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ABSTRACT

The aim of this study is to constitute a systematic approach to architectonic education using “Quality management techniques”. Whit this purpose, by means of quality management analysis model, mutual interaction and relation of components of quality, concerning process and sub-processes of architectonic education. Factors affecting quality have been examined in connection with the process approach of quality management.

With this context, quality, its components and dimensions were defined and discussed in the first part. Quality approaches related to higher education in the Member States of European Union are the subject of second part. The model of the quality assurance including the sub-processes such as; planning, implementation, evaluation and assessment, and review have been explained. The quality of architectonic education, its criteria and factors affecting the process quality of architectonic education have been discussed on third part. The fourth part of the study, consists of the quality assurance model towards architectonic education. The model includes subject provision and overall aims related to the different architectonic programmes. It also relates to the settings up of clear and measurable goals regarding policies, procedures tasks and human resources in architectural domain. The last part of the study includes the management of quality and the structure of architectural education as a proposal.

Key words: Architecture, architectonic education, quality, quality assurance, higher education

‘‘QUALITY *BY/IN/FOR* DESIGN’’
A SYSTEMATIC APPROACH TOWARDS AN ARCHITECTONIC EDUCATION

1. Quality, Its Components and Dimensions

Nowadays, the quality of a product or a service is defined by its capacity to fulfil the requirements and expectations of users, and the bests are those whose aim is to define the probable expectations and requirements of them. Besides, the quality of a product or/and a process is related to the requirements of the system that it belongs to.

The quality of something depends on the criteria being applied to it. Something might be good because it is useful, because it is beautiful, or simply because it exists. Determining or finding quality therefore involves an understanding of use, beauty and existence in other words what is useful, what is beautiful and what exists.

How to identify the Quality?

The meaning for the term *quality* has developed over time. Various interpretations are given below:

1. “Degree to which a set of inherent characteristic fulfils requirements” as ISO 9000;
2. “Conformity to requirements” exposed by Philip B. Crosby in the 1980s;
3. “Fitness for use” presented by Joseph M. Juran . Fitness is defined by the customer;
4. A two dimensional model of quality (Noriaki Kano and others). The quality has two dimensions: **“must-be quality”** and **“attractive quality”**. Supporters characterize this model more succintly as: “Products and services that meet or exceed customers’ expectations”;
5. ‘The loss a product imposes on society after it is shipped’ presented by Genichi Taguchi. Taguchi’s definition of quality is based on a more comprehensive view of the production system. (Bozkurt, R., Odaman, S., 1995)

However, the American Society for Quality defines “quality” as a subjective term for which each person has his or her own definition. In technical usage, quality can have two meanings:

1. The characteristics of a product or service that bear on its ability to satisfy stated or implied needs.
2. A product or service free of deficiencies.

Related to these definitions, the quality of a product or service will depend on the perception of the degree to which the product or service meets customer’s expectations. Quality doesn’t have a specific meaning unless it is related to a specific function and/or object. Quality is a perceptual, conditional and subjective attribute.

The dimensions of quality refer to the attributes that quality achieves using a management system which is called Quality Management System. (QMS)

Quality Management System (QMS) can be defined as a set of policies, processes and procedures required for planning and Execution (Production/Development/Service) in their core business area of an organization. QMS integrates several internal processes within the organizations and intends to provide a process approach for project/service execution. Quality Assurance (QA) appears as a result of a Quality Management System and is defined as a set of activities whose purpose is to demonstrate that an entity/service meets all quality requirements in a continuous improvement.

