A STUDY ON PRIMARY SCHOOL TEACHERS` PERCEPTIONS OF THE TOTAL QUALITY MANAGEMENT PRINCIPLES

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ABSTRACT

A STUDY ON PRIMARY SCHOOL TEACHERS` PERCEPTIONS

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TOTAL QUALITY MANAGEMENT PRINCIPLES

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The purpose of this study is to investigate primary education teachers` perceptions about Total Quality Management (TQM) and the implementation degree of the principles of TQM in their schools; and to investigate whether there are significant differences between these perceptions of teachers in Curriculum Laboratory Schools (MLO) in which TQM principles are applied and teachers in non-MLO schools. For this reason, 16 primary education schools eight of which are MLO schools in different provinces of Ankara were randomly selected, for the sample of the study. Teachers in these schools were asked to fill out the questionnaire consisting of the proposals based on the principles of TQM. A total of 406 teachers completed and returned the questionnaires. Descriptive statistics were used to evaluate the data obtained. Multivariate Analysis of Variance (MANOVA) was used to analyse whether there is a significant difference between MLO and non-MLO school teachers` perceptions related to TQM principles. The results indicated

that there was no significant difference between the perceptions of teachers in MLO and non-MLO schools. Moreover, Chi-square Test was used in order to analyse if there are significant differences in MLO and non-MLO school teachers` perceptions about the degree of the implementation of TQM principles. The results showed that there was a significant difference only in one TQM proposal related to TQM principles. It is implemented in MLO schools more than non-MLO schools.

Keywords: Total Quality Management, education, primary education.

ÖZ

İLKÖĞRETİM OKULU ÖĞRETMENLERİNİN TOPLAM KALİTE YÖNETİMİ HAKKINDAKİ GÖRÜŞLERİ ÜZERİNE BİR ÇALIŞMA

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Bu çalışmanın amacı, ilköğretim öğretmenlerinin Toplam Kalite Yönetimi (TKY) ve TKY ilkelerinin okullarında uygulanma derecesi hakkındaki görüşlerini ve bu görüşler arasında, öğretmenlerin çalıştıkları okullara (TKY ilkelerinin uygulandığı Müfredat Laboratuar Okulları (MLO) ve TKY ilkelerinin uygulanmadığı okullara) göre fark olup olmadığını araştırmaktır. Bu amaçla Ankara`nın çeşitli ilçelerindeki sekizi MLO olan toplam 16 ilköğretim okulu araştırmanın örneklemini oluşturmak için rastgele seçilmiştir. Bu okullarda çalışan öğretmenlerden, TKY`nin ilkeleri temel alınarak oluşturulan önermeleri içeren, anketi doldurmaları istenmiştir. Toplam 406 öğretmen anketi doldurmuş ve geri vermiştir. Elde edilen veriler betimsel istatistik yöntemler kullanılarak yorumlanmış. MLO ve MLO olmayan okullardaki öğretmenlerin TKY hakkındaki görüşleri arasında anlamlı bir fark olup olmadığını

araştırmak için Çoklu Varyans Analizi (MANOVA) kullanılmıştır. Araştırmanın sonucuna göre, MLO ve MLO olmayan okulların öğretmenlerinin TKY prensipleri hakkındaki görüşleri arasında anlamlı bir fark çıkmamıştır. Ayrıca, TKY ilkelerinin okullarında uygulanma derecesi hakkında MLO ve MLO olmayan okul öğretmenlerinin görüşleri arasında fark olup olmadığını araştırmak için de Kay Kare Testi kullanılmıştır. Araştırmanın sonucuna göre, TKY ilkelerinin okullarında uygulanma derecesine ilişkin öğretmen görüşlerinde ise, TKY prensiplerine ilişkin anketteki yalnızca bir önermede fark bulunmuştur. Bu önerme, MLO okullarında daha çok uygulanmaktadır.

Anahtar kelimeler: Toplam Kalite Yönetimi, Eğitim, İlköğretim

To Halise Koral

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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INTRODUCTION

As it is known, the only thing that does not change in our lives is the change itself. This is also true for organizations. As internal and external environments change, organizations must respond to new threats and opportunities to survive. Like any other organization, educational institutions are expected to be affected by the revolutionary changes taking place today. Current educational reforms indicate a need for the restructuring of schools. Many educational institutions` traditional ways of providing service may have to be radically transformed or adjusted to new requirements; and these adjustments and transformations may bring about a completely new organizational culture for an educational institution.

Mukherjee (1995) mentioned a common perception among educational planners and administrators, on the one hand, and recipients and users of education, on the other. The perception is that in the developed countries, maybe in some developing countries too, there are two disturbing trends in education system, i.e. a deterioration in the quality of education (particularly at lower levels) and a growing mismatch between education and employment. According to Mukherjee, these disturbing trends may not be visible to the same extent in different types of education at different levels (such as elementary,

secondary and higher) in all countries (or even in different parts of the same country characterized by different socio, politic and economic factors). At the micro levels, problems may be more numerous as well as more serious in some educational institutions than in others.

According to Morgan and Murgatroyd (1992), there are four factors that create a major challenge to public educational provision. They are as follows: "(1) costs and demands for educational provision by the public purse are outstripping the available revenue; (2) in some countries, taxpayers are baulking at paying; (3) parents and government have been redefining the range of what they expect schools to do for children by adding to 'entitlement curriculum' personal, health, and social education content; (4) government and influential groups in society increasingly expect schools to play their part in national economic competitiveness" (p.3). The message of the four factors is that without change, the expectations and costs of education in the public sector will be both unreasonable (in terms of expectations) and unaffordable (in terms of expenditure). At the level of the individual school, the implications of the four factors are twofold: (1) schools will have to match their performances more closely to the expectations of their customers; (2) school management will have to manage the relationship between income and expenditure in terms of the curriculum programs delivered.

Logothetis (1995) revealed some characteristics common to most countries through a simple analysis of the current educational system in many countries. These are as follows: (a) a focus on obedience training based on mindless classroom activities, (b)

insufficient availability of quality-related training programs, (c) a reward system which distinguishes students according to their individual quantitative performance on technical matters, rather than qualitative criteria such as teamwork, cooperation and communication, (d) a lack of industry involvement in educational policy, (e) an inability to cope with continuous societal change, (f) a system designed to maintain the status quo, and (g) nothing that combines vocational training and academic education (p.18). As a result, there is a system which produces a small number of well educated people with no training or work experience, a large number of people with training but little education and almost no numerate and literate people whop are equipped with soft interpersonal skills, such as ability to communicate and work with others, creativity, logical reasoning to solve problems and respond to change.

According to Mukherjee (1995), it has been realized that to arrest these disturbing trends in education system, the greater and better advantage of the precept and practice of TQM should be taken-but at macro level (considering the entire education system or a distinct part of it) as well as the micro level (considering individual institutions). TQM has proven effective in improving many educational situations (McGonagill, 1997).

TQM "is an approach to create an environment in which organizational sources can be used most effectively to meet defined goals. In this context, 'total' refers to the unity of a group and the full participation of the members to the production process; 'quality' refers to the production of goods or services is carried out based on preset goals and standards; 'management' refers to the production of goods or services under the leadership of a chosen management team" (Osborne, 1992 as cited in Celep, 1993p.345).

Saylor (1992) emphasized that TQM is applicable to every organization striving to be the best, whether that organization is one function, a division, an operating agency, a company or cooperation. TQM is equally useful for large and small business, manufacturing and service industries and public and private organizations.

According to W. Edwards Deming, who is a well known quality professional, TQM is based on assumption that people want to do their best and that it is management job to enable them to do so by constantly improving the system in which they work (as cited in Lunenburg & Ornstein, 1996, p.38).

Mehrez, Weinroth and Israeli (1997) emphasized the central theme of Deming's philosophy which is that both managers and employees have to understand what is going on in the operations process and to constantly think about that process while they are managing it. In varying ways, TQM approach in industry seeks to accomplish many of Deming's objectives and emphasizes empowering employees to enable them to be responsible for the quality of the production process. Applying TQM in the educational setting, by comparison, has a similar challenge of creating a process that empowers students to be responsible for what they learn.

According to Başkan and Aydın (2000), TQM can be described as an approach developing the organizational values, realizing the cultural transformation and determining the success standard. In this context, TQM is at the center of the professional development of teacher; planning, research and the improvement efforts of the educational activities and the development realizing the educational process based on

the guidance. In other words, the effective organizational structure suggested by TQM consists of the dynamics developing the school system. From this starting point, to apply TQM to educational system is not a choice but rather than an inevitable necessity of recent developments. Logothetis (1995) agreed on this idea and stated that "if we want a quality future, we need to improve the present, learning from the mistakes of the past. It is fairly obvious that quality improvement in education system is the key to a quality future" (p.483).

In Turkey, there have been several attempts to improve the quality of primary education and secondary schools. Turkey and the most of the countries, which are members of OECD, have started reconstruction and the reform activities determining to fulfill the aims of national education. One of these activities is National Education Development Project, which is an agreement supported by World Bank. There are three objectives of the project. These are; (a) to improve the quality in primary education and secondary schools and to bring student achievement level close to the average of OECD countries; (b) to improve the quality of education of teachers and to reach the standards of OECD countries in this field; and (c) to be more economic and effective in using the sources of the Ministry of Education. For this reason, Curriculum Laboratory Schools (MLO) have been developed as a field of practice and two hundred-eight schools have been selected from twenty-three cities of seven regions of Turkey. MLO are going to serve as the leader schools because of their experiences gained through the pilot applications in which newly developed educational programs are applied before the spread of new schooling and management approaches to the whole system. Principles of

MLO bear on student-centered school and school-based system. In addition, these principles aim at increasing the student achievement by improving the quality in education. Based on the eight principles, in MLO, TQM approach is applied to educational and instructional services (EARGED, 1999).

Şişman(1997)summarized the steps of TQM applications in MLO schools as follows:

- Preparatory Phase: (1) education of instructors, (2) education of school administrators and teachers, (3) establishing a school quality development committee, (4) establishing school quality development teams, (5) establishing the present school profile.
- Application (implementation) phase: (1) leadership of school administrators, (2) determination of vision and aims of the school, (3) determining the internal and external customers' needs, (4) determination of the policies and strategies, (5) getting school sources into action, (6) developing school processes.
- Evaluation phase: (1) results related to the human resources, (2) results for the society, (3) results related to the general performance, and repeating the processes above continuously and converting them into a life philosophy.

In October, 1999 the regulation related with the spreading of the National Education Development Project was introduced. The first aim of the spreading activities is to improve the physical resources and human resources of the schools in order to achieve MLO standards. According to the regulation, TQM is still in a testing period in

MLO schools and its feedback has not been obtained yet. For this reason, it is not likely to spread it to the non-MLO schools (EARGED, 2000).

In spite of the growing interest in Turkey about TQM, there exists only little number of researches in primary education schools about this topic. Studies in Turkey, generally investigated the applicability of TQM in primary education schools. Uysal (1998) for example, examined the school administrators' perceptions related with the applicability of TQM approach to these kind of schools. Findings of his research showed that TQM approach seems to be applicable according to the administrators. Similarly, Gülşen (2000) investigated the primary education supervisors' perceptions about the same topic. According to the perceptions of the supervisors, TQM is applicable for primary education schools. Only in a few research, teachers' perceptions as well as administrators' were considered. The results of these studies indicated a positive inclinations of the primary education teachers and administrators about TQM approach (Bayrak & Ağaoğlu , 1998; Ensari, 2001). In the other research studies, the current educational practices were evaluated, according to the TQM approach. For example, the findings of two research studies (Demirdaş, 1997; Tozkoparan, 1997) showed that the current educational practices in primary education were not appropriate for TQM approach. On the other hand, in some research studies, the positive contributions of TQM implications in education were examined. Ercan (1999), for example, investigated the effects of the TQM applications in student achievement and teacher motivation. The result showed a significant increase in these areas.

In this context, the perceptions of MLO and non-MLO school teachers who play the most important role in increasing the quality of education in schools about TQM approach are examined.

1.1. Purpose of the Study

The purpose of this study is to investigate the perceptions of MLO and non-MLO primary education school teachers about TQM principles in education and the implementation degree of TQM principles to their schools.

1.2. Significance of the Study

In order to apply TQM in Turkish Education System, the necessary substructure have been tried to construct by the project whish is National Education Development Project and the regulation related to the spreading of the project. Although, the legal ground for TQM applications is ready, there seem to be no research studies which has directly investigated the perceptions of MLO and non-MLO primary education school teachers' perception about TQM approach and its implementation degree in their schools. In this context, it would be beneficial to understand the perceptions of teachers about TQM approach because they play the most important role for the successful TQM implications in schools. In other words, if they do not believe the importance and necessity of this approach, TQM implications in schools can not be successful. It would

also be beneficial to compare MLO school teachers' perceptions on TQM implementations in their schools and non-MLO school teachers' in order to see the results of TQM efforts and investments in MLO, before spreading TQM applications of National Education Development Project to the whole education system. The findings of this study may provide information for policy makers about the readiness level of teachers for TQM implementations.

1.3. Definition of Terms

Total Quality Management: TQM is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization by applying quantitative methods and human resources to improve all the process within an organization and exceed customer needs now and in the future (Besterfield, 1995, p.2).

Principles of TQM: Management` s commitment (leadership), focus on facts, focus on customer, continuous improvement, and everybody` s participation are five basic principles of TQM (Dahlgard, Kristensen & Kanj, 1997, p.42).

Proposals of TQM: Regarding the fundamental principles of TQM, fifty-four proposals were produced.

CHAPTER 2

REVIEW OF LITERATURE

This chapter contains two sections. The first one is deal with the conceptual background of Total Quality Management. The second one deals with TQM in education covering related research studies.

2.1. Total Quality Management

2.1.1. Defining Quality and TQM

In order to understand total quality management, the starting point is to define the meaning of the term "quality". The word "quality" is recognized by most people and it is used in general to describe excellence, value, reliability, or goodness" (Kehoe, 1996, p.6). However, in a business context, quality has been defined in a number of different ways by a number of different organization and people. For example, Deming's definition is that "quality is a predictable degree of uniformity and dependability at low cost and suited to the market" and British Standard Definition is as follows: "quality is the totality of features and characteristics of a product, service or process, which bear on its ability to satisfy a given need; from the customer's viewpoint" (as cited in Flood, 1993, p.42). Although, no universally

accepted definition of quality exists, enough similarity does exist among the definitions that common elements can be extracted. For example, Goetsch and Davis (1997) identified these elements as follows: (a) quality involves meeting or exceeding customer expectations; (b) quality applies to products, services, people, processes and environments; (c) quality is an ever-changing state (i.e., what is considered quality today may not be good enough to be considered quality tomorrow).

Just as there are different definitions of quality, there are different definitions of TQM. For example, Brown and Swenson (1992) defined TQM as a broad term that may be used in a variety of ways to describe an organization's efforts to approach quality improvement as a systematic process. Logothetis (1992) defined TQM as a new culture advocating a total commitment to customer satisfaction through continuous improvement and innovation in all aspects of the business. According to Saylor (1992) 'total' means the involvement of everyone and everything in the organization in a continuous improvement effort. This not only includes all the people but also encompasses all the systems, process, operations, and equipment. 'Quality' is total customer satisfaction which is the center or focus of TQM. The customer is everyone affected by the product and/or service. 'Management' refers to people and process. First, management is the leader of an organization. Management creates and maintains the TQM environment through leadership and empowerment. Second, management refers to the process of planning, organizing, staffing, directing and controlling.

