



## TQM Involvement in Pre-University Education

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**Abstract:** Quality, claimed and emphasized by the political decision makers in the system, is a rather abstract concept and is therefore confused with quantity. The definitions of quality are numerous, but the strategies for its implementation in an inertial system are far from proposing applicable solutions with immediate effect. Some such measures are invoked in our study, some even have an obvious personal note.

**Keywords:** quality; program adopted; management strategy; feedback element

### 1. The General Context

Although the concern for quality management worldwide began in the end of World War II, after the 1990s the frequency of these concerns increased in educational settings. The problem of implementing quality management in education has quickly become a global one, so in the last two decades, education systems in more and more countries aim to implement quality management in order to improve their performance and increase their competitiveness in the globalized market. It is interesting to note that, in educational settings, the phrase quality management has generally been avoided, preferring the phrases, usually undifferentiated, quality assurance in education and quality assurance of education (Chină, 2014, p. 18).

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*Total Quality Management (TQM)* - according to the “Quality Glossary Definition” can be defined as “a management approach to long-term success, through customer satisfaction. Such an approach involves the participation of all members of an organization in improving the processes, products, services of the organization”. TQM is based on the ideas of quality leaders: W.E. Deming, J. M. Juran, P.B. Crosby, A.V. Feigenbaum, Kaouru Ishikawa. An important complement to this definition can be found in [businessdictionary.com](http://businessdictionary.com), in the sense of orienting the organization on a long-term approach to quality management at any level of it, from management to execution. TQM includes three key components: *a management philosophy, an improvement process or model, and a set of mechanisms that includes the seven quality control tools*” (Tague, 2011, p. 12).

Experts believe that this concept, including the TQM philosophy, belongs to the American Edwards Deming (the “*14 points of Deming*”), proposed in 1940, but the application of this concept began in 1985, first used by Naval Air Systems Command (US Naval Air Force Command Structure), for its own quality improvement program, when the Americans took over some working principles from the Japanese industry, which involved:

- focus on continuous improvement processes, and make the processes visible, repeatable and measurable (Kaizen);
- analysis and elimination of unwanted elements in production processes (Atarimae Hinshitsu);
- examining the way in which consumers use the products, in order to improve the product (Kansei);
- extending managerial concerns beyond the product (Miryokuteki Hin-shisu) (Sintion & Iliescu, 2007, p. 17).

Regardless of the program adopted, several common points are identified in the adopted TQM programs (Sintion & Iliescu, 2007, p. 22): *leadership practiced at any level of the organization, employee accountability and involvement, customer-defined quality and satisfaction, work seen as a process and continuous improvement*. TQM’s philosophy was later completed and developed with increasingly efficient and sophisticated tools, developing, among other things, *internal customer* concepts (Masaaki, 1984).

Total quality management is a popular management strategy, including in the education sector, based on the idea that performance in achieving superior quality can only be achieved through the persevering involvement of the entire organization in the process of continuous improvement. The goal of quality management is to increase efficiency and effectiveness in customer satisfaction (including students).

The defining elements of Total Quality Management are: “*continuous improvement*” and “*the level of the entire organization*”, and all the processes involved emphasize the feedback element. Total quality management is a permanent activity to rule out shortcomings.

The quality of the pre-university education institution can be defined as the set of features, characteristics of the institution, in the formation of which are involved all available resources and environmental factors, which gives it the ability to meet certain current and prospective needs / requirements of direct and indirect beneficiaries. education, in accordance with the provisions of quality standards.

The manager must make a creative contribution to the adoption of the techniques and means necessary to streamline the educational activity, depending on the concrete situation of each institution, school unit. The classical techniques and tools of quality management were taken, for the most part, from statistics, being used for:

- ordering and synthesizing quality data, belonging to descriptive statistics, in the quality analysis being used different types of files, tables, graphical representations;
- making decisions regarding the quality of material resources, based on the analysis of the sampled sample, the statistical quality control techniques by sampling;
- controlling the proper functioning of a process, in order to ensure its capacity to obtain, constantly, the required quality level, the realization of a control diagram, etc.

