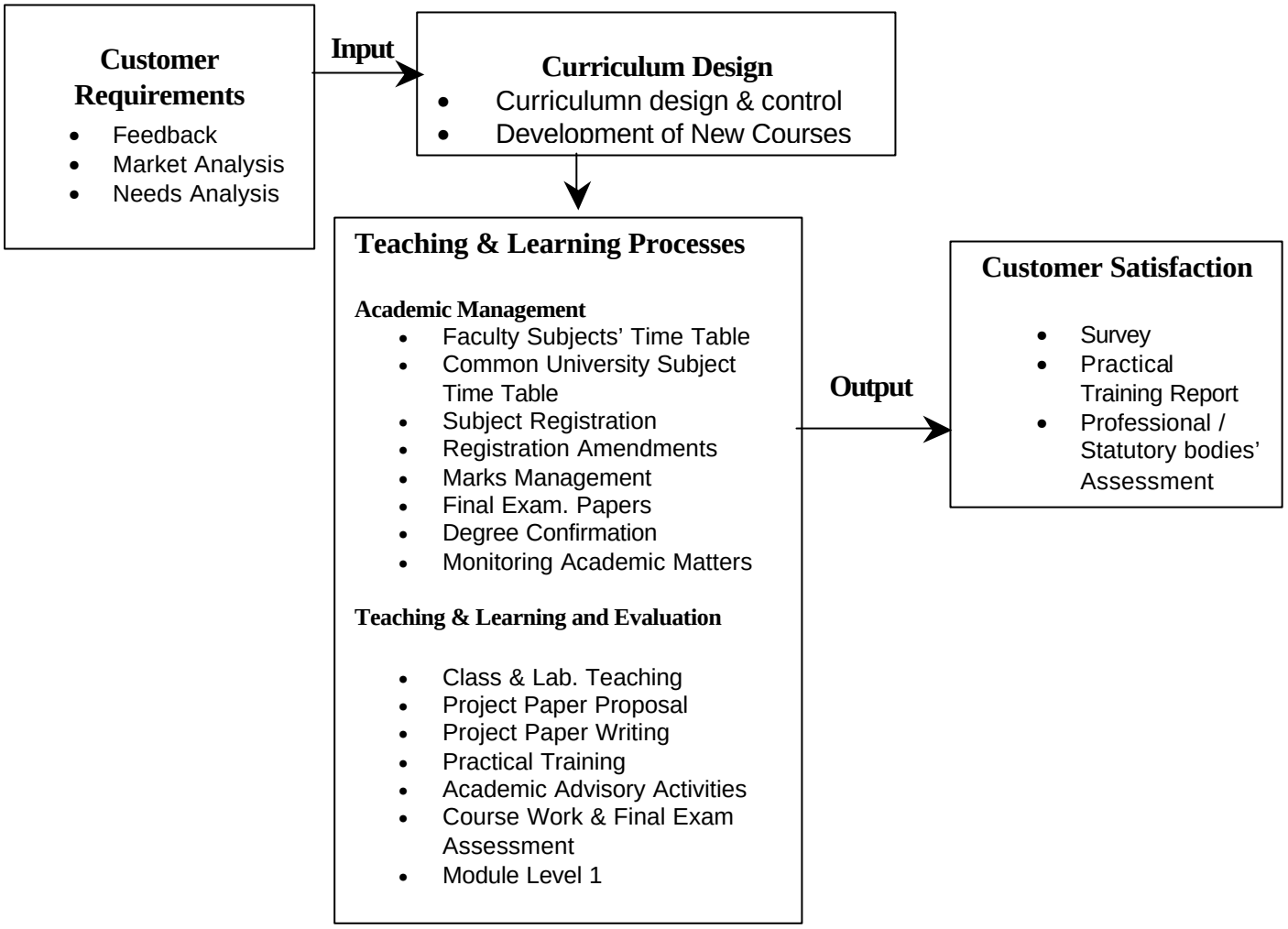

Figure 3: External Customer (Customer- Driven) and Internal Customer (Process Focus) Model