As it is mentioned before, the use of the label "TQM" can vary in what it means in its application from one organization to another. Much of the confusion comes

from a misunderstanding of TQM. For this reason, it is necessary to understand other important quality ideas. These are as follows: Firstly, TQM is not Quality Control (QC). QC is simply a process of checking the final product or service against standards. Quality control is usually carried out by quality professionals known as quality controllers or inspectors. Inspection and testing are the most common methods of quality control. Nor is TQM simply Quality Assurance (QA), although TQM may involve QA as a process. QA is different from QC. It is a before and during the event process. Its concern is to prevent faults occurring in the first place. QA is made the responsibility of the workforce, usually work in cells or teams, rather than the inspector, although inspection may have a role to play in quality assurance. One approach to QA is about comparing the operational processes against set organizational, local, national or international standards of best practice (Sallis, 1996; Quong &Walker, 1996).

2.1.2. The Evolution of Quality Movement

The issue of quality of goods or services is not new. The quality idea has been around for hundreds of years. The historical development of quality management is illustrated in Figure1.

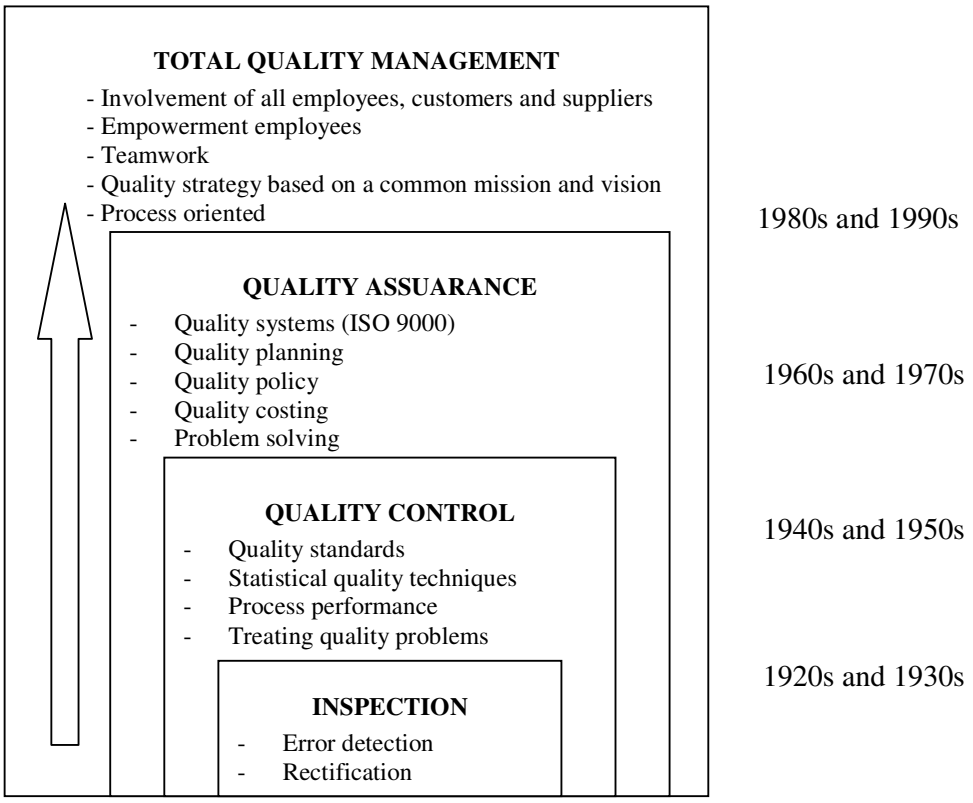


Figure 1. The four levels in the evolution of TQM (Rampersad, 2001, p.4).

2.1.3. TQM Philosophy

To get a clearer understanding of what TQM philosophy is, Kaufman and Zahn (1993) provides some comparisons between traditional management and TQM in Table 2.1.

Table 2.1. Comparison of traditional management and TQM(Kaufman & Zahn,1993)

Traditional Management	Total Quality Management
Conformance to specifications	Customer satisfaction and success
Control learner	Self- control
System defines quality	Customers define quality
Learner is passive	Learner is active
Frequent inspection of defects for quality	Continuous improvement focusing prevention
Cost driven	Result driven
Budget- driven plans	Plan- driven budgets
If it works do not change	If it works change
Quality in after the fact	Quality is continuous and starts with plans
Change is expensive	Change is profitable
Education costs	Education pays

Morgan and Murgatroyd (1992) identified the three "C" of TQM philosophy. The first "C" of TQM is culture. A successful TQM orga nization is one that has created a culture in which: (a) innovation is highly valued; (b) status is secondary to performance and contribution; (c) leadership is a function of action, not position; (d) rewards are shared through the work of teams; (e) development, learning and training are seen as critical paths to sustainability; (f) empowerment to achieve challenging goals supported by continued development and success provide a climate for self-motivation. The second "C" of TQM is commitment. A successful TQM organization engenders such sense of pride and opportunity for development among its people (staff and customer) that there is a great deal of ownership for the goals of

the organization among and between all employees. Commitment extends to taking risks so as to achieve goals, as well as working systematically to keep others informed of the opportunities that exist for innovation and development. Commitment becomes normative, rather than something that is exceptional and due to some event of special personal significance. The final "C" of TQM is communication. A successful TQM organization is one in which communication within and between teams is powerful, simple and effective. It is also one based on facts and genuine understanding, rather than rumor and assumptions. Communication flows freely from one area of an organization to another and between levels of the organization. When suggestions are made and communicated, or improvements are being tested out, the issue is not who gave permission or who is doing the work, but what the work does for process improvement or quality performance.

2.1.4 Total-Quality Pioneers

There are a number of individuals who have become known as influential TQM practitioners. They have demonstrated many years of commitment to quality in many forms and many ways. Some of them are as follows:

W. Edwards Deming is known as the father of the movement. The things for which he is most widely known are his Fourteen Points, and the PDCA Cycle. Deming (1986) summarize his views on what the organization must do to achieve quality by fourteen points (Table 2.2).

Table 2.2. Deming` sFourteen Quality Principles (Deming, 1986, p.24).

1. Create constancy of purpose to improve product or service.
2. Adopt a new philosophy for the new economic age with management learning what their responsibilities are and by assuming leadership for change.
3. Cease dependence on inspection to achieve quality, build quality from the start.
4. End the practice of awarding business on price only.
5. Improve continuously and forever the system of production and service to improve quality and productivity, and thus constantly reduce costs.
6. Institute training on the job.
7. Institute leadership. The purpose of leadership should be to help people to do a better job.
8. Drive out fear so that everyone can work effectively for the organization.
9. Break down barriers between departments so that people can work as a team.
10. Eliminate slogans, exhortations and numerical targets for the work force since they are divisor, and anyway difficulties belong to the whole system.
11. Eliminate quotas or work standards, and management by objectives or numerical goals.
12. Remove barriers that rob people of their right to pride in their work.
13. Institute a vigorous education and self-improvement program.
14. Put everyone in the organization to work to accomplish the transformation.

The PDCA Cycle (Deming Cycle), as illustrated in Figure 2.2, is a flow diagram for learning and for improvement of a product or a process (Deming, 1994).

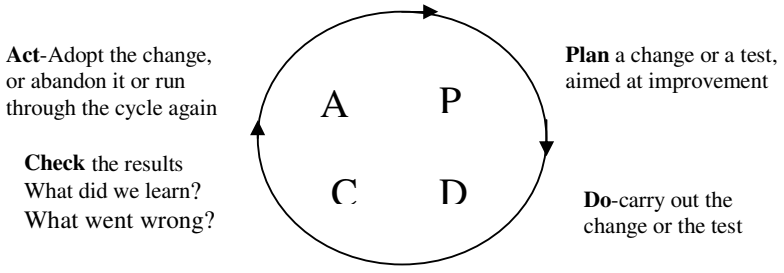


Figure 2.2 PDCA Cycle (Deming, 1994, p.132)

Joseph Juran is another path-finder. Juran's Three Basic Steps to Progress are broad steps that, in Juran's opinion, organizations must take if they are to achieve quality. These are (1) achieve structured improvements on a continual basis

combined with dedication and a sense of urgency, (2) establish an extensive training program and (3) establish commitment and leadership on the part of higher management. The Juran` s Trilogy summarizes the three primary managerial functions. These are quality planning, quality control and quality improvement. Juran was also very interested in the cost of quality, and the Pareto tool was used extensively to illustrate to top management the effects of improving (in cost terms) the vital few. Juran also introduced the development of the quality council, a body that manages the quality activities of an organization. Furthermore, Juran derived the concept of the internal customer (employees) (Goetsch & Davis, 1997; Flood, 1993).

Philip B. Crosby: "Conformance to requirements" is what Crosby means by quality. If quality is wanted, it must be defined in terms of requirements and measures must be taken continually to determine conformance to those requirements. According to him, it is always cheaper to do it right first time, the only performance measurement is the cost of quality, and the only performance standard is zero defects. "Zero defects" or "do it right first time" means that errors should not be expected or accepted as inevitable. It is a management goal encouraging prevention of errors and is not meant to suggest performance of every activity perfectly (Flood, 1993; James,1996; Goetsch & Davis, 1997).

Kaoru Ishikawa is best known for his contribution to quality management through statistical quality control. He is the pioneer in Japan of certain quality tools. To help implement the philosophy of participation and to get the tools work, Ishikawa has developed Quality Control Circles (QCC) (a small number of volunteer workers from a unit of an organization form a group called a quality circle). Ishikawa was more people-oriented than statistically oriented. His main aim was to involve

everyone in quality development, not just the management who drove it. The heart of his contributions was the attention he gave to problem solving (Flood, 1993; James,1996).

Armand V. Feigenbaum's contribution is an approach to Total Quality Control. According to him there is a need to manage company-wide; co-ordination and controlling all management and operational functions, bringing together social and technical aspects of the organization. This is achieved by paying due respect to external satisfaction of consumers, and focusing on suppliers. Feigenbaum has a very serious, money-oriented approach to the management of quality. His major contribution to the subject of the cost of quality was his recommendation that quality costs should be categorized and separately managed. He identified three major categories: failure costs, appraisal costs and prevention costs (Flood, 1993).

2.1.5. TQM Principles

There are five principles characterizing TQM. These are management's commitment (leadership), focus on customer, focus on facts, continuous improvements, and everybody's participation (Dahl gaard, & Kristensen, 1995; Shores,1990 as cited in Bozkurt, 1998). Dahlgaard and Kristensen (1995) have introduced a TQM pyramid with a foundation and four sides based on the five principles of TQM (Figure 2.3).

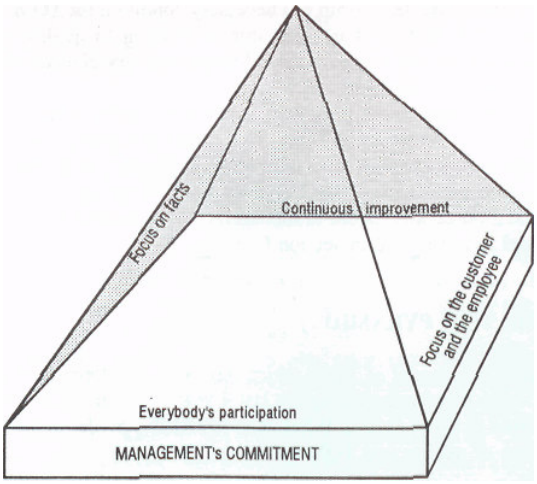


Figure 2.3. TQM pyramid (Dahlgaard & Kristensen ,1995).

a) Management Commitment (Leadership): TQM begins with leadership. It is the basis of TQM and also the foundation of the quality improvements. Without leadership it is impossible to implement TQM in an organization (Johnson, 1993; Besterfield, 1995). There are many different definitions of leadership. For example, Goetsch and Davis (1997) defined it as it relates specifically to total quality: "Leadership is the ability to inspire people to make a total, willing, and voluntary commitment to accomplishing or exceeding organizational goals" (p.212).

Dahlgaard, and Kristensen (1995) suggested a leadership model, which recommends a framework for management to adopt when it is building the TQM pyramid. The model follows the basic concept for quality improvements, i.e. the Deming Cycle. According to the model, while implementing TQM (in the "plan" phase), a vital task for any management is to review quality goals, quality policies, and quality plans to conform to the four sides of the TQM pyramid. It is necessary

that these goals and policies are meaningful and these are understood and expected by the employees. Once TQM has been incorporated into the planning, it will be necessary to communicate the strategy to all the employees so that they can be put into practice through delegation of responsibility, fostered by TQM education and training, in the "do" phase. The key words for leadership in this phase of the model are empowerment and policy deployment. The next phase in the PDCA leadership model is the "check" phase which measures the results against the original plans. The annual quality audit is an essential part of the TQM strategy. It gives top management the opportunity to put a number of important questions to managers regarding the quality strategy. In the run up to the plan for quality improvements, management must answer the following questions with employees: (1) where are we now? (the present situation); (2) where do we want to be? (vision); and (3) how do we get there? (action plans). The "act" phase brings in the bottom -up principle. Management of any organization has the critical task of creating an environment that ensures that employees will work effectively towards quality goals and make suggestions about quality improvements. Motivation and commitment increase when management takes immediate action on good ideas from customers (including employees). Suggestions from the "act" phase provide the input for a new "plan" phase, enabling the whole cycle to be repeated.

b) Focus on Customer: Focus on customer deals with the problem of identifying different customers and their expectations. A customer is the person or group who receives the work done. That work may be a product, or it may be a service. The customer may be either an internal or external customer. Internal customers are people within organization who help to create product or service and

they are affected by their work. External customers are people who does not work for the organization but receives the organization's product or services. It is important to realize that employees are part of the organization's processes, and improving quality at lower costs can only be achieved if an organization has good, committed and satisfied employees. In order to produce and deliver quality, employees need to know what both internal and external customers want or expect from them. Once customers have been identified, and it is agreed that they are the customers, then their requirements must be gathered and clarified, and a complete understanding of what they want, need, and expect must be built. This concept requires a through collection and analysis of customer requirements, and when these requirements are understood and accepted, they must be met (Shiba, Graham & Walden, 1993; Tenner & DeToro, 1992).

c) Focus on facts: Knowledge of customer's experiences of products or services is essential before the process necessary for creating customer satisfaction can be improved. In order to realize the TQM vision, organizations must first set up a system for the continuous measurement, collection and reporting of quality facts. For this reason, three kinds of measurements are needed. These are internal customer satisfaction, external customer satisfaction, and other quality measurements of the organization's internal processes, often called "quality check points" (controlling the results of the most important internal processes) and "quality control points" (checking the conditions of the processes of the organization). Any organization can be described as a collection of connected processes producing some "results". The quality of the result of any process can be measured, i.e., ascertain whether organization is satisfied with a particular result. To measure the quality of the result

from a process, a quality control point must be established. TQM is a process oriented activity which means that management and employees must be aware of, and deal with the many failures or problems in the internal processes and, in particular, with their causes. The most common internal quality measurement that can be used as a control point in most processes is number of failures per unit (number of produced failures/ number of units produced). A failure is anything which causes dissatisfaction for internal or external customers. A unit may be any unit of work. While a quality control point measures a given process result, a quality check point measures the state of the process, of the many different states that can be measured, it is important to choose one, or a few, which can be expected to have an effect on the result (Dahlgaard & Kristensen, 1995).

d) Continuous Improvements: TQM is accomplished by a series of small-scale incremental projects. The Japanese have a word for this approach to continuous improvement: Kaizen. This is most easily translated as step-by-step improvement. It is the process of continuous improvement in small increments that make the process more efficient, effective, under control and adaptable. Continuous Improvement has the objective of achieving improved levels of process performance. Continuous improvement means not being satisfied with doing a good job or process but striving to improve that job or process. Higher quality can be achieved through internal and external quality improvements. The main aim of internal quality improvements is to make the internal processes leaner, i.e., prevents defects and problems in the internal processes, which will, in the long term, reduce costs. On the other hand, external quality improvements are aimed at external customers; the aim is to increase customer satisfaction. Continuous improvement will only take place if the questions

are asked regularly by all employees, and if all employees actively participate in answering them by suggesting quality improvements (Sallis, 1993; Besterfield, 1997; Dahlgaard & Kristensen 1995).

e) Everybody's participation: TQM is process oriented. External customers as well as internal customers are all part of the organization's processes. These customers, together with their requirements and expectations, must be identified in all processes. The next step is to plan how these requirements and expectations can be fulfilled. This requires feedback from customers, so that their experiences and problems become known in all processes. This feedback is a condition for the continuous improvement of the organization. For this to be effective, it seems only common sense that everybody should participate. However to get everybody to participate demands the motivation and empowerment of employees (Dahlgaard & Kristensen, 1995). Team building is an essential part of the empowerment of employees. Management must ensure that every employee in the organization participates actively in a team (work team, quality circle). These work teams are an important and indispensable part of the institution's quality organization (Morgan & Murgatroyd, 1992).Each organization offers opportunities for motivation. Motivating factors include such things as improving morale, improving job skills, utilizing proper and timely communication skills, having a safe work environment, exercising good management skills, acknowledging that job security is important and developing a good communication system. Recognition and award play an important role in motivation and employee satisfaction. Performance Appraisal is also important in motivation and employee satisfaction. (Besterfield, 1997).