All these techniques and means allow the ordering and presentation of quality data in a synthetic, easy to understand way. The different data obtained allow the performance of comparative analyzes, highlighting trends, establishing relationships between the elements of the analyzed field, contributing to making useful decisions (Chițu, & Gribincea, 2016, pp. 81-85).

Other techniques and tools are also used in quality analysis: benchmarking, brainstorming, Ishikawa diagram, process diagram, compatibility matrix, etc. Unlike the above, they are called Numerical Data Techniques and Tools.

This order of ideas includes the existence of management relations - the relationships that are established between the components of a system with the components of other systems, in the processes of planning, organizing, coordinating, motivating, coaching, controlling and evaluating the activity of the educational institution (Nicolescu , 1992, p. 7).

Thus, the management of educational quality expresses the strategic vision of the school unit, organizational culture, material and human resources, teaching-learning-assessment processes, counseling services, processes of improving the current activity, in a word, the whole school activity in its complexity (Toca,2010).

Educational quality management focuses effectively on processes and not on people, and quality becomes both the responsibility of the provider and the beneficiary but also a mental attitude, a way of professional life of each individual and the whole school.

It is also necessary to establish:

- quality standards, norms and indicators for the different components of the educational and counseling process;
- techniques for quality control, which highlight the quality of the educational and counseling process;
- methods for solving difficult situations that affect the quality of education.

The quality of the school unit is highlighted by the way in which the material and human resources correspond to the quality standards; the quality of educational services is determined by the way in which the organizational structures of the school unit achieve the established educational objectives; The quality of the educational process of training and education of students is highlighted by the way in which human resources understand and apply the curriculum, what methods of teaching, assessment, counseling and certification they use.

The product of the educational institution is the result of a certain process. This result can be: a commodity, a service or information. The final product in education is represented by the development of the graduate as added value, the competence acquired by him at the end of studies, ie learning outcomes, expressed

in terms of: accumulated knowledge, trained intellectual abilities, applied skills, personality traits conduct), level of education, training, etc. (Chițu & Gribincea, 2016, pp. 81-85).

## **2. Principles of Quality Management in Pre-University Education**

The ISO 9001 standard - quality management - is popular in the education sector, although it is borrowed from business. The principles on which this system is based have been adapted to the field of education. Adherence to these principles in quality management in pre-university education contributes to solving all consumer needs and are as follows:

- **The principle of consumer orientation.** The analysis of consumer requirements and needs (in general, it is represented by the whole society: students, parents, employers, the state) is the precondition for the development of quality assurance policies and strategies;
- **The principle of leadership.** The mission and objectives of the educational unit can be achieved through the involvement of each employee of the respective institution, who must define his / her role and place in achieving the formulated objectives and the commitments assumed;
- **The principle of involvement.** The responsibilities of the institution as a whole must be distributed, according to competence and capacity, as judiciously as possible, among all employees of the educational unit to achieve the expected results: attracting consumers of educational services, meeting their needs and expectations, obtaining specific benefits: accreditations, recognition, advantageous positions in ratings, positive image, etc.;
- **The principle of procedural approach.** The educational activities are, logically, related to other activities, forming a structural, unitary process, with organic links and interactions, oriented towards the achievement of the expected objectives;
- **The principle of the systemic approach to management.** The administration of the educational unit pays attention to the entire institutional activity, with an emphasis on human resources: staff - qualification and motivation for high-performance activity, students - motivation for high-performance learning;
- **The principle of continuous improvement.** Each subject of the educational process (manager, teacher, etc.) must be concerned with the continuous improvement of the quality of its performance, by optimizing, streamlining the

activity, implementing ICT, with a direct impact on the quality of training and perception. parents, society as a whole, aiming at the quality of the process and the permanent institutional development / modernization;

- **The principle of making decisions based on facts.** The decision-making process is an inherent part of institutional quality assurance and control policies. Decisions will be made on the basis of relevant information, research and analysis on the facts and perspectives of the school, in accordance with developments in the external environment of the institution;