Customer-driven best practices in teaching and learning

Best practices in teaching and learning using the ISO 9001 : 2000 process-based model should be customer-driven. The focus on the customer includes the following parameters :

- identifying customer requirement which will serve as essential input in the teaching and learning process

- delivery of the teaching and learning services or processes which refers to product realization
- output from the best practices of the teaching-learning process that fulfils the identified requirements stipulated by the customers

External Customer requirements

The external customers encompass the parents, professional and statutory bodies and the industry who will employ the graduates. What they need and what they want in terms of the graduates is very important. We expect our graduates to compete in a market where they are sought after. In order to ensure this, we have to rely heavily on what the external market decrees. Feedback, market analyses and needs analyses are the tools used to objectively identify the requirements of the external customers.

The requirements stipulated by the respective and varied external customers serve as integral input to best practices and must be translated into the curriculum design. The curriculum must reflect the knowledge and skills that the external customers want. The curriculum design must be up-dated and modified in line with the demands and the development of the industries. The up-dating and up-grading must also be reflected in the teaching and learning process. The credibility and the marketability of the graduates will depend very heavily on this process.

Teaching and learning Process (Product realization)

In order to ensure that the best practices are applied, FPPSM controls and monitors the 3 Ps of the organization. These are essentially the People, Process and Product. How the Faculty capitalized on the 3Ps and other essential elements in the system, such as management practice, management of non-conformance product and instilling the principles and practices of TQM which together contribute to the formation of best practices in its teaching and learning process is further elaborated below.

(a) The focus on the 3Ps

Best practices in the teaching and learning process at FPPSM focus on three aspects, termed the 3P strategy that focuses on people, process and product since they are the fundamental substance of an organization.

(i) People

The focus on people centres on encouraging creativity in the classroom environment in addition to creating competency in the lecturers respective area or field of expertise. Flexibility is given in the use of technology and the policies formulated that are appropriate to the teaching and learning environment. The provision of techniques and technologies would encourage creativity, in which the academic staff is given the freedom to disseminate knowledge in the classroom using any suitable technique fit for student-lecturer interaction. Printed materials, CD Rom, online materials, online communication, face-to-face to name a few, are types of learning preference available for application in the classroom. Flexible provision regarding policies covers general guidelines for conducting students-lecturer interaction. No specific instructions or rules are applicable for classroom activities. However, to create competency in the subject field or area, the course content and the syllabus are synchronized so that they are in synergy with the requirement of the University, relevant professional bodies and other stakeholders or invested parties.

(ii) Process

The process, on the other hand, involves the teaching and learning activities in producing quality graduates. This requires identifying activities that need to be controlled, monitored and oversee throughout the complete cycle of the process. Thus, activities that have direct impact on producing quality graduates like the syllabus and the examination papers, would have to be rigidly controlled and inspect to ensure the 'correct' specification and requirements are met. Strict and specific procedures and guidelines are provided for in terms of such activities.

Examination papers are monitored in 3 stages, i.e. panels of subjects level, respected department level and the Faculty level. For activities that do not specifically deal with quality control, more opportunity is given to exercise flexibility and freedom. An example would be the academic advisory, where the judgement and consultation are subjective from one academic advisor to the other. Flexibility refers to choices and techniques, where choices of place, time, pace, style and content of consultation are given to students and advisors. Techniques, on the other hand, refer to preference of subjects to discuss and language to use.

(iii) Product

Product according to ISO 9000 series is output that is intended by a customer. The product of FPPSM involves the final product, which is the graduates, and the process product, which involves the examination papers, the undergraduate projects, practical training reports, and course work materials. Should the materials not meet certain specifications (as outlined in the curriculum and the course outline), the item would be returned for correction before being allowed to pass through to the next stage of the process. This is to ensure that product meet the requirements of customers at every stage of the process. Non-conformance product is dealt with in a manner proper to academic setting.

(b) Management Practice

The management of FPPSM incorporates a power-sharing structure. This structure is a medium through which the management support is realized. It involves empowering key personnel like Head of Courses, Head of Panels, Course Coordinators and coordinators of other teaching-learning related committees with well-defined authorities and responsibilities, detailing them in job descriptions.