A QMS is a web of interconnected processes. Each process uses resources to turn inputs into outputs. And all of these processes are interconnected by means of many input-output relationships which are called as Quality Planning. Quality planning is defined as asset of activities whose purpose is to define quality system policies, objectives and requirements, and to explain how these policies will be applied, how these objectives will be achieved, and how these requirements will be met. It is always future oriented. (ISO 9000:2000 Series Standards)

2. Quality Approaches Related To Higher Education In The Member States Of EU

The quality of higher education has long been the major concern of universities. Quality assurance is also one of the prime objectives of Bologna Process. Since ministers met to take stock of progress and define mid-term objectives (Prague 2001, Berlin 2003 and Bergen 2005), the issue of quality has grown in importance and risen to the fore of the ministerial agenda to become one of the first policy objectives. (Quality Culture in European Universities)

Related to the report of the Technical Working Group “Quality in Vet” (TWG) the common quality assurance framework comprises:

- A model, to facilitate planning, implementations, evaluation and review of systems at the appropriate levels in Member States;
- A methodology for assessment and review of systems: the emphasis has been given to self assessment, combined with external evaluation;
- A monitoring system: to be identified as appropriate at national or regional level, and possibly combined with voluntary peer review at European level;
- A measurement tool: a set of reference indicators aiming at facilitating Member States to monitor and evaluate their own systems at national or regional levels.

Quality assurance and development are mentioned as a continuous process in the case of proceeding the knowledge based society, making lifelong learning a concrete reality, and establish a Europe of Education and Training by the Commission and the Council. The 2006 report emphasizes in particular the need for reforms to secure the development of high quality education and training systems, which are both efficient and equitable. (Commission Staff Working Document, Brussels, 16.5.2006)

2.1. The model

In accordance with the report of TWG the model includes four interrelated sub-processes: planning, implementation, evaluation and assessment, review.

- **Planning (Purpose and plan):** This relates to the setting up clear and measurable goals regarding policies, procedures, tasks and human resources. It also relates also to defining input and output standards linked with goals to support the design and implementation of the quality assurance as well as with providing reference points for certification of individuals or accreditation of VET institutions and/or programmes.

  Quality in VET is not primarily a technical issue. It is always linked to a specific policy, the institutional or/and individual goals and objectives are to be achieved, according to different time frames. Thus, the quality criteria of the sub-process of planning, should include the clear and measurable goals/objectives, according to the European targets and also describe the procedure for the planning sub-process within the quality approach in use.

- **Implementation:** It is essential to establish key principles that underline the implementation of the planned actions in order to ensure effectiveness in achieving the goals and objectives which have been planned. These principles have to be coherent with the goals that have been set.

  Such coherence can be achieved in many ways, for example through regulations, funding incentives, provision of guidelines on how to proceed at local level, building capacity of key actors on quality issues through training, combination of internal quality systems at provider level with external inspections, etc….

- **Evaluation and assessment:** This covers continuous *Evaluation-of programme provision* by objectives including learner data; and *Assessment-achievement of outcomes at system and individual* levels.

  It implies designing evaluation mechanisms according to the context, defining the frequency and scope of evaluations, and providing evidence of the findings of the evaluation to those concerned, including strengths, areas for improvement and recommendations for action.

  The effectiveness of assessment depends to a large extent on a clear definition of the methodology and frequency of data collection, and on the coherence between data collection and pre-defined indicators on the one hand and the goals and objectives to be achieved on the other hand. The relevant stake-holders i.e. current and former trainees, staff, employers and trade union representatives should be involved in the discussions arising from evaluation results.

  This sub-process ought to ensure that the assessment and evaluation are relevant and systematic by the use of indicators and measurements.

- **Review (feedback and procedures for change):** Quality assurance and development is a continuous and systematic process. It must undergo constant review combining self-assessment with evaluation by an external body, processing feed-back and organising procedures for change.

  Despite the fact that the other elements of the quality cycle are valuable only when conclusions are drawn, and lessons are learned and put into operation, the analysis of the

quality management systems shows that, in practice, this last phase of the cycle is quite often the weakest: i.e. revision of planning, fine-tuning of quality objectives and of quality management activities.

2.2. Methodology:

This is an important transversal dimension which is present throughout all the sub-processes of the model. It includes decisions about participation mechanisms, measurement and indicators; design of assessment and evaluation tools; procedures for planning, implementation and feedback; ways of combining all elements in order to create a unified system.

Methodology must comprise a systematic approach of quality management, including the basis of a quality system standard e.g. ISO or EFQM.