- **The principle of collaboration.** It is necessary to create effective collaboration schemes between those who provide the “raw material” (parents, lower level institutions, the informal environment) and those who receive the “final product” (educational institutions, employers, society as a whole). In the educational process, as a “raw material” can be considered the curriculum, textbooks, equipment, material and financial resources, which are the inputs to the system and which are processed along the way, in accordance with the objectives set to ensure a level higher quality of the “final product” - the graduate;

- **The principle of minimizing non-quality losses.** The educational process in a broad sense, including the actual teaching-learning activities but also the related, extra-didactic activities, needs to be designed in such a way as to minimize any possible damage: educational waste, loss of resources (staff, time, money), non-quality etc. All these require the forecast and managerial anticipation of the activity of the educational unit, oriented towards ensuring the quality of education.

Strategies and processes that guide the effective implementation of the principles presented guarantee the quality and consistency of all aspects of the educational offer. Thus, the existence of systematic procedures resulting from the functionality of educational management was emphasized: to review teaching, practical training and learning and to improve student outcomes. The manager contributes to the application of these effective procedures for responding to complaints and appeals, developing quality improvement recommendations that ensure their monitoring (Chițu & Gribincea, 2016, pp. 81-85).

The ever-changing paradigm shifts in approaches to educational processes in the European and global education environment call for a reorientation and rethinking of quality management in education. *“The key issue is the process of reviewing what it means to ensure quality in education, because... current standards and*

*guidelines will soon be too restrictive to be useful*<sup>1</sup>. Or, more precisely, while in the educational environment the quality step was “*beaten on the spot*”, in the business, industrial, economic environments it was passed to the application of some evolved and much finer mechanisms in terms of quality management: TQM, Six Sigma, LEAN, Kaizen, Balanced Score Card etc.

In this context, the elaboration and launch by the European Council on 18 February 2021 of the *Resolution on a strategic framework for European cooperation in vocational education and training, in the perspective of the European education area and beyond, for the period 2021-2030*, represent an opportunity to reconsider, fundamentally, the approach to “*quality assurance in education*”, as the document calls for an urgent approach to competition between European educational institutions, based on comparative assessments, which means much more than quality assurance.

It is a known fact, from the literature, that comparative evaluations require an advanced approach to quality management, based on a TQM philosophy and, implicitly: establishing benchmarks, creating benchmarking networks, preparing organizations to implement comparison processes and so on. These techniques usually include the adoption by the organization of a model of excellence,<sup>2</sup> as a philosophy of its development.

Taking into account the concept “*Reverse of the adverse influences (losses) caused to a company by providing a product/service*”, developed by G. Taguchi (Taguchi, 1924), if we take into account the degree of satisfaction of the expressed and implicit requirements, then the quality of a service, for example ) is an ‘area’ of interference between three key areas: “requirements”, “specifications” and “quality achieved”, in the form of a Venn diagram. A particularly interesting approach to this concept will be found in N.G. Drăgulănescu (Drăgulănescu, 2018, pp. 22-26.).

If we translate this approach in the educational area, more precisely in the relation of a school unit (in the role of “manufacturer”) with national standards (which have the role of “specifications” of educational products) and stakeholders (students, parents, etc.), then the area of interference between the three areas (circles) will certainly refer to the quality of educational products and services offered for consumption by the school organization. The most important area is “quality

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<sup>1</sup> Reisz, Matthew, *Europe is told to relearn the ABCs of quality assurance*, source: <http://www.timeshighereducation.co.uk>, p. 1.

<sup>2</sup> The three world-renowned models of excellence are: the Japanese Model of Excellence (1951), the American Model of Excellence (1987) and the European Model of Excellence (1999).

introduced and kept under control”, in fact the only one that matters. Then, through the improvement processes, this area should increase its surface, tending to the ideal situation - therefore impossible - when the three circles completely overlap.