The length and breadth of this empowerment and the authorities stipulated cover processes such as approving teaching-learning modules (for Head of Panels), vetting final examination papers (Heads of Panel), formulating,

developing and deciding on course content (Heads of Panel), selecting, validating and recommending appropriate staff to oversee vital activities (Heads of Courses) and establishing contacts with third parties (Heads of Courses and respective coordinators). Without such support, it would be difficult to implement and sustain the smooth running of the teaching-learning process in FPPSM. The practice is shown in the diagram below (Figure 4) which highlights some of the authorities outlined earlier.

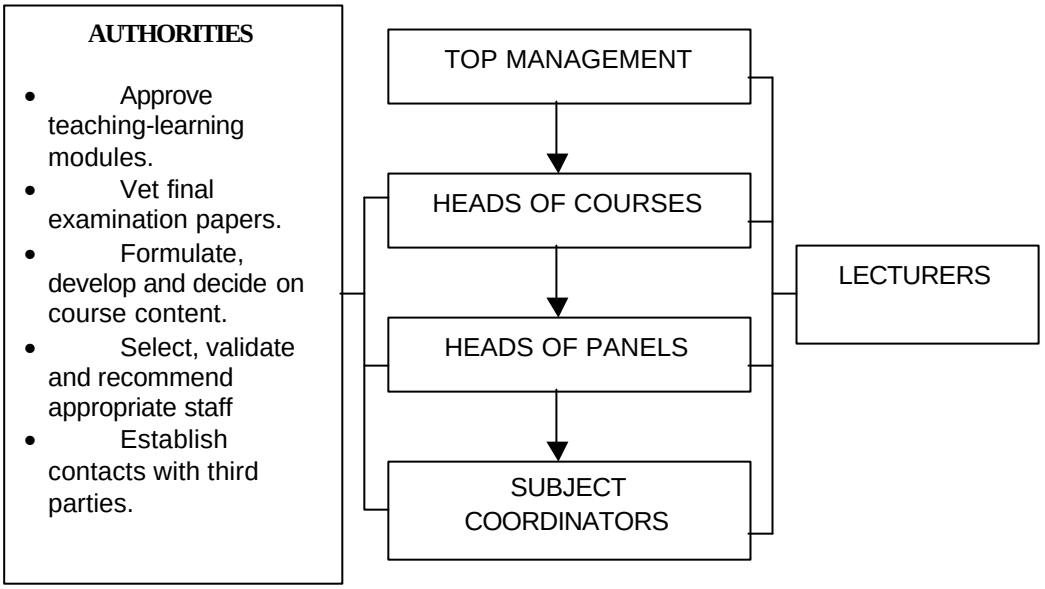

Figure 4 : FPPSM Power Sharing Structure

(c) Non-conformance Product Management

Where it involves non-conformance product in teaching and learning context in FPPSM, only the process output would be considered. The final product, i.e. the graduates, would not be brought back into the system for reworking. The process of non-conformance output considered would be students who are have difficulties and who show signs of not conforming to the desired level.

The academic advisor through consultation deals with students with partial passing grades. These students are given advise on how to choose subjects to help lessen their burden and to cope with academic workload, are encouraged by academic advisors to see respective lecturers for academic

tutoring, selected for motivational seminars and are monitored each semester for personal motivation.

(d) Instilling TQM

Apart from ensuring quality in the teaching and learning process via ISO Quality System, FPPSM undertakes measures to ensure that academic activities are continuously improved from time to time. This continuous improvement involves the use of analytical and statistical tools, and the use of indicators to measure and analyse performance at each stage of the process, performance of people and assessment of graduates. The evaluation on the process capability would bring about process improvement, while performance indicators of staff would lead to training needs, coaching activities and the use of mentor-mentee approach. Product evaluation would generate new and better curriculum that keeps in touch with time and space, as well as other critical needs of the society. The evaluation would then be used as the catalyst for improving process performance towards better implementation of the teaching and learning process at FPPSM.

