TOTAL QUALITY AS AN APPROACH TO DEVELOPING ARCHITECTURAL EDUCATION

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Abstract— Total Quality Management (TQM) – the third revolutionary wave following the Industrial Revolution and the Computer Revolution – is a modern concept that emerged at the end of the last century as a result of intense global competition among economic, industrial, technological, and commercial organizations in developed countries. This was particularly evident between Japanese institutions on one side and European and American institutions on the other, aiming to achieve customer satisfaction. In the past few decades, the term "TQM" began to enter the field of education. This research paper seeks to shed light on what this approach can offer in higher education in general and in architectural education in particular.

Keyword___ Total Quality Management (TQM), Architectural Education, Customer Satisfaction, Educational Reform.

I. INTRODUCTION

At the beginning of this century, there has been a growing interest among numerous educational institutions in implementing Total Quality Management (TQM) in both general and higher education. The aim is to achieve a better quality of learning and to graduate students who are more capable of effectively serving their communities.

Total Quality in education has become a prominent concept worldwide, proving its success over time. In fact, the era we live in is often referred to as the "Era of Quality". The number of educational institutions adopting Total Quality Management systems is continuously increasing, whether in the United States[1], European countries, Japan, and other advanced nations, or in many developing countries such as India, Malaysia, Pakistan, and others. Some Arab countries, including Gulf countries, Jordan, Egypt, Palestine, and others, have also begun implementing this approach in some of their educational institutions.

In education total Quality is closely linked to the processes of teaching and learning, as well as the management of the educational process. It involves connecting education to the needs of society and the labor market, bringing about purposeful educational change, and fostering creativity among learners. Learning occurs when there is interaction between the learner and his environment, leading to a modification in the learner's behavior. Our role is to provide the opportunity for this interaction to take place so that learning can occur. This means creating all the necessary conditions and a suitable environment for learning, which requires setting standards for processes, including a specific system to ensure the quality of education. Therefore, this research seeks to answer the following question:

What role can the concept of Total Quality play in university architectural education?

II. RESEARCH OBJECTIVES

This research aims to achieve several objectives, which are:
1. To explore the concept of Total Quality in its broad sense, its application in the field of education, and the modern trends in this area.
2. To identify the justifications and benefits of implementing Total Quality in university education.
3. To examine the extent to which the current university education system is suitable for applying the principles and foundations of Total Quality.
4. To identify the requirements for implementing Total Quality in the university education system.
5. To explore how the concept of Total Quality can be applied in architectural education and the expected benefits.

A. *First: Defining the Concept of Total Quality and its Modern Trends:*

1. *The Concept of Quality from an Islamic Perspective:*
   The concept of quality is not new in our Islamic culture. A discerning observer of the sources of Islamic legislation—the Holy Quran and the Prophetic Sunnah—can describe Islam as the foundation of quality and excellence in worship, transactions, and all aspects of life daily. [2]
   Islam is the religion of excellence, mastery, and skill. It calls for righteous and collective work, emphasizing conformity and monitoring—two measures of good deeds and standards for performance quality and mastery. Mastery is broader and more comprehensive than the term "quality" or merely doing a good job.
   The Prophet Muhammad (peace be upon him) said: "Allah loves that when one of you does a job, he does it with excellence[2]."
   "**Ihsan**" (excellence) means doing what is good and avoiding what is bad, performing good deeds that elevate humanity and improve their interactions.
   Allah Almighty says: "Indeed, those who have believed and done righteous deeds—indeed, we will not allow to

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[1]The number of higher education institutions adopting the concept of total quality in America increased from 78 institutions in 1980 to 220 in 1991, and then to 2,196 institutions in 2001. [1]

[2]Narrator: Aisha, may Allah be pleased with her. The Hadith Scholar: Ibn Adi. Source: Al-Kamil fi al-Du'afa; page 84.

be lost the reward of any who did well in deeds." (Quran 18:30)

The Prophet Muhammad (peace be upon him) said: "Allah loves the worker who perfects his work[3]."