### 3. Quality Management at the Educational Level

Quality management is part of the organization’s management and includes four components:

- a) *Quality planning* - part of quality management focused on setting quality objectives and specifying the necessary operational processes and related resources to meet quality objectives;
- b) *Quality control* - part of quality management focused on meeting quality requirements;
- c) *Quality assurance* - part of quality management focused on providing confidence that quality requirements will be met;
- d) *Quality improvement* - part of quality management focused on increasing the ability to meet quality requirements.

Romanian pre-university education has a multilevel structure and all educational entities that attend school (provide “education”) within a level will form a subsystem specific to it. A systemic approach to the component levels of pre-university education helps us to properly detail the essential aspects that clearly show for which of the subsystems the implementation of the specific elements of quality management can be efficient and effective.

The current approaches in the European and obviously educational space, and in the Romanian one, have preferred the phrase “*ensuring the quality of education*” or “*ensuring quality in education*”. The current Romanian legislation<sup>1</sup> states that “*ensuring the quality of education expresses the capacity of a provider organization to provide education programs in accordance with the announced standards and is achieved through a set of actions to develop institutional capacity, development, planning and implementation of study programs, which forms the trust of the beneficiaries that the organization providing education meets the quality standards*”.

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<sup>1</sup> Romanian National Education Law, no. 1/2011.



The main stages regarding the implementation of a quality management at the level of the pre-university system can be:

- ❑ setting *strategic targets* in the field of education, depending on national resources and correlated with community standards in the field of education. Setting strategic objectives / targets is a process that exceeds the national educational space, in the context of a “visible” evolution in the community space. As a rule, the role of strategic targets can be ensured by public educational policies;
- ❑ elaboration of *national standards* based on the realities and experiences of the national system, economic and human resources, socio-economic and cultural context, local, regional and national, but also based on community references or advanced experiences in the field, taking into account the requirements of all parties interested;
- ❑ performing *system analyzes* based on realistic research in the field;
- ❑ developing *relevant, flexible and effective systemic evaluation mechanisms and processes*;
- ❑ establishing *benchmarks* at the level of the educational system and subsystem;
- ❑ encouraging and promoting a philosophy of benchmarking, by establishing benchmarking networks, as well as appropriate benchmarking processes, both at the level of the educational system / subsystem or connecting with similar networks in other systems;
- ❑ establishing *corrective and preventive actions* regarding the proper functioning of the educational entities in the system;
- ❑ encouraging, at system level, *a philosophy of self-assessment of educational institutions*, based, in particular, on existing and globally recognized models of excellence.

If a major non-compliance<sup>1</sup> is found in a pre-university subsystem as a result of a system analysis performed by specialists in the field, then the top management must urgently implement the necessary corrective and preventive actions so that the subsystem can re-enter the predetermined trajectory. through quality objectives. The process of quality assurance in education will obviously have to be correlated

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<sup>1</sup> A major non-compliance at the level of the education system can be: a significant mismatch between the curriculum studied in technological high schools and the requirements of the labor market (or the minimum levels established by the European Qualifications Framework); the redundancy of the national systemic evaluation standards (authorization, accreditation of schools and high schools) compared to the dynamics of the referentials at European level, etc.

and complemented with the other parts of the quality management system: planning, control and improvement, to which is added a tool of great importance, already used in the construction of European standards. in the field of quality education: *The PDCA (Plan-Do-Check-Act) cycle*.<sup>1</sup> A national quality management system may create the same preconditions for coherent operation for all educational entities in the education system, generating relevant results within a reasonable timeframe.<sup>2</sup> In the absence of such a system, these conditions cannot be created, so the long-awaited results at system level can only appear arbitrarily and randomly.

An essential aspect of quality management at the level of the educational system is the procedural approach, established at the level of principle in the ISO 9001 model.