2.1.6. Problem Solving Discipline in TQM

The problem solving discipline encompasses a methodology. Rampersad (2001) proposed six steps that systematic, gradual, and team wise solving of problems. These are as follows: (1) defining the problem through teamwork; (2) analyzing the root causes; (3) generating solutions; (4) planning and implementation; (5) measuring (it is completed to see whether the implemented solution has solved the problem or whether the problem has been reduced); and (6) standardization (it encompasses the clear establishment or documentation of process executions in standard procedures. The purpose of this step is to incorporate the new process into the daily routine. This will also prevent the organization from returning to old habits).

Similarly, Shiba, Graham and Walden (1993) provided seven steps for reactive problem solving. These are (1) select theme, (2) collect and analyze data, (3) analyze causes, (4) plan and implement solution, (5) evaluate effects, (6) standardize solution, and (7) reflect on process (and next problem).

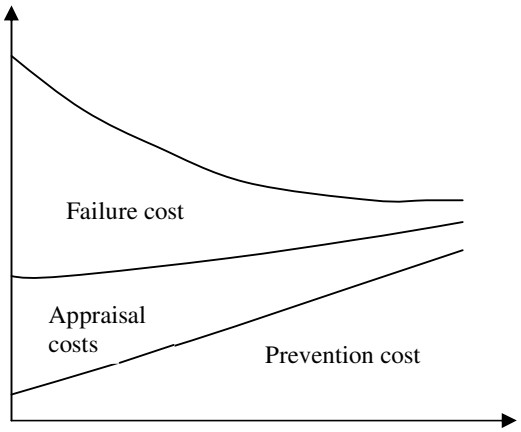
In order to execute the problem solving discipline successfully, it is necessary to apply certain quality improvement tools and techniques. A great number of appropriate tools and techniques are available for continuous improvement effort. The most important seven basic tools are the folowing: cause-effect diagram (fishbone diagram), check sheet, control chart, pareto diagram, flow diagram,

histogram, and scatter diagram. Besides seven basic quality tools, there are seven management and planing tools: matrix diagram, tree diagram, arrow diagram, relations diagram, affinity diagram, PDPC diagram, and KJ method. Moreover, there are also distinctive techniques used in TQM such as brainstorming, benchmarking, cost-benefit analyses, house of quality and run charts...etc. (Schmidt & Finnigan, 1993; Mc Closkey &Collett, 1993; Sashkin & Kiser, 1993; Schiba, Graham & Walden, 1992).

2.1.7. Cost of Quality

The cost of quality includes prevention costs, appraisal cost, and failure costs. Cost of prevention is the cost of activities that prevent failure from occurring. Examples include training employees, quality awareness programs, planning and quality workshops or quality circles. Cost of appraisal is the cost incurred to determine conformance with quality standards. Examples include: (a) inspection checks-include checking that product or service standards match the agreed specifications; (b) quality audits-to check that the quality system is functioning satisfactorily; (c) vendor rating-the assessment and approval of all suppliers, both of products or services. Appraisal activities result in the "costs of checking it is right". Failure costs can be split into two categories, namely internal-failure costs and external failure costs. Internal-failure costs occur when the results of work fail to reach the required standards and are detected before transfer to the customer takes place. Examples include (a) waste-the activities associated with doing unnecessary work as the result of errors, poor organization, the wrong materials and so on; (b)

rework or rectification-the correction of defective material or errors to meet the requirements; (c) re-inspection-the re-examination of products or work which has been rectified; (d) failure analysis-the activity required to establish the causes of failure of internal product or service. External-failure costs include the correction of products or services after delivery to the customer. Examples include: (a) complaints-all work and costs associated with handling and servicing of customers' complaints; (b) liability-the result of litigation and other claims; (c) reduced number of applicants; (d) bad publicity. Taken together these costs can drain an organization of 20-30 percent of its revenue or turnover. The goal of TQM is to halve the cost of quality and to halve it again over time. A reduction of the cost of quality offers many benefits, but they are not immediate. It may take two to four years to halve the cost of quality and the prevention costs may rise during the first year or two (Bank,1992; Greenwood & Gaunt, 1994). The relationship between the costs of prevention, appraisal and failure costs is illustrated in Figure 2.4.



-**Prevention costs** will rise in the short term as investment in training, planning, processes and systems sets the foundation for the future.

-**Appraisal costs** gradually reduce as inspection, the checking of others' work and progress chasing late deliveries are no longer necessary.

-**Internal and external failure** costs will

Figure 2.4. Cost of quality (Greenwood & Gaunt, 1994, p.38).

2.2. TQM in Education

An increasing number of researches are now investigating the TQM approach and implementation of the principles of TQM in education. The researchers and the supporters of the movement say this can help transform education and produce the change they feel needed in education. On the other hand, there are some critics who cite limited time, staff and money and shifting state requirement as primary reasons, why TQM will not work in the education system. However, their main complaint is that the concepts of TQM are difficult to contextualize in a school setting. For instance, they point out that the terms "customers" and "products" do not have clear counterparts in the school system (Hequet, 1995).

In this topic, Kaufman and Zahn (1993) mentioned the similarities between the education and other types of organizations. As for other organizations, education has external customers (the citizens who hire education's outputs as well as pay the taxes) and internal customers (people within the school who help to create the service and those who are affected by their work). Education must also demonstrate results (products), including students who complete courses and graduate (or get licences in a vocational area). In other words, products include the qualities of student's behavioral changes. In evaluating output, students' academic and other successes, graduation, repetition of classes, entrance into higher education and work activities must also be taken into account. Furthermore, education has processes, those factors of production (they are called as teaching, learning, activities, curriculum, and so on) that deliver results. Finally, education has inputs: existing resources (budget, material), buildings, classes, teachers, administrators and the skills, knowledge,

attitudes, and abilities the students bring to schools. TQM in education links these elements, assuring that they all fit together smoothly and that all parties, including the learners, became active participants in achieving quality. In education, as elsewhere, quality is assessed by examining the results delivered: Quality learners are competent, confident and can perform on the job. Quality educational outputs (graduates and completers) not only get jobs but make a contribution to the customers of their organization. Education, as does any other organization, uses resources, develops products, and delivers outputs to external customers.

In education, the internal customers are the students and employees (teachers, administrators and other personnel). The external customers are the students, the parents (families), the society, higher education institutions, and the business world. The students are classified both in the external customer group as well as in the internal customer group, depending on which role the students have in the specific situation. It is important for the students to realize that they are customers as well as suppliers of the educational system (Dahlgaard & Kristensen, 1995).

In an educational organization each individual serves another. In other words, as in every organization, everyone in schools is both a customer and a supplier. Schools' customers are, primarily, students and their families. Parents and families, as suppliers of the schools, entrust their tax monies and their children to the schools' care. Parents are also, in a certain sense, suppliers who teach their children very first lessons in responsibility, understanding, and compassion, as well as physiological nutrition required for mental and physical health. Students, working alongside their teachers, are not only the primary customers of the schools, but also the schools' frontline workers. Students, as workers, produce their own continuous improvement

of abilities, interests and character. Teacher- student teams are the customers of the school administrators, who are the suppliers of a learning environment and educational context in which human potentials maximized and barriers to students' and teachers' pride and joy of working together are eliminated from the processes of the system. Teachers are suppliers and customers of one another (Table 2.3) (Bonstingl, 2001).

Table 2.3 Teachers as customers and suppliers (Morgan & Murgatroyd, 1992, p.61)

Teacher as Customer	**Teacher as Supplier**
• Work completed by students	• Teaching and learning outcomes for students
• A working environment	• A customized working environment for students
• Information on previous students performance	• Assessment and testing of students
• Induction and training in expected roles	• Reporting and giving feedback on students
• Evaluation and appraisal data from children inspectors, evaluators	• Counseling and mentoring of individual

The customer-supplier relationships within the school and between the school and its consumer and provider stakeholders are the basis for all activities in order to optimize the effectiveness of the school. The idea is that TQM, if applied to the whole chain of customer-supplier relationships, can lead to substantial gains in process quality and performance outcomes**.** Process here refers to the way which people work to achieve results. What is important here is the attention given to the managing of processes because processes produce outcomes (Morgan & Murgatroyd, 1992; Bonstingl, 2001).

In quality improvement, the learning process is the keywords of the continuous improvement. Learning process is strongly associated with the teaching process when information is given by a teacher. There is in any organization an obvious need to ensure effective learning. An effective learning strategy is likely to encompass the following: (a) understanding how and why people learn, (b) promoting a healthy learning environment, (c) identifying individual learning needs, (d) preparing a learning plan with agreed objectives, (e) promoting learning opportunities, and (f) evaluating learning outcomes (Logothetis, 1995).

Other key words to continuous improvement are training and performance based assessment in quality improvement. A comprehensive human resource program (staff development) in both the corporate and public school settings positively affects quality. Staff development which addresses the needs of teachers and students and promotes the best possible means of teacher delivery are significant for teacher improvement and student learning (Scott & Palmer, 1994; Mukherjee, 1995). Moreover, utilizing the TQM philosophy in the schools necessitate using performance-based assessment, standards should be based on the teacher's and administrator's performance, as identified by research, that affects student learning. This performance-based model should measure how well school personnel demonstrate the actions that produce improved learner achievement. Teachers must have input into the selection of standards of performance. It is important that assessment procedures be developed with a bottom-up approach rather than a top-down approach. When this occurs educators will feel more comfortable with the process, especially if incentives are utilized to reward those educators achieving excellence (Scott & Palmer, 1994).

Bonstingl (1993), in his essay, emphasized that in schools of quality, teachers and students, learn together how to learn as they create collaborative, trusting environments in which failure is but a temporary step on the road to continuous improvement. They-along with policymakers, administrators, families and others who support the work of the school-learn how to create true learning communities, where a "yearning for learning" is everyone's central focus. The quality movement can help education system to prepare young people to succeed as future leaders in developing a more democratic, humane way of thinking and acting in every aspect of their lives.

Quong and Walker (1996) agreed on that TQM at the very least presents a new way of thinking about schools and an option for restructuring to improve learning and teaching. However according to them many schools may claim that, in principle, they are already using TQM. They may say that they already focus on student needs, which they believe in the integrity of their staff and have invested in staff empowerment and collaboration as means of ongoing improvement. In many cases, this may certainly be true, however, it is also the case that many school administrators only pay "lip service" to these principles and if examined carefully, there can be seen little evidence of change within their schools.

According to Baim and Dimpero (2001), for public education, TQM can become a useful tool in continuous school improvement. For this reason, first, school district priorities must be identified and understood by all members of the organization. Second, individual and group commitment to priorities must be absolute. Third, individuals and special-interest groups must subordinate their needs to that of the organization. They must connect their professional success and

happiness of the job to continuous school improvement. Fourth, issues addressed by the TQM team must be significant. While efforts may focus on department, grade or subject areas, the entire school should benefit from team accomplishments. Finally and foremost, all members of the total quality management team and staff must be willing to be part of the solution.

Rodgers (1998) investigated teacher perceptions of TQM practices in public elementary schools. The purpose of this study was to explore the extent of TQM practices. The second purpose was to determine if TQM practices have an impact on public schools in the following areas: strategic planning, data analysis, staff training, staff involvement, evaluation of services, customer satisfaction, and student achievement. The study found that one of the 56 public school districts was implementing TQM practices. Based on the data, there was a significant difference between teachers' perceptions in a Total Quality School versus teachers in a non Total Quality School in all nine surveyed areas. In summary, the nine TQM areas have a positive impact on school improvement.

Ford (1998) conducted a research to study TQM within the school setting and explain that process. The special interest was the concerns of administrators and teachers and their perceptions of the effectiveness of TQM toward implementing change in the school. For this investigation, a multi-site case study methodology was used on three campuses. The sites studied were two elementary schools and a high school. The researcher conducted ethnographic field work on each of the three sites, all of which have to some degree implemented TQM tools and principles for at least three years. Data collection included (1) interviews with key informants who serve as instructional leaders, (2) a questionnaire and (3) observations derived from scheduled

visits to each site. The major objectives of the data collection were to determine the relationship between TQM and its support of the framework for change in schools. The investigation yielded that findings showed evidence of high "awareness" of TQM principles and concepts among staff of sites studied.

Elliot (1997) examined and determined teacher perceptions of TQM as they relate to teaching strategies and practices. Twenty teachers actively involved in their school system's TQM / Learning Lab Project and were interviewed face to face. Initially, a total of ten in-depth questions addressing the incorporation of TQM methods and principles were asked. Afterwards, data was analyzed. Responses from the interviews helped determine the bases for the five-question follow-up survey, given to each of the same twenty teachers. As a result of the responses from the interviews and the surveys, major patterns and themes emerged. They determined the perceptions teachers had about incorporating TQM / Learning Lab strategies into their daily teaching activities. All twenty teachers agreed that the strategies enhanced their teaching; in turn, student success resulted from positive attitudes, collaboration, and activity variety. Though the methods presented minor difficulties and challenges to one or two teachers, all teachers believed that the use of the methods would only help improve teaching strategies.