2. *The Conceptual Definition of Total Quality:*

Total Quality is primarily an economic term that emerged due to industrial and technological competition among advanced industrial nations. There are numerous definitions of Total Quality, and the meanings of the words that constitute this concept are as follows:

Quality:

- Complete customer satisfaction– Armand V. Feigenbaum, 1956. [3]
- Conformance to requirements– Philip B. Crosby, 1979. [4]
- Fitness for use as perceived by the user– Joseph Juran, 1989. [5]
- A predictable degree of uniformity and dependability at low cost, suited to the market, W. Edwards Deming[4],2001. [6]
- Performing the right task correctly from the first time, relying on customer feedback to assess performance improvement. The American Federal Quality Institute, 2016. [7]

Total:

- It involves applying the principle of seeking quality in every aspect of work, from identifying customer needs to evaluating whether the customer is satisfied with the services or products provided. [8]
- It is a cooperative form of performing work, relying on the shared abilities of both management and employees, aiming for continuous improvement in quality and productivity through teamwork. [9]
- It is a strong and consistent focus on customer needs and satisfaction, achieved through the continuous development of process outcomes to meet customer requirements. [10]

All these definitions, despite differences in wording and meaning carry a single concept: **"Gaining customer satisfaction."**

Moreover, these definitions share an emphasis on the following:

a. Continuous improvement in development to achieve long-term results.
b. Teamwork involving individuals with diverse expertise.
c. Reviewing and responding to customer requirements.

As for the concept of Total Quality (TQ) in education:

It pertains to all the features and characteristics related to the educational field that reflect the quality of the desired outcomes. It translates the needs and expectations of the primary beneficiary—the student—into specific characteristics that form the foundation of their education and training. It also involves generalizing the educational service and formulating it into goals that align with their aspirations [11].

Consequently, (TQ) in this field aims to prepare students with specific attributes that enable them to cope with the abundance of information, ongoing changes, and tremendous technological advancements. Their role is not limited to merely transferring knowledge or listening but extends to engaging with this information and utilizing it sufficiently to serve the learning process [12].

This requires individuals with specific qualities who can comprehend everything new and rapidly evolving and deal with it effectively. It also necessitates a significant shift in the role of educational institutions and their staff—faculty members, administrators, and technicians—so that everyone works to provide an educational environment that allows freedom of expression and discussion and helps students achieve self-directed and collaborative learning [13].

In the educational sector, Total Quality Management (TQM) is defined as:

"A strategic management process based on a set of values and driven by information that enables the utilization of student' talents and the investment of their intellectual capabilities at various organizational levels in a creative manner to achieve continuous improvement in the educational institution" [14].

This definition focuses on the concept of systems management, which links the "inputs - processes - outputs" of the educational process [15].

Consequently, this concept requires considering both the students, who are the direct beneficiaries of this approach, and how the educational institution prepares them to meet their current and future needs. It also includes faculty members, administrators, and technicians, who need training and development to enhance their skills and competencies to grasp the philosophy, concepts, and applications of (TQ) [16].

Based on these definitions, we can say that (TQ) within the framework of an educational institution encompasses a set of key elements, the most important of which are:

- Adopting a collaborative teamwork approach and leveraging the capabilities, talents, and expertise of the human element within the educational institution.
- Ensuring continuous improvement and development to enhance quality.
- Minimizing errors by performing tasks correctly from the first time and every time, which leads to reducing costs to a minimum while achieving satisfaction among both internal and external beneficiaries of the educational process.
- Calculating the cost of quality within the educational institution to include all activities related to the services

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[3]Narrator: Kulayb al-Juhani. The Hadith Scholar: Al-Albani. Source: Sahih al-Jami'; page 1891

[4] He is an American engineer considered the father of quality, with a philosophy and ideas in this field that he initially presented in America in the mid-20th century, but they were ignored. Later, Ishikawa (the president of the Japanese Federation of Economic Organizations) invited him to deliver a series of lectures there. He then taught Japanese producers how to transform

cheap and inferior goods into high-quality products. Indeed, Japanese goods gained a competitive edge over American products. When asked about the reason for the greater success of Total Quality Management in Japan compared to the United States, he said the difference lies in the implementation process, that is, the embodiment and application of Total Quality Management [2].

provided, such as: costs of missed opportunities, costs of errors, evaluation processes, and the institution's reputation [17].

- A holistic approach to all areas of the educational (TQ) system, including objectives, organizational structure, work methods, motivation, incentives, and procedures.

The "Deming" program for improving and implementing is one of the most important modern trends incorporated into the design of any (TQ) curriculum applied in educational institutions. This program consists of 14 points:

1. Create a constant need for education and improvement in production and service.
2. Adopt a new philosophy for development.
3. Implement the philosophy of continuous improvement.
4. Avoid making decisions based solely on costs.
5. Eliminate the need for inspection.
6. Focus on continuous training.
7. Provide effective and conscious leadership that embraces the philosophy of Total Quality, implements it, and supports it.
8. Eliminate fear among leadership.
9. Remove barriers in communication.
10. Avoid slogans that rely on achievements and facts.
11. Avoid using performance limits.
12. Encourage expressing feelings of comfort and pride in confidence.
13. Implement a continuous improvement program.
14. Understand aspects of work through the "Deming cycle" [11]:
    - Plan
    - Do
    - Check
    - Act.

