

QUALITY MANAGEMENT SYSTEM FOR NUCLEAR EDUCATION CENTRES

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Quality Management is a recent phenomenon. This is applied to products or services, with an objective to deliver high quality, reliable, worthy, enduring, product or service. The process is considered to have four main components: quality planning, quality control, quality assurance and quality improvement. Focusing on quality control and quality assurance leads to achieving quality management or ensures that an organization or product is consistent. In this paper, the applicable international standard for learning services and for the organization for education and training (learning service provider) is discussed and also the procedure to implement the management system.

Keywords: Quality management, Education and training, Human resource, Training organization

1. INTRODUCTION

Quality Management System (QMS) is a recent phenomenon, applicable in different types of industries, based on the type of activity or process: designing, production or service delivery. The process is considered to have four main components: quality planning, quality control, quality assurance and quality improvement. Focusing on quality control and quality assurance leads to achieving quality management or ensures that an organization or product is consistent. This process is applied in many sectors like nuclear facilities, radiation protection activities, personnel monitoring services, radioactive waste management and many other including education and training activity. The relevance of QMS to nuclear education is pertinent because of the fact that this activity involves multiple agencies, departments, stakeholders and staff. Therefore a comprehensive laid out procedure detailing the role of each agency/staff will result in a successful implementation of the activity as a whole. Here the referred activity is education and training.

Education here denotes non-formal learning services, meaning it is different from the academic education provided in a university. Training also refers to non-formal training for professional requirement.

The Quality Management System specified by ISO is meant to certify the processes and the system of an or-

ganization, not the product or service itself. For example, ISO 9000 standards do not certify the quality of the product or service [1]. The ISO 9000 family addresses various aspects of quality management and contains some of ISO's best known standards. The standards provide guidance and tools for organizations who want to ensure that their products and services consistently meet customer's requirements, and that quality is consistently improved. For example; ISO 9001:2008 - sets out the requirements of a quality management system, ISO 9000:2005 - covers the basic concepts and language, ISO 9004:2009 - focuses on how to make a quality management system more efficient and effective, ISO 19011 - sets out guidance on internal and external audits of quality management systems. Recently ISO 29990 is published exclusively for learning services and service providers. It also supports and is supported by the other management systems [2].

ISO 29990 titled 'Learning services for education and training- Basic requirements for service providers' was published in December 2010 [3], The aim of ISO 29990 is to provide a general model for the quality of professional practice and service provision as well as a common reference for learning service providers and their customers to plan, design and implementation of training and education and to promote development. The standard focuses on the learner, the learning outcomes, the learning services and the competence of the learning service. Organizations and individuals may comply to the International Standard for the selection of an appropriate learning service that meets the needs and expectations of the development of competencies and skills.

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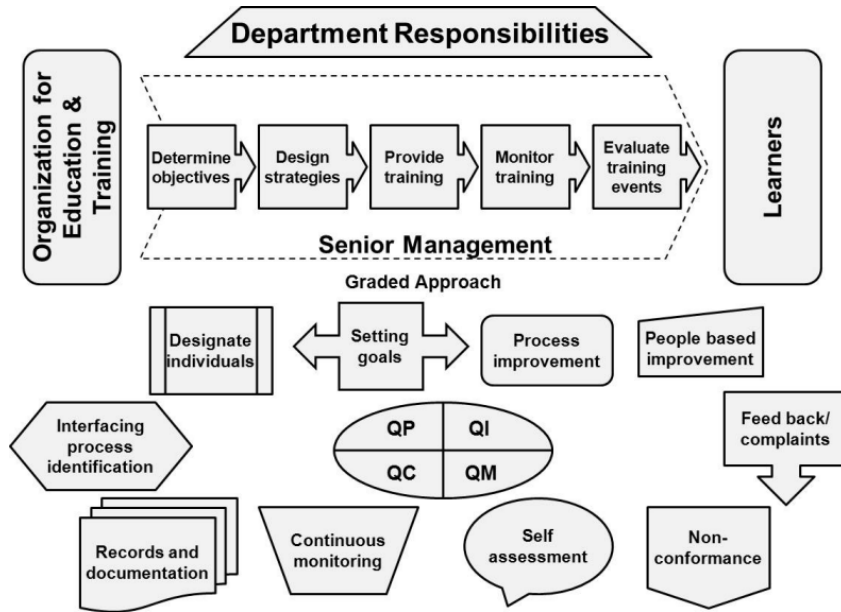


Fig. 1. Quality management process.