A qualitative study (Sadler, 1996) focused on Alabama elementary and secondary schools which are currently using some or all of the TQM approaches. Schools in this study received training from the Quality Education Program at Samford University in Birmingham, Alabama. The purpose of this study was to determine the perceptions of principals regarding the training for, implementation of, and success of TQM as a school implementation aid. This study included an initial

interview and a follow-up interview with each of the selected principals. On-site observations were made to assess consistency of answers to practice. A Likert-type scale based on Deming's 14 points was completed by each principal. The findings demonstrated a high level of satisfaction with TQM training and implementation. Principals perceived different strengths in the way TQM was implemented in their schools. The need for additional time for training and time for implementation were suggested as needs for more effective TQM program in Alabama schools.

Lembeck (1995) examined one school's experience using TQM as an agent for change in school restructuring. The study examined the complex relationship among innovation, leadership and change in a school. A descriptive case study of an elementary school in a midsize school district provided data collected through interviews, document analysis, and participant observation. Results indicated that the participants in the TQM training and processes, the Project Team members, experienced personal and professional growth. The research data and literature search support findings that leadership succession, specifically of the superintendent, has a negative impact on innovation.

Kilmer (1998) carried out a research to determine if the application of Continuous Quality Improvement (CQI) philosophy, principles and tools would result in higher student satisfaction with classroom experiences in 7-12 grades. An additional purpose was to determine if CQI School Improvement initiatives resulted in positive changes in the elements of school climate, curriculum development, and instructional delivery. A qualitative case study methodology was adopted for the study. A school in rural Nebraska was selected and data were collected from surveys, analysis of school improvement data, and researcher observation. The context of the

school improvement process was the application of TQM philosophy, principles and tools to address the needs of the school. This systematic process was monitored with a variety of data collection sources. The data included the following results: (1) Student satisfaction with classroom experiences improved slightly. Students felt that teachers were more interested in them as individuals, provided more variety of learning experiences and provided better materials. There was no change in their perceptions of the fairness demonstrated by teachers. (2) School climate was improved as well by the implementation of Behavior Management System developed to meet the needs of the at risk student. Also contributing to more positive climate was the successful implementation of a pilot advisor-advisee system in grades 7-8. A third climate CQI initiative to improve climate was the successful redesign and implementation of the detention system. (3) Finally, a process for developing learning outcomes based on best practice and research and accompanying benchmark assessments was developed for two core subject areas. Benchmark testing and preliminary standardized testing from data collected at selected grade levels revealed high student achievement in those subject areas.

Paul (1998) investigated the relationship between the principles of TQM and school climate, school culture and teacher empowerment. This study surveyed leadership teams of 26 elementary, middle and high schools in the state of Missouri who were participants in the PROJECT ASSIST school improvement initiative directed by the University of Missouri's Missouri Center for School Improvement. Faculty completed the following four instruments to measure independent and dependent variables: school leadership for school improvement survey, comprehensive assessments of school environments, school culture survey, and the

school participant empowerment were identified. According to the results of the study eleven of the fourteen principles of TQM showed high correlation with school climate and teacher empowerment sub-scales. Nine of these principles had strong correlation with school climate sub-scales. Strong predictive relationships were found between the principles of TQM and each of the dependent variables. The findings of this study validated the implementation of the TQM philosophy in the school setting. Principles of TQM having the greatest relationship with school climate, school culture, and teacher empowerment were identified.

Obiseson (1998) examined the extent to which quality management enhances system change through the analysis of implementation of the philosophy in three suburban public school districts in the northeastern part of the United States. The study covered a 12-month period and used qualitative method. The results indicated that: (1) quality management influenced leadership motivation for change and fostered three different collaborative implementation styles. (2) Quality management was found to be adaptable to improving key school issues: human resources development, academies, discipline, budget, and socialization based on team efforts and problem solving approach and practices. (3) It facilitated communication within organizations, including sharing of information through regular accountability, assessment, and planing team meetings. (4) Quality management team structure facilitated collaboration among different members, departments, and buildings that evolved into relationship development. (5) Quality management fostered teachers' expansion of knowledge based on collaborative experiences resulting in quality teaching: students' attitude change, high student achievement, and yearly increases in

graduation rate. (6) Quality management helped people think to operate efficiently, resulting in improved budgetary management.

The purpose of a case study (Robinson, 1996) was to investigate the role of leadership and training and development in the implementation of TQM philosophy and practice in an Australian elementary school. A qualitative case study methodology was adopted for the study. Data were collected from interviews, from an analysis of school documents and by researcher observation. The focus of the school was quality teaching and learning. A visionary and collaborative leadership style modeled by the principal and leadership team provided the context for teaching and learning programs. Leadership strategies included a team approach to problem solving, collaborative decision making, trust, empowerment, delegation of roles and responsibilities, the provision of opportunities for leadership, continuous improvement of processes, and training and development programs for staff and parents. There was strong evidence to support TQM philosophy, as well as visionary leadership, customer focus, collaborative decision making and empowerment for stakeholders as characteristics of TQM evident within the school.

Bryant (1995) tried to describe and analyze the leadership role of the principal in the implementation of the seven components of the Commitment to Quality Project. The seven components used are: customer focus, total participation, leadership, continuous process improvement, mission, measuring and monitoring processes. The survey was conducted with all 16 project principals to establish implementation levels. The interviews were conducted on site with four Fully Implementing Principals and four Partially implementing Principals. Results suggest that the implementation of Quality Strategies had a beneficial effect on participants.

All principals experienced a shift in their leadership roles toward increasing their levels of personal leadership power. As educators Fully Implementing Principals are (1) moving toward applying quality technologies in education; (2) focusing on issues related to improving all aspects of the education system; (3) developing leadership skills in all personal; (4) planning more strategically for curriculum development; (5) looking at students to be more responsible and accountable for their education; (6) focusing on parents and community members as critical stakeholders in education; and (7) moving away from the traditional model of education leadership into a newer quality model. As a result Fully Implementing Principals are shifting toward the quality model presented in the Commitment to Quality Project. They are (1) becoming grounded on a commitment to meeting customer requirements; (2) doing things right the first time; (3) empowering employees at all organizational levels; (4) problem-solving with stakeholder teams; (5) basing decisions on relevant data; and (6) adopting a continuous process improvement philosophy.

To gain an understanding of the needs and expectations of the present public, Suba (1997) developed a survey to ascertain perceptions held by stakeholders about the quality of elementary schools. Parents of students enrolled in public elementary schools, along with teachers and administrators in those same schools, were surveyed to measure their degree of satisfaction with the quality of education received by their students. 203 parents, 45 teachers, and 7 administrators from three different elementary schools completed the revised version of the Service Quality Survey modified to apply to public elementary schools. The revised survey includes components of TQM, service quality, parent expectations, and effective schools research. Analysis of the survey results showed parents and administrators had the

highest expectations for an excellent school. Parents and teachers had similar perceptions of the performance of their school.

2.2.1. TQM Studies in Turkey

In Turkey, there are various studies which investigated the TQM in education. Since the concept of TQM is relatively new in Turkey, most of the studies were carried out in the last ten years. Although some of these studies are indirectly related to the implementation process, they will help us to describe the current situation of TQM in education system and schools, in Turkey.

Some of the literature focused on the problems of Turkish education system as it relates to total quality (Bulut, Gökbunar, Çivi & Öztürk, 1997; Erdoğan, 1995). The problems are as follows:

- The achievement in education is not measured in an effective way. It is appraised by exam scores and the number of the graduated students. The skill, interest and capacity of the students are not considered in evaluation system and educational curriculum.
- The education system destroys the students' creative thinking. The students are not aware of obtaining and using knowledge. They only memorize the subjects. They do not know how to reason, search for and interrogate the information.
- The educational curriculum is separate from life and new developments and it is late to produce new knowledge, skills and value in case of changing situations.

- The subjects in the educational curriculum are limited according to the ages and class. Therefore, the learning capacity of the students is imprisoned by specific borders.
- In our education system, teachers are regarded as an instructive person and teacher training programs are neglected.
- Since there is insufficient number of teacher people who do not have the required skills in education enter the system. This is a handicap for providing the students with a qualified education.
- In our education system, low quality and productivity is thought to be controlled by teachers and students themselves. The other units, groups, individuals and departments are not be responsible for producing expected results in education.
- Turkish education system is criticized because of its bureaucratic characteristics blocking effective service. Everyday new conflicts have been experienced because of the centrally organized structure. Everything, whether it is meaningful or meaningless is tried to be done according to the rules. For this reason, employees in education system work ineffectively just not to make a mistake. Unnecessary rules and regulations destroy the creativity of the employees. Therefore, the practitioners of education hesitate trying new developments.
- Educational resources are used ineffectively and the cost of the education is increased throughout the time.

In this topic, Demirdaş (1997), carried out a research in primary education schools in Kütahya in order to determine the problems in primary education schools and to evaluate the current educational practices in this kind of schools related with TQM approach. He obtained the necessary information about the primary education from

the Kütahya National Education Directorate and by applying a questionnaire to 35 class and branch teachers selected from five different schools by using simple random sampling method. According to the findings of the research, the problems of primary education were as follows: (1) the educational curriculum is not concentrated on students' interests and expectations, and the realities of life and society. (2) The student-centered education is not fulfilled in the schools. (3) Different teaching methods are not used in the instruction. (4) Principals and supervisors do not have the qualifications of a leader. (5) The student, parent and teacher participation in decision-making process is not provided by the school management. (6) Schools can not reach their objectives and goals. (7) The innovations in education and educational technology take place at schools late. (8) The communication between the school and other educational institutions is not efficient and not continuous. (9) The school employees do not rely on the school management. (10) The educational sources are not used efficiently. (11) There is no reward system in the schools. (12) The supervision system in the schools are fulfilled as a result of control system. (13) The results of the researches are not used by the schools. (14) The cooperation in the school is not provided. The research also showed that the current educational structure and management system in primary education were not appropriate for TQM approach.

Similarly, Tozkoparan (1997) made a study to yield the current situation related with the quality in education and to emphasis the necessity of TQM approach in education. For this reason, 105 teachers employed in primary education and high schools in İzmir were selected for the sample of the research. The findings showed that TQM principles are not applied in this kind of schools and the substructure to be

formed for TQM applications are not consisted. On the other hand, according to the study, performed by Tok (2001), the applicability of TQM to education was supported by opinions of teachers and administrators. The sample of the study was 52 teachers and 22 school administrators in Hatay. In the study, in connection to applicability of TQM to education, results showed that (1) schools have no problems in creating and using the resources; (2) there is a democratic ambient on the thoughts within the school; (3) people, who are assisting to the improvement of education, are awarded; (4) personal learning capacities of the students are considered; (5) students are encouraged to show their personal skills; (6) homework is given according to the students` personal skills; and (7) the learning strategies which are applied support the learning.

In a study, (Uysal, 1998) the applicability of TQM in the primary education schools was investigated from the perspectives of the private and public primary education school administrators. The sample of the study consisted of 245 administrators employed in private and public primary education schools in central districts of Ankara. A self-administered questionnaire consisting forty proposals about TQM was applied to the administrators. Two major findings were significant. First, all administrators in private and public schools agreed with the TQM proposals in the questionnaire. Second, the level of the agreement among private school administrators was much more than the public school administrators'. At the end of the study it was suggested that in order to increase the school achievement the current understanding of administrators related with measurement, evaluation, and cooperation with parents, specialization, control and training should be changed.

Similarly, Gülşen (2000) investigated the applicability of TQM in primary education schools and primary education supervision system from the perspectives of the primary education supervisors. In order to collect the data, a questionnaire including quality understanding, quality control, customer satisfaction, organizational dimension, managers' role in quality and supervision dimension was developed by the researcher. The study was designed as a survey. The population of the study consisted of all primary education supervisors employed in the province of Ankara National Education Directorate Primary Education Supervisors Ministry. Eighty-three percent of the supervisors (148) took questionnaire. Two of the findings were remarkable. First, the supervisors considerably agreed with the propositions about the applicability of TQM to the primary education and the supervision system. Second, when studied by seniority of the supervisors, it was seen that the junior primary education supervisors agreed with the prepositions more than others.

In a study conducted by Bayrak and Ağaoğlu (1998), the primary education school administrators and teachers' opinion related with the application of TQM in primary education were investigated. The special interest of the study was to identify teachers and administrators' TQM inclinations. According to the researchers, it is vital to determine the right starting point for TQM implications in primary education. There are three TQM inclinations which are defensive, tactical and improvement identified by the researchers. Teachers and administrators who are the members of the improvement group would like to improve quality and use resources effectively. They cooperate in order to make the school one of the best. The first aim of teachers and administrators in the tactical group is to meet unique requirements of the school. The future development and situation of the school is not considered. Defensive

teachers and administrators treat people under their services in a bad way. They are not willingly doing their task as tactical group members but defensive group members express this feeling openly. They do not need to spend time in order to make a plan for new practices in education. The population of the study consisted of 42 principals and 387 teachers in 17 primary education schools in Eskişehir. 29 principals and 268 teachers among them were willing to join the study. The data obtained by applying a questionnaire. The questionnaire consisted of three parts including the personal features, total quality inclinations and total quality knowledge of teachers and principals. The study revealed that teachers and administrators determined the improvement group, which was the positive inclination for successful TQM implementations in the schools.

Ensari (2001) investigated the quality understanding of educational institutions. The population of the study was all administrators, teachers, parents and students of primary and secondary educational institutions (schools and specialized schools for university preparation and for foreign language) in Istanbul. For the sample of the study, a total of 1.117 people were selected. In order to collect the necessary data, a questionnaire consisting of 31 TQM concepts was developed by the researcher. Three major findings were important: (1) According to the school administrators, teachers, students and parents, the least important five quality concepts in education are "focus on customer", "process control", "vision", "mission" and "comparison". On the other hand, the most important five quality concepts in education are "first of all people", "cooperation", "communication", "problem analyses" and "being open to innovations". (2) Students and parents are two groups who give importance to the TQM concepts less than the teachers and administrators. (3) Specialized schools

more than the schools, private schools more than the public schools and secondary schools give importance to the TQM concepts more than the primary schools.

Ercan (1999) examined the effects in the student achievement and teacher motivation of the continuous improvement efforts related with the application of TQM in the primary education schools. The continuous improvement efforts were fulfilled in two classrooms (fourth and fifth grades) as mathematics course-centered. For this reason, quality circles were established. The aim of these quality circles was to identify and to solve the problems in the classrooms. The activities of the circles were started at the beginning of the second semester. Firstly, the teachers who were willing to work in quality circles were selected by the leader who was the researcher. And then quality circles meetings were started. At the end of the semester, two key findings were obtained. First, the student achievement rate in two classrooms increased in the second semester. In the first semester, it was 88 percent in the classroom fourth grade and it was 81 percent in the fifth grade; in the second semester, it was 100 percent in two classrooms. Second, the student achievement in the other courses also increased. The other findings of the research are as follows: (1) Significant increase was recorded in student interest, motivation and participation in the courses. (2) Self confidence of the students was provided. Student confidence towards to the school and teacher was provided as well. (3) Students spent their free times in an effective way. (4) Students had the responsibility of studying lessons. (5) Teachers' motivation was increased. (6) Teachers showed more interest towards to the students. (7) They started to use different teaching methods in the instruction. (8) Teachers saw the benefits of team working. (9) The lack of communication between students, parents and teachers was removed (10) The opinion that TQM applications

will provide a significant increase in the general achievement of the school in the future was spread.