E.g:

□ The entries in the pre-university education system (from the point of view of the educational entities that make it up) can be considered:

- the initial states of the entities - school organizations at the beginning of each school year or at the beginning of each educational cycle / level of education or the capacities of the educational entities at the establishment / beginning of the school year / beginning of the educational cycle;
- the set of knowledge, skills of students at the beginning of each school year / schooling cycle;

□ Exits from the education system can be considered:

- the set of knowledge, skills and competencies of students acquired at the end of an educational cycle;
- the capability of educational entities in correlation with national, European and/or world standards;

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<sup>1</sup> PDCA cycle: Plan-Do-Check-Act. It has been taken as a key element in the development of the main European benchmark for quality assurance in education and training. EQARF / CERAC - European Quality Assurance Reference Framework for Vocational Education and Training. Source: [www.pdcacycle.com](http://www.pdcacycle.com).

<sup>2</sup> A notable performance in this regard is the Finnish education system. In that system, there is the smallest measured difference between schools in the European Community that operate in different socio-economic backgrounds. Source: *Pearson Report 2012 – The Learning Curve*, <http://thelearningcurve.pearson.com/the-report>.

□ Output measurement indicators: results of national exams, results of international tests, employability, etc.

#### **4. Factors that Can Influence the Evolution of the Educational System**

The evolution of the educational system is decisively influenced by certain factors which, if not kept under control, can translate it into states of instability and with irrelevant systemic results. In this sense, quality management can play an absolutely essential role in the positive evolution of any educational system.

In the functioning of the Romanian education system, we identify several external factors that can have a decisive influence on its evolution: the political, trade union, legislative factor, socioeconomic and cultural environment, media, community legislation and, last but not least, the phenomenon called economic crisis, subtly multiplied by each factor listed above. To the factors listed above, we add three more important and relevant internal factors: quality management of information flows in the system, dynamics of national evaluation standards used to evaluate educational entities, system components, types and weights of evaluations used for them.

These factors can greatly influence the evolution of the system. For example, quality management of information flows. An information flow starts from the top of the system, considered to be the ministry of education and propagates, through the “network nodes”, to the base of the system: schools, teachers, students. The flow passes through school inspectorates (the first “wave” of nodes), advances to schools - the second “wave” and is disseminated to teachers and students. Theory tells us that the successive passage through several “filters” - “nodes” can reduce the content and value of the message up to 90% of the initial value. If the message starts distorted from the start, the distortion amplifies as it progresses, and finally, when it returns to the source, through feedback, they are exponentially amplified. This shortcoming can be reduced by an information quality management,<sup>1</sup> by implementing a quality management system in each network node, so that they can keep as much as possible the accuracy of the initial information, with an absolutely essential condition: the information management system. information to be implemented, categorically, at the top of the system. Otherwise, the risks are major

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<sup>1</sup> English, Lary, *The TIQM Quality System for Total Information Quality Management: Business through Information Excellence*, MIT Information Quality Industry Symposium, July 15-17, 2009, <http://mitiq.mit.edu/>.

and the management of the quality of information flows in the education system becomes random, insignificant and irrelevant.

*The filters and the actors* in the flows are the school inspectorates and the local public administration authorities. The scheme must be thought of at the level of the whole educational system.

Achieving quality in education will be a result of the coherent functioning of the education system, in correlation with the national systemic standards and, at the same time, the generation of relevant results, at system level, compared to European and world standards, to essential indicators. Relevant results mean significant results in evaluation processes compared to other education systems, at the same levels of education and following the same indicators. A good benchmark is the PISA Tests,<sup>1</sup> the results of which have “placed” the education systems of the participating countries in an extremely suggestive ranking. In the mentioned ranking we will notice that there are educational systems that constantly remain in the top 10 places (Finland, South Korea, China, etc.). It is important to note that these systems have succeeded in achieving what we call quality in education or, more precisely, quality at the system level. This means that, at the level of the system, it has been possible to build a critical mass - a majority of educational entities that function coherently, efficiently and effectively, in correlation with national standards, but also with European and global ones. *Eurypedia*<sup>2</sup> specifies that in Finland, following a reform started in 1972,<sup>3</sup> school inspectorates were abolished in 1991, with the main aim of reducing the burden of control, in favor of a major increase in the self-assessment process in each school.