2.3. Self-assessment:

Self-assessment is a relevant method/tool to assess and evaluate quality at system and provider levels. It may cover one, several or all of the factors that have an impact on the quality of the higher education provision and also be used for VET system, including the organization, mechanisms and resources, pedagogical expertise, as well as relations to with external environments.

2.4. Monitoring system:

Self-assessment is an important method in quality assurance, which builds on “innate” knowledge. But it is an “introspective” procedure and thus biased. It needs therefore to be combined with periodic external monitoring by an independent and appropriate third party body at national, regional or sectoral levels. This combination is a pre-condition to ensure the credibility, legitimacy and recognition of the evaluation of the results and to support review. External monitoring can range from strict control and accounting measures to more open systems where control is also committed to developmental purposes, possibly combined with voluntary peer review.

Monitoring systems, mechanisms and procedures are part of the regulation function in governance and they can be as diverse as the national systems, sub-systems and institutions are. The trend towards decentralised governance, supporting and relying on local know-how and creativity, goes together with an increasing strategic complementarities between internal and external procedure.

2.5. Measurement tool:

Measuring quality and its components on all levels is a major challenge in quality management. The references made to indicators in each one of the elements of the model show their own importance throughout the quality cycle.

The aim is to consist of common quality criteria on Member States in order to ensure adequate and consistent follow-up and evaluation system of their own systems, based on common qualitative and quantitative references.

An important point that should not be forgotten is that a quality assurance system or principles are always related to the "inputs" of the system. The inputs that affect the quality of an educational system can be suggested as:

- Characteristics of the students,
- Characteristics of the teachers,
- Educational system of the country that students/teachers belong,
- Higher educational institution's programs and behaviour,
- The interrelations and influences of these factors in between.

These inputs are the main factors that affecting the quality of higher education. For specific areas like design/architecture/art, the factors affecting the quality of process and products-as the graduated student, will mainly depend on the characteristics of the student, educational system of the country and of the program as well as the interrelation and influences of these factors.

3. The Quality In Architectonic Education

3.1. Definition of the quality in architectonic education and its criteria

Within the Bologna Declaration in June 1999, the future structures of third level education across the European Union and beyond were formed. One of the principal aspirations of the Bologna Declaration is to increase mobility throughout Europe among students, teachers and researchers. This is the one part where there is a close match between it and the objectives of the Qualifications Directive which will be the only Directive in force within European Union by 20 October 2007. (Horan, 2006)

In order to facilitate this mobility between third level institutions, the Bologna Declaration suggests a framework which if adopted would produce a greater possibility for comparison between the programmes offered at the various universities and institutions. This framework recommends a Bachelor/Master/Doctorate structure with the Bachelor or Primary Degree being achieved after a minimum of three years, followed by a Masters qualification after two and a Doctorate after three additional years. The programmes being offered by Schools of Architecture being generally five years in duration seemed to fall naturally into the 3+2 format. The three plus two format may have a tendency to introduce specialisation, particularly in years 4 and 5. So, Schools of Architecture need to be vigilant in this area as an over-emphasis on specialisation could lead to the programme of the School being deemed non-compliant with the Directives.

In accordance with the Architects' Directive 85/384/EEC and the New Qualifications Directive 2005/36/EC the architectural training shall insure the acquisition of eleven points which are mentioned below:

- An ability to create architectural designs that satisfy both aesthetics and technical requirements,
- An adequate knowledge of the history and theories of architecture and the related arts, technologies and human sciences,

- A knowledge of the fine arts as an influence on the quality of architectural design,
- An adequate knowledge of urban design, planning and the skills involved in the planning processes,
- An understanding of the relationship between people and buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale,
- An understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs and than take account of social factors,
- An understanding of the methods of investigation and preparation of the brief of design project,
- An understanding of the structural design, constructional and engineering problems associated with building design,
- An adequate knowledge of physical problems and technologies and of the function of building so as to provide them with internal conditions of comfort and protection against the climate,
- The necessary design skills to meet building users' requirements with the constraints imposed by cost factors and building regulations,
- An adequate knowledge of the industries, organizations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning.