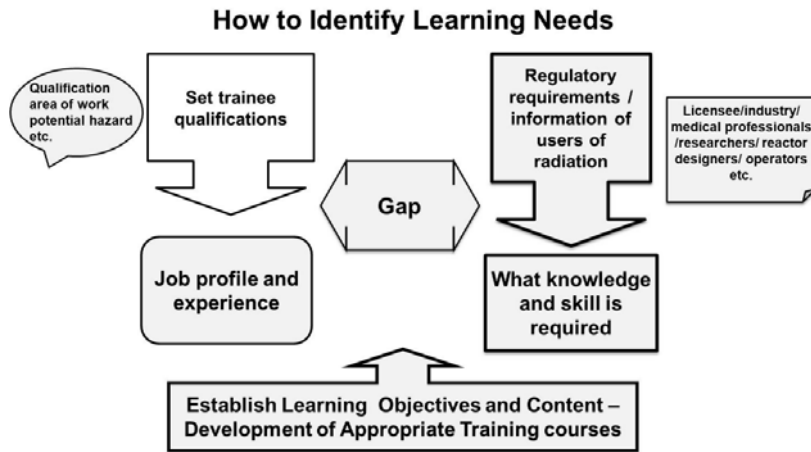


Fig. 2. Determination of training needs.

2. MATERIALS AND METHODS

The ISO 29990 specifications are applicable to both a) learning services or training activity b) learning service provider (institute or organization). The complete process that covers Planning, Quality Control (QC), Quality Maintenance (QM), Quality Improvement (QI) is detailed in Fig. 1. At the planning stage the senior management sets of the goals, strategies, plans and objectives of the institute and designates individuals -their roles and responsibilities. QC is actually process management. This will require interactions and interfacing processes, review of processes, documentation and records. QM will study the non conformance if any and include corrective and preventive actions. While QC uncovers defects, QM attempts to improve and stabilize. QI is for both process improvement and people based improvement. This could be an extension of QM.

3. IMPLEMENTATION OF QMS FOR TRAINING

The first step is to determine learning needs. The needs may emerge from various reasons like technological innovations, regulatory requirement to train nuclear or radiation personnel, nuclear and radiation safety, varying applications of ionising radiation in industry medicine, research, agriculture, emergency response, workforce turnover and so on. Therefore collection of information regarding interested parties is also essential. Determination of learning needs will be followed by; a) Design of the learning service b) Provision of training c) Monitoring delivery of the services and d) Evaluation carried out by the education and training centre. The steps are elaborated in Fig. 2 and 3. Similar activity carried out by the Nuclear Training and Education Centre (NTC) of KAERI is elaborated by Son et al [4].

The training centre would focus on objectives and

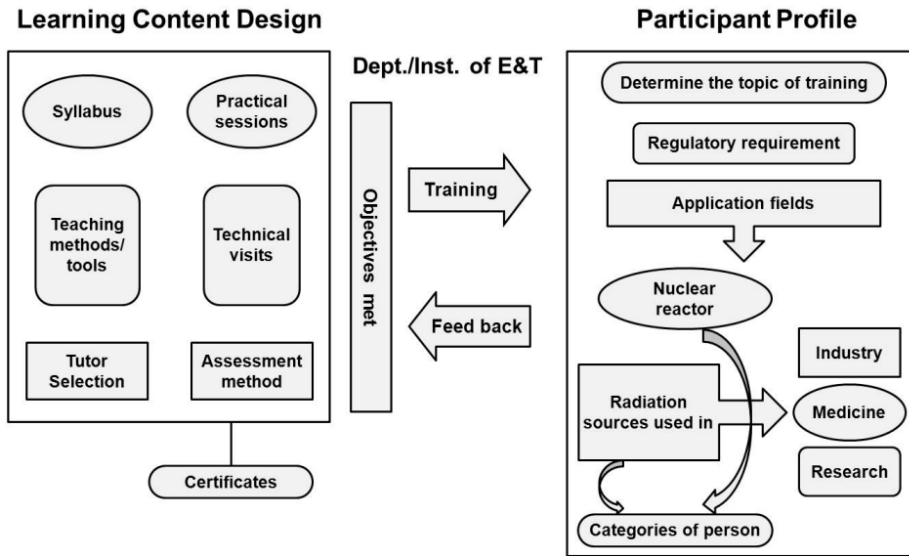


Fig. 3. Provision of training.