A lot of literature in Turkey mentions the benefits of TQM in education. Some of them are as follows: For example, according to Hergüner (1998), TQM applications improve students' personal qualifications and help them to be individuals who think scientifically. Moreover, improvement of leadership, putting creativeness in the front, providing to enjoy from learning by preventing of insufficiency worries, are its important assistance. Furthermore, the benefits of TQM within school in connection with administration as follows: administration digress from being the central, because each school will apply its self TQM approach and each school will be able to solve their problems themselves. For this reason, unsolved problems on the basis of schools will decrease. Schools can collect and assess more data related with education and training. Teachers, who see that problems within the school are solved as they see that their assistance is appreciated, will have a positive motivation. Application of decisions made via representation on all levels will be easy.

İge (1997) categorized the benefits as increasing the general educational quality, improving multiplicity and flexibility on education subjects and programs, encouraging both teacher and student to improve themselves and their creativeness, and supporting the use of new techniques and equipment in education.

According to Akgül (1998), equal opportunity will be maintained within education; costs of education will be decreased; numbers of experts or professional individuals will increase; social consciousness will increase; negative effects of

technological changes and improvements on society will decrease; and effective and productive labor can be obtained by TQM applications in education.

Yahyagil (1997) determined the benefits as follows: teachers, students, parents and management focus on mutual aims and elements of the system works more compatible. Reliable data is collected by systematic problem solving approach as teams and improvement solutions will be more successful thanks to the usage of appropriate analysis methods. Management's support of and trust in the staff increase productivity. As a result, system continuously improves. Future needs will be better covered what the groups' expectations from education is addressed to. The role of the teacher within classroom will change by the recognition of democratic behavior. Wrong steps will be timely prevented thanks to open communication channels. Teachers will give current and beneficial information to students.

Arkış (1997), Türkmen (1995), and Ünal (1999) provide the most important reasons why TQM sometimes fails in schools. These are as follows:

- Lack of management's support: As TQM contains the word "quality" administrative staff generally think that quality departments or quality circles are responsible for TQM applications.
- Management's resistance to change: Leaders are supposed to take charge. At first, managers give importance to TQM applications and they attempt to put them into practice. However, when they are forced to change their working habits, they postpone the application of these activities. Principals may fear that relinquishing control over any aspect of the school will hinder its functioning.

Other staff also may find it difficult to transcend years of experience as "leader" or "follower".

- Lack of continuous education and improvements: Team activities and in-service training are generally neglected in educational institutions.
- Lack of creating consciousness of TQM: At the beginning of the TQM applications, the employees are not informed correctly and clearly. When the employees are informed incorrectly or insufficiently, they are tend to resist to change.
- We can not let go of grades: Educators are faced to use quantitative goals, such as standardized test scores, to measure progress. Parents can be even more insistent than legislators because they fear that their children's future education and career will depend on grades.
- We do not use data to improve systems: While emotions are important gauges of personal well-being, they do not help evaluate the stability or efficacy of an entire system. When the most persuasive or powerful person in a group dictates what decisions will be made, and when data is ignored, politicking can lead to a distracted staff whose main goal becomes pleasing the basis, not educating the students.
- Not supporting TQM applications by rewards: Successful TQM activities are not identified and they are not rewarded.
- Using TQM will fail where quality will succeed: Even if a school surmounts these obstacles, using TQM will not significantly alter the learning experience for students or improve the efficiency of teachers and staff. "TQM" is not synonymous with Deming's principles. Using "TQM" tools and calling the

outcome "quality" is like le tting the tools get confused with the reason of using them.

2.3. Summary of Review of the Literature

The review of the literature revealed that there were many issues and challenges in the world and in Turkey that might have impact on the quality of primary education. Current educational reforms are indicating a need for the restructuring of schools for the purpose of meeting those challenges.

Literature provided information about TQM and its using in education. TQM at the very least presents a new way of thinking about schools and an option for restructuring to improve learning and teaching.

Review of the literature also indicated that there is a need to develop primary education system in Turkey. The Turkish education system is criticized because of its bureaucratic characteristics blocking the effective service; the educational curriculum which is late for producing new knowledge, skills and value in case of changing situations; and the quantitative goals in education.

Therefore, the literature review suggested that the effective organizational structure suggested by TQM consists of the dynamics developing the school system. For this reason, to apply TQM to education system is an inevitable necessity for recent developments.

CHAPTER 3

METHOD

This chapter includes the overall design of the study, research questions, descriptions of variables, population and sample selection, data collection instrument, data collection procedures, data analysis procedures and limitations of the study.

3.1. Overall Design of the Study

This causal comparative survey was designed to investigate the perceptions of MLO and non-MLO primary school teachers about TQM principles in education and the implementation degree of TQM principles in their schools. The sample of this study was selected by cluster sampling method and consisted of teachers from 16 public primary education schools from different regions of Ankara. The sample included eight public schools among MLO and eight public schools among non-MLO schools. Teachers were presented a self-administered questionnaire in which they were asked to answer questions related to the basic principles of TQM. Items in the survey instrument were selected from the related literature and validated by a group of experts in the field. Both descriptive and inferential statistical analyses were conducted for the data.

3.2. Research Questions

The research questions of this study are as follows:

1. Is there any significant mean difference in the perceptions of MLO and non-MLO school teachers on the five dimensions of TQM principles with respect to the school they work, the gender, and the years of experience and the school of graduation?
2. Is there any significant difference in the perceptions of MLO and non-MLO school teachers on the degree of the implementation of the TQM principles in their schools?

3.3. Descriptions of Variables

Independent Variables

Type of the school: This variable is a categorical variable with the categories of non-MLO (1) and MLO (2).

Gender: This variable is nominated dichotomous variable with the categories of female (1) and male (2).

Years of experience: This variable is a categorical variable with the categories of less than one year (1), 1-5 years (2), 6-10 years (3), 11-15 years (4), 16-20 years (5), more than 20 years (6). However, the categories of this variable were reduced to three because there was not enough observation for each category. So, the categories became 1-5 years (1), 6-15 years (2), more than 16 years (3).

School of graduation: This variable is a categorical variable with the categories of two year college (1), make-up program to have bachelor's degree (2), education

institute (3), four year college (4), master (5), Ph.D. (6). However, the categories of this variable were reduced to three because there was not enough observation for each category. So the categories became two year college or make-up program to have bachelor's degree (1), education institute or four year college (2), master or Ph.D. (3).

Dependent Variables

Leadership (Management's commitment): This continuous variable refers to creating and maintaining the TQM environment through management and empowerment. This variable is measured by nine questions for which the answers range from strongly disagree (1) to strongly agree (5). The possible scores for this variable range between 9 to 45.

Focus on facts: This continuous variable refers to having the knowledge of customer's experiences of services by setting up a system for the continuous measurement, collection and reporting of quality facts. This variable is measured by seven questions for which the answers range from strongly disagree (1) to strongly agree (5). The possible scores for this variable range between 7 to 35.

Continuous improvement: This continuous variable refers to step by step improvement in the process to make it more efficient and effective. This variable is measured by ten questions for which the answers range from strongly disagree (1) to strongly agree (5). The possible scores for this variable range between 10 to 50.

Focus on customer: This continuous variable refers to the problem of identifying the different customers and their expectations. This variable is measured

by five questions for which the answers range from strongly disagree (1) to strongly agree (5). The possible scores for this variable range between 5 to 25.

Everybody's participation: This continuous variable refers to the involvement of everyone in the organisation in a continuous improvement effort. This variable is measured by five questions for which the answers range from strongly disagree (1) to strongly agree (5). The possible scores for this variable range between 5 to 25.

3.4. Population and Sample Selection

The population of this study included all public primary school teachers in Ankara. Cluster sampling method was used for the selection of sample of the study. The sample included 406 teachers from 16 public primary schools eight of which were selected from MLO. The equality of numbers could not be maintained because of the difference between schools in terms of the number of teachers. 209 teachers were from non-MLO and 197 teachers were from MLO schools; 273 teachers were female whereas 133 teachers were male. The year of experience of teachers were ranged from less than one year to more than 20 years. The school of graduation of teachers were ranged from two year college to master degree. The number of teachers who responded to the questionnaire from each school is presented in the Table 3.1.

Table 3.1. The number of teachers from each school

Name of Schools	Number of Teachers
1. Çankaya Primary Education School	39
2. Milli Egemenlik Primary Education School	15
3. Konutkent Primary Education School	15
4. Demetevler Primary Education School	37
5. Demirlibahçe Primary Education School	33
6. İbni Sina Primary Education School	27
7. Çağlar Primary Education School	23
8. Atlıoğlu Primary Education School	20
9. Haymana Primary Education School (MLO)	18
10. Hamdullah Suphi Primary Education School (MLO)	22
11. Ahmet Andiçen Primary Education School (MLO)	15
12. Yunus Emre Primary Education School (MLO)	28
13. Yücetepe Primary Education School (MLO)	32
14. Hüseyin Güllüoğlu Primary Education School (MLO)	29
15. Ayşe Numan Kondakçı Primary Education School (MLO)	34
16. Arjantin Primary Education School (MLO)	19
TOTAL	**406**

3.5. Data Collection Instrument

A questionnaire was used in this study to obtain information about the perceptions of teachers on the principles of TQM and the degree of implementation of them in selected schools. For the purpose of developing the questionnaire, the literature that is about TQM and TQM in education was reviewed. In addition to the literature, an open-ended question which is "what do you know and think about TQM?" was administered to teachers in a public school to form the items of the questionnaire. Moreover, the existing questionnaires which are similar with the purpose of the research study were reviewed. Then by considering the literature and results of open-ended question, a list of statements (68) related to five principles of

TQM, which are leadership (12), focus on facts (18), focus on customer (17), continuous improvement (13) and everybody's participation (8) was given out to the 5 academicians, who are experts in that area, in order to determine whether the statements were clear and sufficient in identifying the teachers' perceptions on TQM. Four academicians returned it. The academicians were also asked to add their suggestions if necessary. This helped to eliminate the ambiguities, explanation mistakes, and unfamiliar terms and also to examine the content and face validity. According to the suggestions of the academicians some statements were extracted and some of them reformulated. On the other hand, several statements were added and the last version of the questionnaire consisted of fifty-four statements which was created in the form of items for subjects to endorse on a five-point Likert-type scale from "strongly disagree" (1) to "strongly agree"(5) for the perceptions of teachers about TQM principles. In addition to the five-point Likert type scale, a three-point scale from "never" (1) to "always" (3) was also added to the questionnaire in order to determine the implementation degree of TQM principles in MLO and non-MLO schools from the perspective of teachers. The questionnaire was composed of two sections. The first section requested background information. Selected background variables were those that might affect the responses of the teachers, either directly or indirectly. Information requested from teachers was about the name of school, gender, years of experience and the school of graduation. The second section of the questionnaire included fifty-four items related to TQM in education.

3.5.1. Pilot Testing of the Questionnaire

After the assessment of the questionnaire by a group of expert, an initial pilot testing was conducted with 74 teachers in 3 primary education schools in order to examine the reliability of the questionnaire. They were asked to fill out the questionnaire and make comments about the statements themselves for clarity.

3.5.2. Factor Structure of the Questionnaire for the Sample

Principal Component Analysis was used to interpret the factor structures of the questionnaire. The varimax rotated factor solutions were referred in order to determine how many dimensions account for most of the variance in the scale. Scree test was used in order to decide how many components to retain. Principal Component Analysis indicated that there are twelve factors with eigenvalues greater than 1. Some of the items having high factor loading in more than one factor were eliminated from the questionnaire. The cut of point for factor loadings was .38. A total of 36 items were selected with respect to their content and factor loadings. These items were then submitted to principle component factor analysis for the second time by limiting the number of factors to five in order to see if the items were grouped under the five TQM principles suggested by Dahlgard, Kristensen and Kanj (1995). The results indicated that the eigenvalue of first factor was 11,126, while the second, third, fourth, and fifth were 2,689; 1,853; 1,621; and 1,343, respectively. These five factors explained the 51.8 % of the total test variance. Close investigation

of item content revealed five meaningful dimensions in the scale with grouping the statements into dimensions of (1) management commitment (leadership); (2) focus on facts; (3) continuous improvement; (4) focus on customer; (5) everybody's participation. The ranges of factor loadings for each dimensions were .769-.512 for the first; .688-.583; .680-.385; .835-.477; .683-.456 for the second, third, fourth, and fifth dimensions, respectively. The reliability coefficient (cronbach alpha) of factors are.90; .84; .82; .78; and .71; for leadership, focus on facts, continuous improvement, focus on customer and everybody's participation, respectively. The reliability coefficient of the questionnaire was .92 for the perceptions about TQM principles and it was .94 for the perceptions about the implementation degree of the TQM principles. Table.3.2 shows the factor loadings and communalities of the items in the questionnaire.

Table 3.2 Factor loading and communalities of the items of the scale

Item No	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Communalities
LEADERSHIP						
35	**.769**	.193	.272	.073	.108	**.719**
39	**.743**	.183	.103	.095	.147	**.627**
33	**.728**	.133	.183	-.020	.067	**.587**
31	**.723**	.156	.080	.164	.105	**.592**
37	**.662**	.264	.272	.079	.249	**.650**
34	**.638**	.288	.221	.050	.135	**.559**
36	**.618**	.348	.299	.045	.150	**.617**
32	**.583**	.258	.101	.171	.102	**.456**
30	**.512**	.316	.101	.139	.354	**.517**
FOCUS ON FACTS						
49	.323	**.688**	.108	.099	.249	**.662**
53	.155	**.677**	.168	.114	.018	**.523**
54	.225	**.675**	.170	.073	.060	**.544**
51	.152	**.649**	.184	.145	.104	**.510**
50	.432	**.622**	.128	.029	.078	**.597**
48	.346	**.620**	.189	.003	.181	**.572**
44	.250	**.583**	.146	.094	.238	**.490**
CONTINUOUS IMPROVEMENT						
4	.132	.117	**.680**	.143	.065	**.518**
6	.245	.171	**.622**	.160	.113	**.514**
5	.346	-.060	**.618**	.055	.130	**.525**
3	.196	.156	**.614**	.035	.022	**.441**
8	.180	.162	**.542**	.051	.338	**.469**
14	-.090	.295	**.537**	.108	.041	**.397**
9	.055	.220	**.498**	.142	.372	**.458**
7	.042	.153	**.427**	.297	.381	**.441**
1	.257	.204	**.425**	.043	.089	**.298**
15	.279	.035	**.385**	-.050	.202	**.270**
FOCUS ON CUSTOMER						
27	.088	.041	.090	**.835**	.107	**.726**
26	.102	.017	.025	**.769**	.078	**.608**
25	.120	.051	.083	**.763**	.086	**.606**
23	.064	.126	.131	**.622**	.266	**.494**
43	-.030	.178	.139	**.477**	.145	**.300**
EVERYBODY`S PARTICIPATION						
12	.084	.088	.121	.068	**.683**	**.500**
21	.286	.174	.081	.144	**.658**	**.572**
19	.127	-.008	.284	.131	**.600**	**.474**
17	.133	.165	.152	.245	**.532**	**.412**
38	.346	.231	.038	.060	**.456**	**.386**

3.6. Data Analysis

In this study, quantitative data were collected. Non-parametric statistics and Multivariate Analysis of Variance (MANOVA) were also used to analyze the quantitative data. Some descriptive statistics such as frequency and percentages were used to describe the data.