In this context, architectonic education process should provide the curriculum which clearly follows the guidelines set out in the eleven points of Article 3 of the Architects' Directive and Article 46 of the Qualifications Directive.

3.2. Factors affecting the process quality of architectonic education

The factors affecting the process quality of architectonic education can be examined in two main directions.

- **Internal factors affecting quality:** Internal factors affecting quality are academic standards, quality of learning opportunities.

Academic standards consist of learning outcomes, the curriculum, and student assessment and student achievement.

Quality of learning opportunities is defined as teaching and learning, student progression and learning resources.

- **External factors affecting quality:** External factors affecting quality are characteristics of the student and educational system of the country that students belong.

Characteristic of the student are skills, behaviour, interests, competences or cognitive capabilities

and socio-cultural features that he or she has. These characteristics affect the quality of performance of the student in design process.

The effect of the educational system on architectonic education depends on the model of the educational system. These model which does not include an orientation based context towards the aptitude of the students, affect the quality of architectonic education.

4. A Quality Assurance Model Towards Architectonic Education

A quality assurance model can not be set without dimensions of the architectonic education.

These dimensions can briefly be defined as follows related to the UIA recommendations and reflections:

- *Context and objectives of architectonic education* refers to the rationale, in other words, the "where's" and "why's" of education. An understanding of the historical and contemporary contexts which make institutionalised education system necessary could facilitate more accurate assessment of current educational and professional issues. Objectives also refer to the specific aims and objectives of courses, course components or specific design projects.

- *Content and curricular structure of architectonic education* refers to the content, in other words, the "what's" of education. Both overall content of the curriculum and the specific contents of course components, projects, etc. should be accounted for in curriculum design, and be examined in detail to evaluate outcomes.

- *Methods and media of architectonic education* refers to the "how's" of education, in other words, to the modes, means, techniques and tools by which the stated contents (i.e. objects) and objectives of courses are achieved.

- *Management and structure of architectural education* refers to the management of knowledge, people, time, space and financial resources in educational contexts. It is also to do with the question "who", that is, who runs the institutions, who teaches, who are admitted as students and who evaluates and validates courses.

In connection with the quality approaches related to higher education in the Member States of EU, a Quality Assurance Model in Architectonic Education should consists of:

- A model to facilitate planning, implementations, evaluation and review of systems in architectonic education.

- A methodology for assessment and review of systems related to the outcomes of the curriculum and the specific contents of course components, projects etc.

- A monitoring system which should be identified as appropriate at national or regional level in order to reach the target quality.

- A measurement tool which will facilitate the internal and/or external monitoring

activities.

The model:

The model should consist of the subject provision and overall aims related to the different architectonic programmes (architecture, architectural technologies, interior architecture or landscape architecture…). It also relates to the settings up of clear and measurable goals regarding policies, procedures tasks and human resources in architectural domain. It includes four main interrelated sub-processes: planning, implementation, evaluation and assessment, review.

- **Planning (Purpose and plan):** Planning sub-process should provide a detailed study programme concerning the student's capabilities of Design, Knowledge and Skill related to the architectonic education in accordance with the eleven points mentioned by Architects' Directive and the New Qualifications Directive. It also should concern the context and objectives of architectonic education which mean social, cultural, political contexts; professional, technological, industrial contexts; local, global, ecological contexts; academic contexts including science and knowledge in general; international contexts.

  Whatever the detailed dimensions of these contexts, architectonic education planning sub-process should have two basic purposes in accordance with the UIA principles:

  -to produce competent, creative, critically minded and ethical professional designers/builders;

  -to produce good world citizens who are intellectually mature, ecologically sensitive and socially responsible.

- **Implementation:** It is essentially focus on establishing key principles that underline the implementation of planned actions in order to ensure effectiveness in achieving the goals and objectives which have been planned. In this context, content and curricular structure of architectonic education are main parts of the implementation. And include knowledge, skills and competence part of the architectonic education.