Evaluation on the whole system would lead to benchmarking process in order to improve further the performance of the system toward increasing customer satisfaction, and creating loyalty on behalf of both the staff and the customer.

Process-focus best practices in teaching and learning

In the process-focus aspect of the system, best practices in teaching and learning focuses on the internal customers, that is, the students, themselves.

Internal customers

In the education arena, there are basically two main categories of customers : the internal customers and the external customers. The former are the direct recipients of the best practices in the teaching and learning, while the latter customers refer to those who are in the business of employing the product of the best practices, namely, the university graduates. However, even though the practices are customer-driven, it is believed that the internal customers, that is, the students are not able to specifically

outline how the teaching-learning practices should be done or how assessment should be conducted.

Nevertheless, the internal customers are the direct recipients of the teaching-learning process. The process covers lectures, practical training, project supervision, course work, lab work, final exams, and so on as detailed in Figure 3 above.

Customer Satisfaction

Feedback and knowledge of customer satisfaction is regarded as an integral component in the process-based quality model. Customer satisfaction in the context of FPPSM refers to external and internal customer satisfaction.

External customer satisfaction

There are several methods of measuring external customer satisfaction. There are several criteria by which the external customers measure and assess graduates or products from the teaching-learning process. In the context of FPPSM the criteria used for customer satisfaction are those used in the study done by Norfadzillah, (1997). These are :

- Knowledge/skill in the respective field of study
- Leadership quality
- Communicative Ability and
- Cooperation with colleagues

Their opinions are gathered through reports that external supervisors make on students who undergo practical training, market survey carried out when necessary or at least for every two years by the respective departments, needs analysis carried out during the design stage of the course/curriculum, and questionnaires distributed by the alumni to the present employers of the graduates. Any suggestions or complaints made by these external customers and stakeholders must be considered, assessed and wherever necessary, incorporated into the teaching and learning process. Only with such objective assessment of such feedback could the Faculty adhere to the principles of best practices and hence, continuous improvement.

Internal customer satisfaction

Notwithstanding their inability to provide informed input on how the teaching and learning processes should be conducted (as mentioned earlier), their opinions and feedback on these practices are regarded as of paramount importance and serve as input for continuous improvement. In UTM, to encourage this voluntary feedback, each semester the students are asked to respond to a set of questionnaire (OMR forms) that aims to solicit information concerning the following :

1. **Lecturer's preparation for the lectures** : this covers sufficient teaching-learning materials, continuance, organization of materials, use of teaching aids.
2. **Lecturer's delivery** of lectures : covering the variety of teaching-learning techniques, confidence, interesting lecture
3. **Lecturer's evaluation method** : which covers organization of assessment, students are made aware of mode of assessment, assessment is wholly based on lectures.
4. **Teaching organization** : covering distribution of course outline during first week, keeping of schedule, on time, delivering of lectures.
5. **Lecturer- student relationship**: availability of lecturers, willingness of lecturers to listen to students' suggestions, open mindedness, good rapport.

Analysis of the above is done every semester and is used as an indicator for best practice performance of individual lecturers and overall performance of the Faculty. Therefore, it is clear here that for the internal customer, the main focus is on the process of teaching and learning.

Conclusion

In the context of a higher education institution, implementing best practices in teaching and learning using ISO 9001:2000 should focus on the whole quality management system. This focus should entail :

- the incorporation of customer requirements in the teaching and learning process

- the measurement of quality in the final product, product of sub-processes, teaching-learning process and people directly and indirectly involved in these processes
- management support to facilitate the effective implementation of the teaching and learning process
- resource management for efficient utilization of resources and continuous improvement of the quality management system to achieve world class standard.

In the context of higher education institutions, adopting best practices in teaching and learning will ensure the production of quality graduates that will meet the needs of the industry and the respective external customers; the practice of efficient teaching and learning processes through feedback on customer satisfaction and for the organization as a whole, it is a trademark or recognition for ensuring standard. As quality is a journey and not a destination, higher education institutions should continue the journey by benchmarking the teaching and learning processes with renowned institutions to ensure it is of a world class standard.

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