In order to investigate the differences between MLO and non-MLO school teachers' perceptions on TQM with respect to certain background variables MANOVA was employed. It was ensured that all the assumptions of MANOVA were mostly met by the data set. In order to investigate if there are any significant differences in MLO and non MLO school teachers' perceptions about the implementation level of TQM principles Chi-square test was employed. All the statistical analyses were carried out by the Statistical Package for the Social Sciences (SPSS) for Windows 10.0 package program. The .05 level was established as a criterion of statistical significance for all the statistical procedures performed.

3.7. Limitations

The study was limited to teachers employed in public primary education schools in Ankara in 2002. Therefore, the results of the present study are limited with the perceptions of the sampled group.

CHAPTER IV

RESULTS

In this chapter of the study, the results of the statistical analyses are presented. Firstly, the results concerning the perceptions of teachers about the dimensions of TQM, and the differences in the perceptions of teachers about these dimensions with respect to certain background variables of teachers were presented. Then, the results concerning the perceptions of teachers on the degree of TQM implementations and the differences in the perceptions of teachers in MLO and non-MLO schools on the degree of TQM implementations were presented.

4.1. Results Concerning the Perceptions of Teachers in the Dimensions of TQM.

In table 4.1, the descriptive statistics related to the teachers` perceptions on the five dimensions of TQM were presented regarding both MLO and non-MLO schools. The percentages, means and the standard deviations of the data obtained from the questionnaire applied to the teachers (in both MLO and non-MLO schools) presented on the Appendix C.

Table 4.1. The means and standard deviations of the dimensions of TQM among MLO and non-MLO school teachers

Dimensions of TQM	MLO			NON-MLO		
	N	M	SD	N	M	SD
Leadership	193	4.76	0,33	204	4,67	0,47
Focus on Facts	188	4.67	0,42	199	4,68	0,41
Continuous Improvement	192	4.55	0,41	189	4,56	0,48
Everybody's Participation	191	4.53	0,45	206	4,45	0,57
Focus on Customer	192	3.77	0,76	202	3,66	0,72

As it is seen on Table 4.1, teachers in both MLO and non-MLO schools give importance to the dimensions of leadership and focus on facts the most, whereas the least importance to the dimensions of focus on customer (M= 3,77 for MLO schools, and M=3,66 for non-MLO schools). All dimensions have the value higher than the mean value (3) of the scale. Teachers demonstrated high awareness to the five dimensions of TQM.

4.1.1. Results Concerning the Differences in the Perceptions of Teachers in the Dimensions of TQM with respect to Certain Background Variables of Teachers.

In order to see the effect of some background variables such as school type, gender, years of experience and the school of graduation of teachers on the five dimensions of TQM which are leadership, focus on facts, focus on customer, continuous improvement and everybody's participation, one way MANOVA was conducted.

The results of MANOVA yielded that no significant difference was found between MLO and non-MLO school teachers` perceptions on the TQM principles which are leadership, focus on facts, focus on customer, continuous improvement, and everybody`s participation (Wilks` $\Lambda$ = .99, F (5, 293) =.313, p=.90). The result also yielded no significant difference regarding gender of teachers (Wilks` Λ = .98, F (5, 293) =1.064, p=.38); the years of experience of teachers (Wilks` $\Lambda$ = .94, F (15, 809) =1.047, p=.40); and the school of graduation of teachers (Wilks` Λ = .90, F (20, 972) =1.498, p=.07) on TQM principles (leadership, focus on facts, focus on customer, continuous improvement, and everybody` s participation). Moreover, the results of the MANOVA analysis showed no interaction effect of school type and gender (Wilks` Λ = .99, F (5, 293) =.346, p=.88); school type and years of experience (Wilks` $\Lambda$ = .94, F (15, 809) =1.038, p=.41); gender and years of experience (Wilks` Λ = .94, F (15, 809) =1.050, p=.40); school type, gender and years of experience (Wilks` $\Lambda$ = .94, F (15, 809) =1.066, p=.38); school type and school of graduation (Wilks` Λ = .94, F (20, 972) =.855, p=.64); gender and school of graduation (Wilks` $\Lambda$ = .94, F (20, 972) =.92, p=.56); school type, gender and school of graduation (Wilks` Λ = .97, F (20, 972) =.408, p=.99); years of experience and school of graduation (Wilks` $\Lambda$ = .87, F (50, 1339) =.81, p=.81); school type, years of experience and school of graduation (Wilks` Λ = .91, F (25, 1089) =1.089, p=.34); gender, years of experience and school of graduation (Wilks` $\Lambda$ = .94, F (25, 1089) =.634, p=.91); and school type, gender, years of experience, and school of graduation (Wilks` Λ = .99, F (5, 293) =.313, p=.75).

4.2. Results Concerning the Perceptions of Teachers on the Degree of TQM Implementation on the Five Dimensions of TQM.

The descriptive statistics related to the teachers` perceptions about the degree of TQM implementation related to the five dimensions of TQM are shown on table 4.2 regarding both MLO and non-MLO schools. The percentages, means and the standard deviations of each item are presented on the Appendix D.

Table 4.2. The means and standard deviations of the implementation degree of TQM principles among MLO and non-MLO school teachers

Dimensions of TQM	MLO			NON-MLO		
	N	M	SD	N	M	SD
Leadership	193	1.85	0,42	201	1.91	0,37
Focus on Facts	192	1.78	0,39	202	1.90	0,40
Continuous Improvement	189	1.91	0,34	202	1.89	0,33
Focus on Customer	188	1.73	0,42	193	1.73	0,34
Everybody's Participation	186	1.68	0,39	205	1.79	0,37

As it is seen on the Table 4.2, regarding the perceptions of teachers related to the implementation degree of TQM principles based on the five dimensions of TQM, all dimensions of TQM are sometimes being implemented. The implementation degree of TQM dimensions in both MLO and non-MLO schools is almost equal. There is no dimension which is always implemented.

4.2.1. Results Concerning the Differences in the Perceptions of MLO and non-MLO School Teachers on the Degree of TQM Implementation

Chi-square test was employed to compare the differences in the perceptions of MLO and non-MLO school teachers on the degree of implementation of TQM proposals related to the five dimensions of TQM.

Table 4.3. The result of chi-square test of the TQM proposal related to the school administrator's leadership

The school administrators should be the leaders who abolish obstacles in front of employees and students and try to give support for being them more successful.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	50	143	16	209
		%	23.9	68.4	7.7	100.0
	MLO	**N**	53	125	18	196
		%	27.0	63.8	9.2	100.0
Total		**N**	103	268	34	405
		%	25.4	66.2	8.4	100.0
x^2=.998, df=2, p=.60						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that 'the school administrators should be the leaders who abolish obstacles in front of employees and students and try to give support for being them more successful" is presented on Table 4.3. As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)}$ =.998, p=.60).

Table 4.4. The result of chi-square test of the TQM proposal related to the revising the leadership activities by the school administrators

School administrators should revise their leadership activities periodically.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	79	120	10	209
		%	37.8	57.4	4.8	100.0
	MLO	**N**	74	100	21	195
		%	37.9	51.3	10.8	100.0
otal		**N**	153	220	31	404
		%	37.9	54.5	7.7	100.0
x^2=5.40, df=2, p=.06						

Table 4.4 shows the result of chi-square test which indicates whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "school administrators should revise their leadership activities periodically" is presented. The result showed that there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =5.40, p=.06).

Table 4.5. The result of chi-square test of the TQM proposal related to the way of communication used by the school management

The school management should prefer a quick, fluent, and a multidirectional way of communication.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	50	139	19	208
		%	24.0	66.8	9.1	100.0
	MLO	**N**	65	115	17	197
		%	33.0	58.4	8.6	100.0
Total		**N**	115	254	36	405
		%	28.4	62.7	8.9	100.0
x^2=4.04, df=2, p=.13						

Table 4.5 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school management should prefer a quick, fluent, and a multidirectional way of communication". As shown on

the table, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =4.04, p=.13).

Table 4.6. The result of chi-square test of the TQM proposal related to an environment created by the school management in the school

The school management should create an environment based on respect and confidence not on fear and pressure.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	18	136	53	207
		%	8.7	65.7	25.6	100.0
	MLO	**N**	53	118	26	197
		%	26.9	59.9	13.2	100.0
Total		**N**	71	254	79	404
		%	17.6	62.9	19.6	100.0
x^2=27.53, df=2, p=.00						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school management should create an environment based on respect and confidence not on fear and pressure" is presented on table 4.6. As can be seen from the table, the percentage of teachers who think the proposal is always applied was higher in non-MLO schools (53%) than in MLO schools (26%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (53%) than in non-MLO schools (18%). The difference between the MLO and non-MLO school teachers` perceptions was found statistically significant ($x^2(2) = 27.53$, $p<.01$).

Table 4.7. The result of chi-square test of the TQM proposal related to preparing an environment encouraging working together in the school

The school principal should prepare an environment that encourages working together in school by abolishing hierarchical obstacles.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	36	140	32	208
		%	17.3	67.3	15.4	100.0
	MLO	**N**	53	115	29	197
		%	26.9	58.4	14.7	100.0
Total		**N**	89	25	61	405
		%	22.0	63.0	15.1	100.0
x^2=5.55, df=2, p=.06						

Table 4.7 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school principal should prepare an environment that encourages working together in school by abolishing hierarchical obstacles". According to the result of chi-square test, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant (x^2 (2)=5.55, p=.06).

Table 4.8. The result of chi-square test of the TQM proposal related to the benefiting from the ideas abilities and enterpreneurship of employees

The school principal should benefit from the ideas, abilities, and enterpreneurship of employees.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	41	139	29	209
		%	19.6	66.5	13.9	100.0
	MLO	**N**	39	131	27	197
		%	19.8	66.5	13.7	100.0
Total		**N**	80	270	56	406
		%	19.7	66.5	13.8	100.0
x^2=.004, df=2, p=.99						

The Table 4.8 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school principal should benefit from the ideas, abilities, and enterpreneurship of employees". The result

showed that, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =.004, p=.99).

Table 4.9. The result of chi-square test of TQM proposal related to the creating an environment encouraging to take responsibilities

The school principal should create an environment that encourages employees and students to take responsibilities.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	37	141	30	208
		%	17.8	67.8	14.4	100.0
	MLO	**N**	40	124	33	197
		%	20.3	62.9	16.8	100.0
Total		**N**	77	265	63	405
		%	19.0	65.4	15.6	100.0
x^2=1.05, df=2, p=.59						

Table 4.9shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school principal should create an environment that encourages employees and students to take responsibilities" is presented. As indicated on the table, the difference between the MLO and non-MLO schools` teachers`perceptions was not statistically significant (x^2 (2) =1.05, p=.59).

Table 4.10. The result of chi-square test of the TQM proposal related to the helping to employees and students for feeling proud of their works by school management

The school management should help to employees and students for feeling proud of their works.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	34	146	26	206
		%	16.5	70.9	12.6	100.0
	MLO	**N**	41	123	33	197
		%	20.8	62.4	16.8	100.0
Total		**N**	75	269	59	403
		%	18.6	66.7	14.6	100.0
x^2=3.25, df=2, p=.19						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that 'the school management s hould help to employees and students for feeling proud of their works" is presented on table 4.10. As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant (x^2 (2) =3.25, p=.19).

Table 4.11. The result of chi-square test of the TQM proposal related to the arrenging a reward system in school by the school management

The school management should motivate his employees not only by material rewards but also by the elements such as esteeming and appreciating.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	60	127	22	209
		%	28.7	60.8	10.5	100.0
	MLO	**N**	61	113	22	196
		%	31.1	57.7	11.2	100.0
Total		**N**	121	240	44	405
		%	29.9	59.3	10.9	100.0
x^2=.408, df=2, p=.81						

Table 4.11 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that 'the school management should motivate his employees not only by material rewards but also by the elements such as esteeming and appreciating". As can be seen from the table, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =.408, p=.81).

Table 4.12. The result of chi-square test of the TQM proposal related to the measurement and evaluation system in schools

Measurement and evaluation in schools should be fulfilled in order to correct and improve the learning and teaching process.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	53	129	24	206
		%	25.7	62.6	11.7	100.0
	MLO	**N**	59	119	19	197
		%	29.9	60.4	9.6	100.0
Total		**N**	112	248	43	403
		%	27.8	61.5	10.7	100.0
x^2=1.11, df=2, p=.16						

Table 4.12, the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "measurement and evaluation in schools should be fulfilled in order to correct and improve the learning and teaching process" is presented. The result showed that, the difference between the MLO and non-MLO schools` teachers` perceptions was not statistically significant (x^2 (2) =1.11, p=.16).

Table 4.13. The result of chi-square test of the TQM proposal related to the works fulfilled by the school administrators effectively

The school management should provide not only to do works correctly but also to do correct works.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	24	152	32	208
		%	11.5	73.1	15.4	100.0
	MLO	**N**	39	142	15	196
		%	19.9	72.4	7.7	100.0
Total		**N**	63	294	47	404
		%	15.6	72.8	11.6	100.0
x^2=9.71, df=2, p=.00						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school management should provide not only to do works correctly but also to do correct works" is presented on table 4.13. A closer look into the table, the percentage of teachers who think the

proposal is always applied was higher in non-MLO schools (32%) than in MLO schools (15%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (39%) than in non-MLO schools (24%). The difference between the MLO and non-MLO school teachers` perceptions was found statistically significant (x^2 (2) = 9.71, p<.01).

Table 4.14. The result of chi-square test of the TQM proposal related to the learning and teaching activities in schools

Learning and teaching strategies should be revised continuously.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	45	138	24	207
		%	21.7	66.7	11.6	100.0
	MLO	**N**	57	123	16	196
		%	29.1	62.8	8.2	100.0
Total		**N**	102	261	40	403
		%	25.3	64.8	9.9	100.0
x^2=3.57, df=2, p=.16						

Table 4.14 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "learning and teaching strategies should be revised continuously".As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant ($x^2_{(2)}$ =3.57, p=.16).

Table 4.15. The result of chi-square test of the TQM proposal related to the school supervision

The school supervision should not be performed to find error and deficiency but should be performed in the aim of correction and development.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	44	139	24	207
		%	21.3	67.1	11.6	100.0
	MLO	**N**	62	122	13	197
		%	31.5	61.9	6.6	100.0
Total		**N**	106	261	37	404
		%	26.2	64.6	9.2	100.0
x^2=7.19, df=2, p=.02						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school supervision should not be performed to find error and deficiency but should be performed in the aim of correction and development" is presented on table 4.15. As seen on the table, the percentage of teachers who think the proposal is always applied was higher in non-MLO schools (24%) than in MLO schools (13%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (62%) than in non-MLO schools (44%). The difference between the MLO and non-MLO school teachers` perceptions was statistically significant ($x^2(2)=7.19$, $p<.05$).