  In general, the contents of architectural education should:

  a.) aim to be as comprehensive in its coverage as possible, hence, be generalist;

  b.) try to specialise in areas where particular foci and accuracy are essential;

  c.) aim to integrate areas of knowledge, know-how and skills from allied professions, such as engineering, arts, economics, etc.

  d.) allow higher levels of knowledge or specialisation through postgraduate programmes, multi-professional courses, research or short courses;

  e.) take care not to be fixed, but respond to emerging forms of practice and to changes in the construction industry, in universities and in society at large.

  "Structure of Architectonic Education" on the other hand, can be seen in two distinct, but

closely related, senses;

a.) the organisation of courses in terms of their specific content and teaching modes, i.e. “curricular structure”;

b.) the organization of the whole study programme into variously numbered years, stages, parts, degrees etc.

- **Evaluation and Assessment:** This sub-process includes the monitoring phase of a quality assurance system. It can be a self-assessment process, as well as an internal/external verification which is made about the academic standards achieved and the quality of the learning opportunities provided. The evaluation and assessment sub-process consists of the examination of the whole process of the architectonic education. It contains the verification of overall aims; defined academic standards within the programme specifications; insurance of the aims and objectives related to design projects are addressed within the framework of programme specifications; a criteria for degrees in architectonic education, an undergraduate programme accredited by an external experts groups; verification of the learning outcomes within the criteria of professional bodies and with the European Union Architects Directive.(QAA for Higher Education, 2003)

  Evaluation and assessment sub-process should provide an accreditation of educational programs in architecture, whether sought voluntarily by the educational institution or exacted by relevant authorities, seeks primarily to ensure, in the public interest, that the standards attained by successful graduates of the program are adequate with regard to design, technical and professional skills and ethical formation required for competent architectural practice. (UIA, 2002)

  The principles in any accreditation policy permit flexibility of approach while ensuring independent standards for the accrediting body and the pursuit and maintenance of high standards in educational endeavor and in the accrediting process itself.

  The critical criteria in a satisfactory educational program involve thorough assessment in accordance with previously defined and agreed criteria, by a group of assessors external to the school of architecture, who are competent by training and experience to evaluate architecture programs and make recommendations for their direction or modification which means the review of the system.

- **Review (Feedback and procedures for change):** In connection with the results of evaluation and assessment sub-process, the review of the program, content, context or/and methods should be reorganized due to the quality assurance system. It can be related to the academic standards and also to the quality of learning opportunities. The results of the examination related to the academic standards may be defined as confidence, which may be expressed as limited confidence, or no confidence. Quality of learning opportunities may be defined as commendable, approved or failing.

  The management should develop its method for academic review, concerning the academic programs, academic standards such as; clear learning outcomes which reflects the expectations of the subject community and the requirements of professional bodies; curricula which encourage the achievement of the intended outcomes in preparing

graduates for the architectural profession; an appropriate assessment process which enables students to demonstrate their achievement and student achievement which matches the intended outcomes and the level of the awards.

5. Conclusion and Proposals

The quality problem due to architectonic education has always been one of major field of discussions. And it is now named The Management of Quality or The Management.

The management of architectural education is an organised form of learning and teaching.

A systematic approach to the quality management in architectonic education should involve following levels:

- *Management of knowledge: the structure(s) of architectonic education:* the number of years; the number of years in each stage (e.g. the First Stage, the Second Stage, etc.); the administrative structure of and the relationship between undergraduate/postgraduate courses, and the hierarchy of staff teaching them, in addition to the relative positions of research, teaching and practice; the relationship between and the hierarchy of courses and projects; the involvement of professional bodies in setting the structure of the architecture study programme, its validation and accreditation, the recognition of degrees awarded, etc.

- *Management of People:* defining the “who” question of the process, as “who” teaches, “who” is admitted as a student, “who” runs the school etc. Greater participation of all those involved in education and les emphasis on hierarchy in educational structure would be conducive to creative developments in schools. Sharing of responsibilities in schools as well as between schools and the profession and between allied building professions would create greater identification with the aims as well as the outcomes of education.