The education system operates on the basis of 1999 legislation, the red thread of quality assurance being decentralization, self-assessment and external evaluation, carried out by national expert bodies. The legislation was amended in 2009 and the main amendments focused on making the school organization and national assessment bodies accountable. *The Quality Management Recommendation for Vocational Education and Training* (FNBE, Helsinki 2008) has been launched, based on the European Quality Assurance Reference Framework for VET (2004,

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<sup>1</sup>PISA – <http://www.oecd.org/pisa/>.

<sup>2</sup> Eurypedia – <https://webgate.ec.europa.eu/Finland>.

<sup>3</sup> Reijo Aholainen, *Finnish education system. Past and present*. Education Congress, Bucharest, June 13-14, 2013. From the presentation of the Finnish official, we learn that the debate on reform in Finnish education lasted almost 10 years (between the '60s and' 70s), the opposition to the new reform ideas being extremely strong. Source: <http://www.congresuleducatiei.ro>.

2008, 2009).<sup>1</sup> This framework has been developed on the basis of three fundamental elements specific to quality management: the ISO 9001 standard, the EFQM Excellence Model and the PDCA Cycle<sup>2</sup> and promotes the philosophy of self-evaluation, as a principle of improving quality in any educational organization. The investment of resources in education in one year in Finland is significant: 12.5% of total public expenditure is allocated to education (5.9% of GDP) of which 3.9% for tertiary education.

## 5. Conclusions regarding “*quality in education*”

It is found that the education sector, in order to implement an institutional quality management system, has applied and adapted validated business strategies, such as Total Quality Management (TQM), principles of quality management according to ISO 9001, data techniques and tools numerical data, techniques and tools for non-numerical data, etc

In conclusion, we can say that in each educational unit - the manager, the quality commission and the members of this commission, teaching staff, the auxiliary teaching staff and the administrative staff become responsible for the implementation and quality assurance of the educational services offered and guarantee it to the beneficiaries.

Quality management includes both quality assessment and assurance, as well as all the mechanisms by which the quality of education and counseling is maintained, developed and improved. Strategic management must be proactive, be a management of change without disruption of activities, while ensuring the continuity and stability of the educational process.

Quality in education undoubtedly means an approach to quality management at the level of the education system. This aspect means, first of all, strategic visions issued at system level, outlined by the decision makers regarding the educational system: political, civil society, managerial, executive. In this context, public education policies can play the role of strategic visions, provided that they are thought out prospectively, in the long and medium term. Quality management in education means quality management implemented and developed at the level of the educational system. Given that the national education system consists of two

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<sup>1</sup> EQARF – European Quality Assurance Reference Framework for VET, [http://europa.eu/legislation\\_summaries](http://europa.eu/legislation_summaries).

<sup>2</sup> PDCA cycle: <http://asq.org/learn-about-quality/project-planning-tools/overview/pdca-cycle.html>.

essential subsystems, the pre-university education system and the higher education system, it is highlighted that for quality management in the pre-university education system, which has its own specific elements, different from those of the education system. superior, we can talk about another quality management system, its own.

Quality management in education should include a systemic view of quality, including the two subsystems mentioned above, as they are interdependent and closely linked, although to a considerable extent they operate according to different rules. If we consider the *internal customer* approach, we will find that the two major subsystems are linked exactly by an *internal customer* relationship. Thus, some of the graduates of the pre-university education system go to higher education, the *internal client* of the first system. The relationship is reversed when some of the graduates of higher education go to the *internal client* - pre-university education.

Given the context described above, quality management at the level of the education system is absolutely necessary, at least to manage the dual *internal customer* relationship described above. This is where the top management of the education system comes into play, combined with the philosophy of corporate governance, to demonstrate the ability to manage the processes of interaction and the evolution of the two most strongly interrelated subsystems. For each of the two major subsystems, customers outside the education system - stakeholders are very important and, above all, must be very well identified, and by applying the “philosophy” of quality management, their requirements can be met. Then comes what we call “quality in education” - meeting the requirements of all “stakeholders” in the education system.

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