Table 4.16. The result of chi-square test of the TQM proposal related to the getting and using of the knowledge in education system

In education, the process of getting knowledge and production skills should be controlled rather than the knowledge itself.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	61	135	13	209
		%	29.2	64.6	6.2	100.0
	MLO	**N**	57	130	8	195
		%	29.2	66.7	4.1	100.0
Total		**N**	118	265	21	404
		%	29.2	65.6	5.2	100.0
$x^2=.936$, df=2, p=.62						

Table 4.16 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "in education, the process of getting knowledge and production skills should be controlled rather than the knowledge itself". The result showed that there was no significant difference between the MLO and non-MLO school teachers` perceptions ($x^2_{(2)}=.936$, $p=.62$)

Table 4.17. The result of chi-square test of the TQM proposal related to the supervising of school staff

School administrators, teachers, and other staff should supervise themselves.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	46	134	27	207
		%	22.2	64.7	13.0	100.0
	MLO	**N**	62	121	13	196
		%	31.6	61.7	6.6	100.0
Total		**N**	108	255	40	403
		%	26.8	63.3	9.9	100.0
x^2=7.64, df=2, p=.02						

In Table 4.17, the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "school administrators, teachers, and other staff should supervise themselves" is presented. As shown on the table, the percentage of teachers who think the proposal is always applied was higher in non-MLO schools (27%) than in MLO schools (13%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (62%) than in non-MLO schools (46%). The difference between the MLO and non-MLO school teachers` perceptions was found statistically significant (x^2 (2) = 7.64, $p<.05$).

Table 4.18. The result of chi-square test of the TQM proposal related to the way of supervision

Evaluation after supervison should be done together with the people who are supervised.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	81	106	21	208
		%	38.9	51.0	10.1	100.0
	MLO	**N**	91	98	7	196
		%	46.4	50.0	3.6	100.0
Total		**N**	172	204	28	404
		%	42.6	50.5	6.9	100.0
x^2=7.55, df=2, p=.02						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "evaluation after supervison should be done together with the people who are supervised" is presented on table 4.18. A closer look into the table, the percentage of teachers who think the proposal is always applied was higher in non-MLO schools (21%) than in MLO schools (7%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (91%) than in non-MLO schools (81%). The difference between the MLO and non-MLO schools` teachers` perceptions was found statistically significant (x^2 (2) = 7.55, p<.05).

Table 4.19. The result of chi-square test of TQM proposal related to the school administrators` leadership

The goal of schools should be to provide aim continuity by looking for the ways of continious improvement and the whole success.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	21	129	57	207
		%	10.1	62.3	27.5	100.0
	MLO	**N**	14	141	42	197
		%	7.1	71.6	21.3	100.0
Total		**N**	35	270	99	404
		%	8.7	66.8	24.5	100.0
x^2=3.96, df=2, p=.13						

Table 4.19 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the goal of schools should be to

provide aim continuity by looking for the ways of continious improvement and the whole success". The result indicated that there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =3.96, p=.13).

Table 4.20. The result of chi-square test of the TQM proposal related to the employees` training

All employees should be trained continuously in order to provide improvement in management and teaching in the school.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	50	132	25	207
		%	24.2	63.8	12.1	100.0
	MLO	**N**	35	136	26	197
		%	17.8	69.0	13.2	100.0
Total		**N**	85	268	51	404
		%	21.0	66.3	12.6	100.0
x^2=2.48, df=2, p=.28						

Table 4.20 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO schools` teachers` perceptions on the implementation level of the TQM proposal that "all employees should be trained continuously in order to provide improvement in management and teaching in the school" is presented. As can be seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant (x^2 (2) =2.48, p=.28).

Table 4.21. The result of chi-square test of the TQM proposal related to the planning of education

In schools, short, middle and long term plans should be prepared in the application of education and teaching activities.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	44	128	36	208
		%	21.2	61.5	17.3	100.0
	MLO	**N**	34	124	39	197
		%	17.3	62.9	19.8	100.0
Total		**N**	78	252	75	405
		%	19.3	62.2	18.5	100.0
x^2=1.16, df=2, p=.55						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "in schools, short, middle and long term plans should be prepared in the application of education and teaching activities" is presented on table 4.21. As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant (x^2 (2) =1.16, p=.55).

Table 4.22. The result of chi-square test of the TQM proposal related to developing of the school continuously

Schools should be an instution changing and developing continuously.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	39	126	36	201
		%	19.4	62.7	17.9	100.0
	MLO	**N**	47	118	28	193
		%	24.4	61.1	14.5	100.0
Total		**N**	86	244	64	394
		%	21.8	61.9	16.2	100.0
x^2=1.85, df=2, p=.39						

Table 4.22 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "schools should be an instution changing and developing continuously". The result showed that, the difference

between the MLO and non-MLO school teachers` perceptions was not statistically significant ($x^2(2)=1.85$, $p=.39$).

Table 4.23.The result of chi-square test of the TQM proposal related to the team works in schools

In schools, the activities done for improving the education process should be fulfilled by team works.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	43	145	20	208
		%	20.7	69.7	9.6	100.0
	MLO	**N**	42	130	25	197
		%	21.3	66.0	12.7	100.0
Total		**N**	85	275	45	405
		%	21.0	67.9	11.1	100.0
$x^2=1.08$, df=2, p=.58						

Table 4.23 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "in schools, the activities done for improving the education process should be fulfilled by team works" is presented. As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant (x^2 (2) =1.08, p=58).

Table 4.24. The result of chi-square test of the TQM proposal related to the quality comitee

A comittee should be established in order to check and evaluate the results of the activities concerning the improvements of education process.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	97	105	5	207
		%	46.9	50.7	2.4	100.0
	MLO	**N**	63	113	17	193
		%	32.6	58.5	8.8	100.0
Total		**N**	160	218	22	400
		%	40.0	54.5	5.5	100.0
$x^2=13.59$, df=2, p=.00						

Table 4.24 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on

the implementation level of the TQM proposal that "a comittee should be established in order to check and evaluate the results of the activities concerning the improvements of education process". The result showed that the percentage of teachers who think the proposal is always applied was higher in MLO schools (17%) than in non-MLO schools (5%). Moreover, the percentage of teachers who think it is never applied was higher in non-MLO schools (97%) than in MLO schools (63%). The difference between the MLO and non-MLO school teachers` perceptions was statistically significant (x^2 (2) = 13.59, p<.01).

Table 4.25.The result of chi-square test of the TQM proposal related to the following the changes in education by teachers and principals

In schools, principals and teachers should follow the changes and developments in education.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	34	149	25	208
		%	16.3	71.6	12.0	100.0
	MLO	**N**	24	153	20	197
		%	12.2	77.7	10.2	100.0
Total		**N**	58	302	45	405
		%	14.3	74.6	11.1	100.0
x^2=2.04, df=2, p=.36						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "in schools, principals and teachers should follow the changes and developments in education" is presented on table 4.25. As can be seen from the table, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =2.04, p=.36).

Table 4.26. The result of chi-square test of the TQM proposal related to the following the relevant applications in the other fields and technology by the school

Schools should follow the relevant applications in the other fields and technological developments and adapt to education.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	57	135	17	209
		%	27.3	64.6	8.1	100.0
	MLO	**N**	40	141	16	197
		%	20.3	71.6	8.1	100.0
Total		**N**	97	276	33	406
		%	23.9	68.0	8.1	100.0
x^2=2.79, df=2, p=.24						

Table 4.26 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "schools should follow the relevant applications in the other fields and technological developments and adapt to education" is presented. The difference between the MLO and non-MLO school teachers` perceptions was not statistically significant ($x^2_{(2)}$ =2.79, p=.24).

Table 4.27. The result of chi-square test of the TQM proposal related to the students` cooperation

Students in the school should cooperate to increase their achivements rather than compete each other.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	49	138	21	208
		%	23.6	66.3	10.1	100.0
	MLO	**N**	55	127	14	196
		%	28.1	64.8	7.1	100.0
Total		**N**	104	265	35	404
		%	25.7	65.6	8.7	100.0
x^2=1.85, df=2, p=.39						

Table 4.27 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "students in the school should cooperate to increase their achivements rather than compete each other". As can be seen from the table, the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)}$ =1.85, p=.39).

Table 4.28. The result of chi-square test of the TQM proposal related to the teachers` cooperation

Teachers in the school should work for the same goal and cooperate rather than compete.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	N	48	119	42	209
		%	23.0	56.9	20.1	100.0
	MLO	N	58	113	26	197
		%	29.4	57.4	13.2	100.0
Total		N	106	232	68	406
		%	26.1	57.1	16.7	100.0
x^2=4.51, df=2, p=.10						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "teachers in the school should work for the same goal and cooperate rather than compete" is presented on table 4.28. The difference between the MLO and non-MLO school teachers` perceptions was not statistically significant ($x^2_{(2)}$ =4.51, p=.10).

Table 4.29. The result of chi-square test of the TQM proposal related to the determining the achivement of the school

The achivement of school should be determined depending on the satisfaction obtained from school of students, parents and its environment.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	61	137	10	208
		%	29.3	65.9	4.8	100.0
	MLO	**N**	73	112	10	195
		%	37.4	57.4	5.1	100.0
Total		**N**	134	249	20	403
		%	33.3	61.8	5.0	100.0
x^2=3.17, df=2, p=.20						

Table 4.29 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the achivement of school should be determined depending on the satisfaction obtained from school of students,

parents and its environment". As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)} = 3.17$, p=.20).

Table 4.30. The result of chi-square test of the TQM proposal related to the parents as customers

The school should assume the parents not only as customers but also as partners for arriving at success.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	64	132	11	207
		%	30.9	63.8	5.3	100.0
	MLO	**N**	54	121	17	192
		%	28.1	63.0	8.9	100.0
Total		**N**	118	253	28	399
		%	29.6	63.4	7.0	100.0
x^2=2.05, df=2, p=.35						

Table 4.30 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that 'the school should assume the parents not only as customers but also as partners for arriving at success" is presented. As seen on the table, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant (x^2 (2) =2.05, p=.35).

Table 4.31. The result of chi-square test of the TQM proposal related to the determining of the quality of the education in the school

The quality of education in schools should be determined with respect to pleasure of the people benefitted from service presented rather than the criteria determined by school.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	78	122	6	206
		%	37.9	59.2	2.9	100.0
	MLO	**N**	67	118	11	196
		%	34.2	60.2	5.6	100.0
Total		**N**	145	240	17	402
		%	36.1	59.7	4.2	100.0
x^2=2.12, df=2, p=.34						

Table 4.31 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that ‘the quality of education in schools should be determined with respect to pleasure of the people benefitted from service presented rather than the criteria determined by school” is presented. The difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)}$ =2.12, p=.34).

Table 4.32. The result of chi-square test of the TQM proposal related to the environment as customers of the school

The school should get information regularly about complaints, criticism and expectations of the environment (upper and lower level of schools, market, etc...) related to education.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	92	112	4	208
		%	44.2	53.8	1.9	100.0
	MLO	**N**	98	88	9	195
		%	50.3	45.1	4.6	100.0
Total		**N**	190	200	13	403
		%	47.1	49.6	3.2	100.0
x^2=4.58, df=2, p=.10						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that ‘the school should get information

regularly about complaints, criticism and expectations of the environment (upper and lower level of schools, market, etc...) related to education" is presented on table 4.32. As seen on the table, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =4.58, p=.10).

Table 4.33. The result of chi-square test of the TQM proposal related to the cost of quality in school

The school management should get the maximum quality with the minimum cost.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	40	139	30	209
		%	19.1	66.5	14.4	100.0
	MLO	**N**	51	118	27	196
		%	26.0	60.2	13.8	100.0
Total		**N**	91	257	57	405
		%	22.5	63.5	14.1	100.0
x^2=2.79, df=2, p=.24						

Table 4.33 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that 'the school management should get the maximum quality with the minimum cost". The result showed that the difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)}$ =2.79, p=.24).

Table 4.34. The result of chi-square test of the TQM proposal related to the prediction of errors in education process in schools

The errors should be predicted in advance and interfered at the right time in education process.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	42	143	24	209
		%	20.1	68.4	11.5	100.0
	MLO	**N**	71	112	12	195
		%	36.4	57.4	6.2	100.0
Total		**N**	113	255	36	404
		%	28.0	63.1	8.9	100.0
x^2=14.74, df=2, p=.00						

The result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the errors should be predicted in advance and interfered at the right time in education process" is presented on table 4.34. As can be seen from the table, the percentage of teachers who think the proposal is always applied was higher in non-MLO schools (24%) than in MLO schools (12%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (71%) than in non-MLO schools (42%). The difference between the MLO and non-MLO school teachers` perceptions was found statistically significant (x^2 (2) = 14.74, p<.01).

Table 4.35. The result of chi-square test of the proposal related to the everybody` s participation in determining the behaviours which students will have

The behaviours which students will have should be determined in advance by the participation of principals, teachers, parents and students.			Never	Sometimes	Always	Total
School Type	**NON-MLO**	**N**	57	127	24	208
		%	27.4	61.1	11.5	100.0
	MLO	**N**	60	121	14	195
		%	30.8	62.1	7.2	100.0
Total		**N**	117	248	38	403
		%	29.0	61.5	9.4	100.0
x^2=2.43, df=2, p=.29						

Table 4.35 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on

the implementation level of the TQM proposal that "the behaviours which students will have should be determined in advance by the participation of principals, teachers, parents and students". The difference between the MLO and non-MLO school teachers` perceptions was not found statistically significant ($x^2_{(2)}$ =2.43, p=.29).

Table 4.36. The result of chi-square test of the TQM proposal related to the students as customers

The school should get information regularly about complaints, criticism and expectations of students related to education.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	86	116	7	209
		%	41.1	55.5	3.3	100.0
	MLO	**N**	85	105	6	196
		%	43.4	53.6	3.1	100.0
Total		**N**	171	221	13	405
		%	42.2	54.6	3.2	100.0
x^2=.213, df=2, p=.89						

Table 4.36 indicates the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school should get information regularly about complaints, criticism and expectations of students related to education". As shown on the table, the difference between the MLO and non-MLO school teachers` perceptions was not statistically significant ($x^2_{(2)}$ =.213, p=.89).

Table 4.37. The result of chi-square test of the TQM proposal related to the teachers and other staff as customers

The school should get information regularly about complaints, criticism and expectations of teachers and other employees related to education.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	62	134	12	208
		%	29.8	64.4	5.8	100.0
	MLO	**N**	79	105	9	193
		%	40.9	54.4	4.7	100.0
Total		**N**	141	239	21	401
		%	35.2	59.6	5.2	100.0
x^2=5.44, df=2, p=.06						

Table 4.37 shows the result of chi-square test which shows whether there is a significant difference between MLO and non-MLO school teachers` perceptions on the implementation level of the TQM proposal that "the school should get information regularly about complaints, criticism and expectations of teachers and other employees related to education" is presented. As seen on the table, there was no significant difference between the MLO and non-MLO school teachers` perceptions (x^2 (2) =5.44, p=.06).

Table 4.38. The result of chi-square test of the TQM proposal related to the creating a reward system to provide the participation of employees

School management should set up a reward system in the school for successful work activities.			**Never**	**Sometimes**	**Always**	**Total**
School Type	**NON-MLO**	**N**	57	122	28	207
		%	27.5	58.9	13.5	100.0
	MLO	**N**	76	91	28	195
		%	39.0	46.7	14.4	100.0
Total		**N**	133	213	56	402
		%	33.1	53.0	13.9	100.0
x^2=6.87, df=2, p=.03						

The result of chi-square test which shows whether there is a significant difference between MLO and non- MLO school teachers` perceptions on the implementation level of the TQM proposal that "school management should set up a reward system in the school for successful work activities" is presented on table 4.38. As seen on the table, the percentage of teachers who think the proposal is sometimes

applied was higher in non- MLO schools (58%) than in MLO schools (46%). Moreover, the percentage of teachers who think it is never applied was higher in MLO schools (76%) than in non- MLO schools (57%). The difference between the MLO and non- MLO school teachers` perceptions was found statistically significant (x^2 (2) = 6.87, p<.05).