    See Fig. No. (1)

Fig. 1. Deming Cycle /
Source – Researcher

B. Secondly - Justifications and Benefits of Total Quality (TQ) in University Education:

The topic of (TQ) in educational institutions has garnered significant attention, leading to the organization of workshops and seminars in many countries. This comes after the successes achieved in economic, industrial, and technological fields. This does not merely mean striving to increase profits by improving the product but rather leveraging it to develop methods of the educational process to achieve the quality of the educational product. Among the justifications for applying this new approach in education are the following [18]:

- The quality system's connection to comprehensiveness in all fields.
- The universality of the system, as it is a characteristic of the current era we live in.
- The success of its application in many educational institutions, whether in the public or private sector, in many countries around the world[5].
- The connection of total quality with the comprehensive evaluation of education in educational institutions [20].

These justifications and others confirm that the application of (TQ) in the educational system requires continuous efforts that go beyond improving performance. Instead, they aim to enhance educational inputs, processes, and outputs.

The (TQ) system in education can achieve numerous benefits, including [15]:

1. Regulating and developing the administrative system in any educational institution due to the clarity of roles and precise definition of responsibilities.
2. Elevating students' levels in all aspects: physical, mental, social, psychological, and spiritual.
3. Raising the standards of faculty members, administrators, technicians, and staff in educational institutions.
4. Developing methods of measurement and evaluation.
5. Improving the use of modern educational technologies.
6. Increasing trust and cooperation between educational institutions and the community.
7. Providing an atmosphere of understanding, cooperation, and healthy human relationships among all staff in the educational institution, regardless of its size or type.
8. Increasing awareness and a sense of belonging toward the educational institution among internal beneficiaries (students, faculty members, administrators, and staff).
9. Granting the educational institution greater respect, local appreciation, and global recognition [14].

C. Third: The Suitability of the Current University Education System for Applying Total Quality (TQ) Principles and Foundations:

To begin with, it is essential to distinguish between applying Total Quality principles in the educational field and other fields—whether industrial, commercial, technological, etc.—as the difference is clear and evident. This is due to the following reasons:

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[5]A recent study has shown that 80% of educational institutions that failed to implement a Total Quality Management (TQM) system did so due to

problems encountered at the upper and middle management levels, as well as their lack of commitment to applying it within their institutions [19].

a. Industrial inputs, etc., can be controlled, whereas this is difficult in education because students are human beings whose performance may vary.

b. It is easy to define processes in industrial fields, etc., and it is easy to control the specifications of the manufacturing process. However, in education, the process is interactive, occurring between the teacher and the learner, and depends on relationships between humans with different behaviours and reactions. Therefore, it is difficult to define specific specifications in the educational process.

c. In industry and other fields, it is easy to control outputs that lead to customer satisfaction. In education, however, there are multiple beneficiaries who are difficult to satisfy all of them [11].

Therefore, Total Quality in the educational and pedagogical field generally refers to "A set of standards and procedures aimed at achieving continuous improvement in the educational product. It refers to the expected specifications and characteristics, as well as the processes and activities through which these specifications are achieved" [21].

The application of the Total Quality system in some universities around the world has led to a qualitative shift in the level of higher education programs [15]. In a previous comparative study to monitor the changes that occurred in a university educational institution that transitioned from a traditional system to adopting the (TQ) system— Table No. (1)—the following was observed:

1. The principles and foundations of Total Quality significantly contributed to elevating the level of performance within universities—both academically and administratively.
2. It provided integrated tools and methods that helped achieve satisfactory results.
3. It fostered close relationships among staff within the university institution.
4. It developed methods of communication, decision-making, and problem-solving, among others.
5. It established new principles within the university system, such as the necessity of continuous improvement, the rejection of errors, and the goal of satisfying beneficiaries (both internal and external), etc [22].

D. Fourth: Requirements for Implementing Total Quality Management in University Education:

Total Quality Management (TQM) requires educational institutions to establish fundamental prerequisites to properly adopt and implement TQM concepts, moving beyond theoretical ideas to practical application. The goal is to achieve satisfaction for both internal (students, faculty, administrators, staff) and external (local community and labor market) beneficiaries. Among these requirements are [18]:

1. Support and endorsement from top management for the Total Quality Management system.

2. Embedding a culture of Total Quality Management among all individuals, which is a key step in serving the new directions for development and quality improvement in educational institutions.
3. Developing human resources—for faculty, administrators, technicians, and staff—and updating curricula, adopting advanced evaluation methods, and modernizing organizational structures to achieve the desired educational quality.
4. Involving all employees in efforts to improve performance levels.
5. Continuous education and training for all individuals.
6. Identifying the needs of internal beneficiaries (students, faculty, administrators, staff) and external beneficiaries (local community and labor market), and subjecting these needs to performance and quality measurement standards.
7. Encouraging the educational institution to effectively practice self-evaluation of performance.
8. Developing information systems to gather facts for making sound decisions regarding any occurring issues.
9. Delegating authority and decentralizing decision-making.
10. Genuine participation of all beneficiaries in the educational institution in formulating plans and objectives necessary for the institution's quality of work. This includes defining everyone's roles, unifying efforts, and boosting morale in the work environment at all stages and levels.
11. Using quantitative methods in decision-making to increase objectivity and reduce subjectivity.

E. Fifth: Applying Total Quality Management in University Architectural Education and Its Expected Benefits:

Jablonski has developed an applied methodology—for any educational field—in the form of fourth stages where participants learn essential skills that enable them to work effectively. These stages are as follows [23]:

1. *Decision-Making Stage*: In this stage, managers—whether top, middle, or direct management—decide whether they will benefit from applying Total Quality Management or not.
2. *Planning and Formulation Stage*: This stage involves formulating a vision for the educational system within the educational institution—or department—along with its desired goals, proposed strategies, and policies. This stage requires disseminating the spirit and concepts of Total Quality (TQ) at all levels and selecting some members to participate in the development process.
3. *Evaluation and Assessment Stage*: This stage includes self-assessment of individual performance and organizational evaluation of the system, along with conducting a comprehensive survey to ensure the satisfaction of internal and external stakeholders.
4. *Implementation Stage*: This is the stage where the philosophy of (TQM) is put into practice.

Table No. (1)- A comparison table to monitor the changes occurring in a university educational institution that transitioned from the traditional system to adopting the Total Quality Management system - Source: Journal of the Association of Arab Universities, Amman, Issue (4), April 2007

No.	Comparison Area	Changes	
		Before	**After**
		Traditional University	**University Operating with Total Quality Concept**
1	Vision and Values	Responsibility of Top Management	Shared by Everyone
2	Management's View of Employees	Workforce	Human Resources
3	Management Style	Management by Control	Management by Participation
4	Focus on Efforts	Effort for Daily Wage	Focus on Rationalizing Efforts
5	Scope of Application	Narrow Scope	Integrated Process
6	Accountability	Individual Responsibility	Team Responsibility
7	Performance Reinforcement	Negative Reinforcement (Punishment for Mistakes)	Positive Reinforcement (Reward for Improvement)
8	Communication	Top-Down	Mutual
9	Decision-Making	Mandatory Orders	Consultation Before Decision-Making
10	Individual Skills	Narrow Specialization	Diverse Skill Sets
11	Work Development	Responsibility of Supervisors	Responsibility of Everyone
12	Delegation of Responsibility	Assignment (Only for Supervisors)	Honor (For All Employees)
13	Employee Training	Developmental Duty	Developmental Right
14	Improvement	As Needed	Continuous Improvement
15	View of Work Quality	Higher Quality Means Higher Cost	Higher Quality Means Lower Cost
16	Problem-Solving	Focus on Problems Related to Results	Focus on Problems Related to Processes, Then Addressing Them to Prevent Recurrence
17	Errors	Errors are Detected and Corrected	Assumption that Errors Will Not Occur, and Planning to Avoid Them
18	Tolerance for Errors	Errors are Acceptable	Errors are Unacceptable
19	Goal	Satisfy the Manager	Satisfy the Customer (Internal and External) Above All
20	Quality Department	Responsible for Quality	Quality is Everyone's Responsibility in the University

Therefore, applying the concept of (TQM) in architectural education goes through several steps—after fulfilling the previous requirements—which include:

1. Having a clear vision for the future and a defined mission to serve society.
2. Establishing goals to be achieved in the long, medium, or short term.
3. Developing implementation plans to achieve these goals, along with programs and timelines for execution.
4. Evaluating performance considering the set goals, objectives, and plans, considering the surrounding circumstances.
5. Improving and enhancing performance.

Applying the concept of (TQM) in university architectural education will yield numerous benefits that will undoubtedly enhance the quality of the output—the primary beneficiary being the student of architecture. These benefits include:

1. *In the Academic Field*:
   a. It will help in continuously developing the curriculum and identifying new theoretical and practical knowledge areas that align with labor market requirements.
   b. It will help provide a healthy and correct educational environment for both students and faculty members.
   c. It will significantly contribute to improving the teaching process—in terms of performance style or evaluation methods—in this field.
   d. It will help develop scientific research in architecture to align with local and global societal needs.
   e. It will provide indicators to ensure the quality of education in this field, including:
   - The number of credit hours for each course (if following a credit-hour system).
   - The number and types of courses required at each academic level.
   - The number of faculty members per specialization.
   - The types and titles of books and references required for each course.
   - Educational resources and methods of their use in the educational process to contribute to achieving goals.