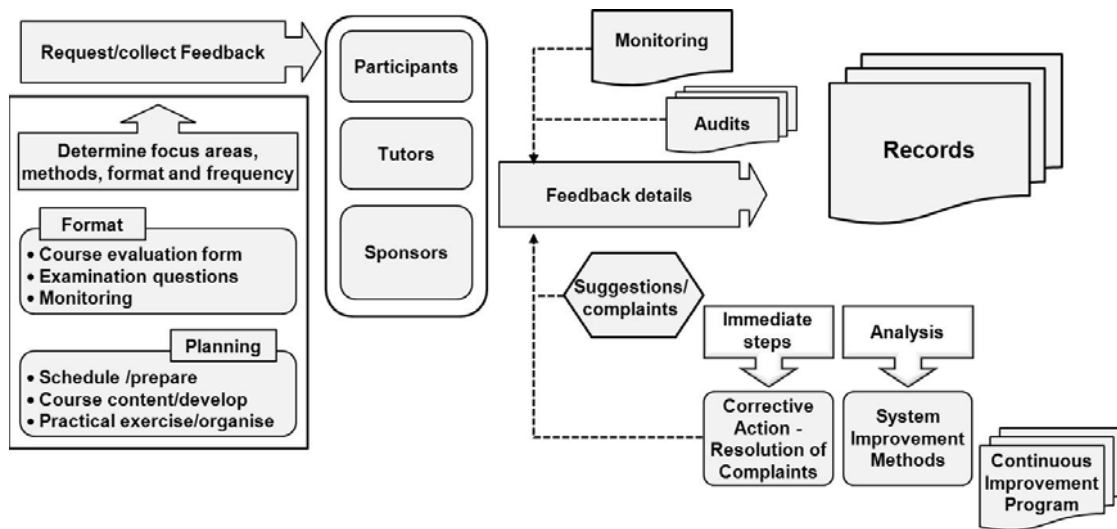


Fig. 4. Quality improvement.

control such as: i) Goal setting and monitoring ii) Development of policy iii) Strategy iv) Review – internal audit and external review v) Preventative & corrective actions control of non conformities, vi) Financial management vii) Human Resources, Co ordination with other organisations, designating individuals, and feedback from stakeholders involved in training activities viii) A document and record control procedure ix) The employment or engagement of the appropriate qualified trainers & scientific personnel x) Defines the interaction with the other Departments of the organisation so as to ensure the smooth and unhindered operation.

In parallel to the organization of training events there should be provision for internal audits and identification of non-conformities. The results of the audit is then analyzed and brought to the attention of senior management. The management might review and make decisions for improvement which could be even changes to the system. In addition a third party review or ex-

ternal audit will be useful. This practice of internal and external audits should be periodical, to maintain and continuously improve the Management System. This is elaborated in Fig. 4. There was an external appraisal – Education and Training Appraisal (EduTA) conducted at the NTC of KAERI by an international team of experts a) to assess the provisions for an education and training in radiation protection and the safety of radiation sources according to the EduTA methodology and to evaluate and identify the education and training needs in Korea and to make improvements to build national competence [5]. The result was this assessment has a set of recommendations to improve the national education and training program.

4. RESULTS AND CONCLUSION

Introducing QMS in a training centre in conformance

to ISO 29990 ensures a perfect administration of any training program. The international standard is for both learning services and for learning service provider. Further, the advantage of following the standard is that the training process will be role based rather than individual based and the process gets automated irrespective of the individuals. The documentation of the processes is a good support system. One of the aims of the QMS is to improve knowledge transfer and assurance of sustainability of education and training. The sustainability is attained by establishing the training needs, implementing a quality control and quality improvement of the process through constant monitoring, self assessment and external audits. Stake holders are convinced of a reliable product or delivery of a good training event if the training centre is complying with international standards. Therefore every training centre should strive to establish an appropriate Quality Management System to be recognized at international level.

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