- *Qualifications of teachers:* the qualification of teachers is an essential condition of the quality of the education process specific to an architectural school, and one should consider it from many points of view; the professional, the pedagogical, the overall cultural view, the managerial experience in practice. Being a "good architect" does not necessrily ensure that the person is a good teacher. The teacher has to process an ability to work outsideas well as within professonal concepts, to be able to synthesise and communicate educational issues; to be creative in settings projects, to discover and to develop the student's talent, and to possess pedagogical tactfulness to foster the student's own thinking. Moreover, the teacher has to find a way to sustain a didactic career by a working method that should be both motivatedand articulatedby coherent objectives and be able to adapt personal habits and knowledge, as well as working methods, to the changes occuring within society, from a local, regional, and international perspective. The school of architecture should run a mechanism of teacher's selection and promotion, one that involves a stimulating and competitive system of evaluation. This should also apply to the part-time teaching staff. at the same time, it is the school's responsabilityto create proper research conditions, opportunitiesfor continious education programmes for the teaching staff, including national and international cooperation in programmes of exhcanges.

- *Students: Minimum entry requirements:* students entering educational institutions to study for a professional qualification in architecture should ideally have had a broad secondary school education that encompasses a mixture of arts and science based subjects, ideally studied to the age of eighteen to an advanced level.

- *Management of time: organisation of the academic year:* there are several models of organising and managing the time aspect of architectural education. 6this is based, variously, on the number of years, how these years are divided up or how and by whom various attainment levels of knowledgeor competence are assessed and certified. As the activities in the year, the curricular activities may be spread autonomously, grouped in modules, scheduled regularly on a weekly basis or merged within a given time, varying from week to week. In each case there are more stages within one semester, each involving the definition of an objective and the on-going evaluation, especially in the case of the "project". It is assumed that studio time will equate to at least half the curriculum time. Management of the time means the quality planning of sub-processes.

- *Management of educational spaces:* the buildings in which future architects are educated are often as important as the lessons they get in those spaces. 5 years working in a space may discreetly effect the make-up of their spatial awareness. Secondly, the management of educational spaces in architecture schools is more than a facilities management issue. The relationship between studios, lecture rooms and other spaces, the quality of public spaces or those of exhibition areas, the existence or otherwise of an in-house library, the relationship between the staff offices and the studios, are all pertinent educational factors.

- *Management of funds:* as a public service, architectural education requires sufficient funding for its effective operation and continious development. It should not be restricted by fluctuations in funding or external considerations such as student numbers. There can be different modes of funding education in different cntexts. The specific nature of architectural/design education with its unique requirements (e.g. space, time, staff/student ratio) must be emphasised in presenting the case to funding authorities

All these procedures are main topics related to the process quality of the architectonic education. The nature and detail of procedures to be adopted by an accrediting board will vary depending on the culture and educational practices of the country concerned. Related to the explanations given above, it can be said that to have a process quality; school of architects must have an internal system of quality development which -on the basis of structural and procedural organisation, its own quality culture and own quality management-enables the architectural education institution itself to plan, implement, control and further develop all its programmes on a regular basis, irrespective of subject or standard and systematically to a self-determined and validity-checked degree of quality; and at the same time this system is a control tool with which the architectural education institution distinguishes itself in teachng and learning; and also the system should be structured with a view to permanence (sustainability) and the necesary capacity for change (flexibility).

REFERENCES

Bozkurt, R., Odaman,S., (1995), ISO 9000 Quality Assurance Systems, National Productivity Center Publication, No:549, pp7-11, Ankara

European Commission, Directorate General for Education and Culture, Technical Working Group "QUALITY IN WET", (2004), Fundamentals of A "Common Quality Assurance Framework" (CQAF) for VET in Europe, Brussel

European Commission, Commission Staff Working Document, "Progress Towards The Lisbon Objectives in Education and Training", report 2006

ISO 9000-2000 Quality Management System Standard

Quality Assurance Agency for Higher Education (2004); Academic review:subject review; Architecture, Architectural Technology, and Landscape Architecture, London South Bank University; SR11/2004

98th Session of the UIA Council (Curitiba, Brazil.November 2002), pp6-25