- Methods of evaluating and measuring each student's performance during and at the end of each semester or academic year.
  f. It will grant departments that implement it a level of distinction, local recognition, and international accreditation.

2. In the Administrative Field:
  a. It will help establish standards for evaluating the performance levels of all administrative elements within the system.
  b. It will assist in restructuring jobs and activities according to these standards and performance levels.
  c. It will help reduce wasted costs—in terms of time and money—resulting from poor administrative performance in some tasks.
  d. It will contribute to the flexibility of administrative procedures necessary for the educational process.
  e. It will help define roles and unify efforts across all stages and levels [18].

III. RESULTS

From the above, we can conclude the following points:

1. Islamic legislation has addressed total quality in its most complete form by emphasizing **Ihsan** (excellence) and **Itqan** (mastery). **Itqan** pertains to the skills acquired by individuals, while **Ihsan** is broader and more comprehensive than **Itqan**. It represents an internal force nurtured within a Muslim's being, tied to their conscience, and translated into manual skills as well. These two elements are among the most important principles and foundations of total quality.

2. Total quality in education has become a hallmark and requirement of the era we live in, often referred to as the "Era of Quality."

3. Total quality represents global standards for measuring educational outcomes and outputs and a shift from a culture of minimum standards to a culture of mastery and excellence.

4. It is an integrated approach that seeks to develop methods for managing the educational process year after year, aiming to improve the quality of educational product.

5. It is a comprehensive system that encompasses all fields, linked to productivity, its continuity, and improvement.

6. The application of total quality systems in many higher education institutions worldwide has led to a qualitative leap in the level of programs offered and in their outcomes satisfaction by both internal and external beneficiaries.

7. To apply this concept in any educational institution, two conditions must be met, including:
  a. Support, endorsement, and conviction of top management in its value and benefits.
  b. Genuine participation of all stakeholders in formulating plans and objectives necessary to improve performance (academically and administratively) to enhance the quality of educational products.

8. The application of total quality in architectural education goes through five consecutive stages: starting with a vision and mission, followed by long-term, medium-term, and short-term goals, then implementation plans, evaluation of what has been achieved, and finally performance development and improvement to satisfy the primary beneficiary—the student (see Fig. 2).

9. Applying the concept of total quality in architectural education will help us answer the following logical questions:
  a. Where are we now, and what is our current status?
  b. Where do we want to go, and what are the goals we aim to achieve?
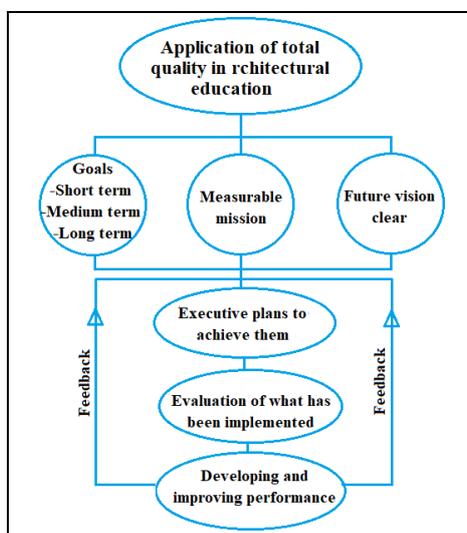 c. How do we achieve what we want, and what are the standards for measuring our progress toward these goals?

Fig. 2. Application of total quality in architectural education /Source – Researcher

IV. RECOMMENDATIONS

Based on the above, we recommend the following:

1. Total quality (TQ) should not be viewed as a separate program or an isolated endeavor from the other goals and projects of the educational institution. Instead, it should be seen as a shared philosophy that forms an essential part of the institution's mission and culture, explaining its purpose, objectives, and how it performs its tasks—a necessity dictated by contemporary life.

2. Each educational institution must define its mission and work to achieve it by overcoming obstacles to realize the primary and secondary objectives of total quality.

3. Universities should focus their efforts—through the concept of total quality—on developing academic and administrative aspects to bring about comprehensive change that enhances overall efficiency and meets the real needs of the society they serve.

4. Shifting from a culture of memorization and regurgitation to a culture of mastery, and from focusing on teaching to learning.

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