4.2.2. Summary Table of Chi-square Test

Table 4.39. presents a summary table of the items in which chi-square tests revealed a significant difference between the perceptions of MLO and non-MLO teachers about implementation degree of TQM principles.

Table 4.39. Summary of of chi-square test results

ITEMS	MLO SCHOOL			MLO SCHOOL			χ^2
	Never %	S %	Always %	Never %	S %	Always %	
The school management should create an environment based on respect and confidence not on fear and pressure.	8.7	65.7	25.6	26.9	59.9	13.2	*27.53*
The school management should provide not only to do works correctly but also to do correct works.	11.5	73.1	15.4	19.9	72.4	7.7	*9.71*
The school supervision should not be performed to find error and deficiency but should be performed in the aim of correction and development.	21.3	67.1	11.6	31.5	61.9	6.6	*7.19*
School administrators, teachers, and other staff should supervise themselves.	22.2	64.7	13.0	31.6	61.7	6.6	*7.64*
Evaluation after supervison should be done together with the people who are supervised.	38.9	51.0	10.1	46.4	50.0	3.6	*7.55*
A comittee should be established in order to check and evaluate the results of the activities concerning the improvements of education process.	46.9	50.7	2.4	32.6	58.5	8.8	*13.59*
The errors should be predicted in advance and interfered at the right time in education process.	20.1	68.4	11.5	36.4	57.4	6.2	*14.74*
The behaviours which students will have should be determined in advance by the participation of principals, teachers, parents and students.	27.5	58.9	13.5	39.0	46.7	14.4	*6.87*

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

This chapter includes an interpretation and synthesis of the findings in relation to relevant literature, conclusions drawn from those findings and implications and suggestions for practice and future research.

5.1. Discussion and Conclusion

5.1.1. Perceptions of teachers about TQM principles

One of the purposes of the present study was to investigate the MLO and non-MLO primary school teachers` perceptions about the principles of TQM in education. The results of the study revealed that teachers in both MLO and non-MLO schools give almost equal importance to the all dimensions of TQM which are leadership, focus on facts, focus on customer, continuous improvement, and everybody's participation. The assessment of overall research sample (both MLO and non-MLO) indicated that all TQM dimensions have the value higher than the mean value (3) of the scale. It shows that there is no TQM dimension found unimportant from the perspectives of teachers. According to the findings, focus on customer dimension was determined as the least important dimension (M=3.77 for

MLO schools and M=3.66 for non-MLO schools) among the five dimensions of TQM by the perceptions of teachers.

These results are consistent with the findings of Ensari` s (2001) research, conducted 1998-1999 academic year in connection with current quality understanding of all correspondents (students, parents, teachers and administrators) of primary and secondary level educational institutions. He found that teachers were determined as the group who give importance to the quality concepts the most with the importance higher than the mean value (M=3,5) of the scale and being customer focused was determined as one of the least important quality concepts.

These results also show similarities with the research findings of Bayrak and Ağaoğlu (1998) carried out in connection with the opinions of teachers and administrators in primary education schools related with TQM approach. According to the results of the study, overall quality tendencies of teachers and administrators have the improving features and submit an overview which will commence an application of the information related with TQM approach.

The findings of the present study were also supported by Ford` s (1998) research. In his research, findings showed evidence of high awareness of TQM principles and concepts among teachers and administrators in the schools all of which have to some degree implemented TQM principles for at least three years.

The results of the present study also indicated that there was no significant difference between the perceptions of MLO and non-MLO school teachers on the five dimensions of TQM with respect to genders, years of experience and the school of graduation which means teachers in MLO and non-MLO schools were aware of TQM principles. A possible explanation for this result of the present study might be

that teachers in MLO schools were aware of the principles of TQM before it is brought as a requirement under the heading of TQM. In other words, all teachers in MLO and non-MLO schools believe the importance of TQM. As it is mentioned before, the results of Bayrak and Ağaoğlu (1998) and Ensari (2001) support this explanations. In spite of their samples not consisting MLO schools, teachers demonstrated high awareness to the TQM concepts.

On the other hand, Rodgers (1998) investigated teacher perceptions of TQM practices in public elementary schools. The study found that one of the 56 public school districts was implementing TQM practices. Based on the data, there was a significant difference between teachers' perceptions in a Total Quality School versus teachers in a non Total Quality School in all nine surveyed areas which are strategic planning, data analysis, staff training, staff involvement, evaluation of services, customer satisfaction, and student achievement.

5.1.2 Perceptions of teachers about the implementation degree of TQM principles

The other purpose of this study was to investigate the perceptions of teachers in MLO and non-MLO schools on the degree of the implementation of TQM principles in their schools. Considering the implementation of TQM principles in schools, the results showed that overall principles of TQM are sometimes being implemented in MLO and non-MLO schools which can be considered as low-level. Regarding the implementation degree of TQM principles based on the five dimensions, in both MLO and non-MLO schools, all dimensions are implemented almost at equal

degrees. According to the perceptions of teachers Full implementation of all principles of TQM has been achieved neither in MLO nor in non-MLO schools. However in some of the previous studies the principles of TQM were found to be applicable by teachers, principals and supervisors in primary schools (Uysal 1998; Gülşen 2000; and Tok 2001).

The results also indicated that there was no significant difference between MLO and non-MLO school teachers` perceptions related to the implementation degree of TQM principles in twenty-eight TQM proposals among the thirty-six TQM proposals in the questionnaire; in other words, only in eight TQM proposals a significant difference was found. According to the findings, there is only one proposal showed a significant difference in MLO schools. The proposal was that "a committee should be established in order to check and evaluate the results of the activities concerning the improvements of education process". Based on the findings, this proposal has been applied in MLO schools more than in non-MLO schools. This finding can be an evidence for TQM implementations` efforts in MLO schools as required by the Ministry of Education.

Overall assessment of the results showed that despite the high level of teachers` desire to accept the principles of TQM, the implementation of its principles are realized at low level in both MLO and non-MLO schools. The reason for that can be the insufficient arrangements of the necessary educational substructure needed to be formed for TQM applications. In the studies of Tozkoparan (1997) and Demirdas (1997) it was revealed that current educational substructure and management system in education are not appropriate for TQM applications. Morever, the main reason for this finding in schools, especially in MLO schools might be explained by the

insufficient TQM training which has to be given by the school administrators to the teachers or by the insufficient TQM training which has to be given by the educators of Ministry of Education to the school administrators. Because there are various studies (Bryant,1995; Sadler, 1996; Robinson,1996; Elliot, 1997; Rodgers, 1998) reporting the significant increase in teachers' and administrators' perceptions about TQM and in school improvement, student achievement, teacher empowerment and school customers` satisfactions, when the training activities on TQM arranged well and ongoing for the teachers and administrators.

Another reason for this finding of the present study can be the problems in the implementation phase explained by the researchers (Türkmen, 1995; Arkış, 1997 and Ünal, 1999). As it was mentioned before, these are lack of management's support, management's resistance to change, lacking of creating consciousness of TQM, not supporting the TQM applications by rewards, and lacking of continuous education which is the most important of all.

5.2. Implications for Practice and Research

Several implications for practice can be drawn from the findings of the present study. The findings indicated that there was no significant difference between the perceptions of MLO and non-MLO school teachers. According to the requirements of the project mentioned earlier, administrators were supposed to be trained by the Ministry of Education and then they would have trained teachers about TQM. Therefore, the results of the present study show that TQM trainings of teachers in MLO schools might not be fulfilled by the administrators, sufficiently. The main reason of this can be that TQM trainings arranged by Ministry of Education for

school administrators did not have an impact on the perceptions about TQM approach. Moreover, the results also revealed that in spite of high level of awareness of teachers in both MLO and non-MLO schools about TQM principles, the implementation level of these principles in the schools are realized at low levels.

According to these results of the present study, it can be suggested that there is a need for additional TQM training for teachers in MLO schools and especially for school administrators, because firstly administrators should believe in the importance of TQM in schools if the TQM training of the teachers will be given by the administrators and it should be considered that management's commitment is the basis of TQM implementations; in other words, without leadership it is impossible to implement TQM approach in schools (Beterfield, 1995) It should be also considered that in-service training programs should be continuous. Moreover, a continuous and detailed monitoring and assessment process of the implementation of TQM principles in schools is needed to be conducted by Ministry of Education .

Results of this study may also have several implications for future research. First, in this study only teachers' perceptions were considered. However, administrators, parents and even students' perceptions can also be investigated .

Second, in this study, only primary education school teachers' perceptions about TQM in education and its implementations degree were investigated. Such a study can also be conducted for high schools teachers' perceptions.

Finally, more studies are needed to investigate the reasons why the implementation degree of TQM principles fulfilled at low levels. For example, the effectiveness of the training programs provided by the Ministry of Education for principals should be evaluated.

REFERENCES

Akgül, M. K. (1998). Toplam Kalite Yaklaşımı İçinde Sürekli Yenilenen Eğitim Sistemleri Nasıl Kurulur? Standard Dergisi, 433, 84-91.

Arkış, N. (1997). Kalite Çemberlerinin Amaçları. Verimlilik Dergisi, Özel Sayı, 155-170.

Baim, J., & Dimperio, J. C. (2001). Total Quality: A Gifted Idea May Be Failing. School Administrator, 58, 51-54.

Bank, J. (1992). The Essence of TQM. London: Prentice Hall.

Başkan, G. A., & Aydın, A. (2000). Eğitim Sisteminde İnsan Unsuru ve Toplam Kalite Yönetimi Anlayışı. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 18, 51-55.

Bayrak, C., & Ağaoğlu, E. (1998). İlköğretim Okullarındaki Yönetici ve Öğretmenlerin Toplam Kalite Yönetimine İlişkin Görüşleri. Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 13, 23-37.

Besterfield, D.H., Besterfield, C. M., Besterfield, M., & Besterfield, G. H. (1995). Total Quality Management. New Jersey: Prentice Hall.

Bonstingl, J. J. (1993). The Quality Movement: What's it really about? Educational Leadership, 51, 66-69.

Bonstingl, J. J. (2001). Schools of Quality. California: Corwin Press.

Bozkurt, R. (2001). Örgütsel Mükemmellik Arayışı: Toplam Kalite Yönetimi. Verimlilik Dergisi, MPM Yayını, Mert Matbaası.

Brown, G. M. & Swenson, R. (1990). What Doing TQM Really Means? In Winchell, W. (1992). TQM Getting Started and Achieving Results With TQM. Society of Manufacturing Engineers.

Bryant, S. L. (1995). A case study of the leadership role of principals in the commitment to quality project in Virginia. Dissertation Abstracts International, 56 (4).

Bulut, Ö., Gökbunar, R., Çivi, E., & Öztürk, M.E. (1997). Eğitim Yönetiminin Çağdaşlaştırılması: Eğitimde TKY Uygulaması ve Yararları. 2.TKY Makale Yarışması, Ödül Kazanan Makaleler, Kal-Der Yayınları, 40-47.

Celep, C. (1999). Okul Yönetiminde TKY. In Çoruh, R. (1999). Yükseköğretimde TKY Prensiplerinin Uygulanması. Ankara: Haberal Eğitim Vakfı.

Dahlgaard, J. J. & Kristensen, K. (1995). TQM and Education., Total Quality Management, 6(5), 445-456.

Deming, W. E. (1982). Out of the Crisis. London: The MIT Press.

Deming, W. E. (1994). The New Economics for Industry, Goverments, Education. London: The MIT Press.

Demirdaş, H. (1997). Temel eğitimde vizyon ve konsensüs arayışları: Toplam kalite yönetimi modeli ve bir anket uygulaması, Dumlupınar Üniversitesi, Sosyal Bilimler Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi, Kütahya.

EARGED, M.E.B. (1999). Müfredat Labaratuvar Okulları MLO Modeli. Ankara: Milli Eğitim Basımevi.

EARGED, M.E.B. (2000). Müfredat Labaratuvar Okulu Uygulama Kılavuzu. Ankara: AÇEM ve 4. Akşam Sanat Okulu Matbaası.

Elliot, D. G. (1997). Teacher perceptions and Total Quality Management teaching strategies. Dissertation Abstracts International, 59 (2).

Ensari, H. (2001). Eğitimde TKY'ye İlişkin Bazı Uygulamalar. Kal-Der Forum Dergisi, 1 (1), 18-23.

Ercan, R. (1999). Eğitimde Toplam Kalite Yönetimi, Marmara Üniversitesi, Fen Bilimleri Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi, İstanbul.

Erdoğan, İ. (1995). Toplam Kalite Yönetimi Anlayışının Eğitim Kurumları İçin Yorumlanması. Yaşadıkça Eğitim Dergisi, 55, 27-32.

Flood, R. L. (1993). Beyond Total Quality Management. England: John Wiley & Sons.

Ford, M. G. (1998). A multi-site case study: Total Quality Management within a Texas school district. Dissertation Abstracts International, 59 (4).

Goetsch, D. L., & Davis, S. B. (1997). Introduction to Total Quality. Quality Management for Production, Processing and Services. New Jersey: Prentice Hall.

Greenwood, M. S., & Gaunt, H. J. (1994). Total Quality Management for Schools. London: Cassell.

Gülşen, C. (2000). Toplam Kalite Yönetimi`nin ilköğretim ve ilköğretimde teftiş sistemine uygulanabilirliği, Gazi Üniversitesi, Sosyal Bilimler Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi, Ankara.

Hequet, M. (1995). Quality goes to school. Training, 32 (9), 47-57.

Hergüner, G. (1998). Eğitimde Toplam Kalite Uygulamasının Sağlayacağı Yararlar. Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 13, 11-21.

İge, P. (1997). Eğitimde Toplam Kalite Yönetiminin Uygulanmasının Sağlayacağı Yararlar. Eğitimde Kalite Dergisi, 98, 6-7.

James, P. (1996). Total Quality Management. An Introductory Text. USA: Prentice Hall.

Johnson, R. S. (1993). TQM: Leadership for the Quality Transformation. Wisconsin: Aspe Quality Press.

Kaufmann, R., & Zahn, D. (1993). Quality Management Plus: The Continuous Improvement of Education. California: Crowin Press.

Kehoe, D. F. (1996). The Fundamentals of Quality Management. London: Chapman & Hall.

Kilmer, L. C. (1998). Total Quality Management: A tool for school improvement. Dissertation Abstracts International, 59 (10).

Lembeck, E. J. (1995). Total Quality Management: One school's tool for change. Dissertation Abstracts International, 57 (6).

Logothetis, N. (1992). Managing for Total Quality Management. From Deming to Taguchi and SPC. London: Prentice Hall.

Logothetis, N. (1995). Towards a Quality Management of Education. Total Quality Management, 6, 479-487.

Lunenburg, F. C. & Ornstein, A. C. (1996). Educational Administration. Concepts and Practices. California: Wadsworth Publishing Company.

Mc Closkey, L., & Collett, D. N. (1993). Total Quality Management, A Basic Text, A Primer Guide to TQM. Massachusettes: Goal Quality Publishing Company.

McGonagill, B. (1997). Gifted education long range planning: Using time wisely with TQM. Roeper Review, 19, 200-204.

Mehrez, A., Weinroth, G. J., & Israeli, A. (1997). Implementing Quality One Class at a Time. Quality Progress, May 97, 93-96.

Mukhejee, S. P. (1995). Quality Assurance in an Education System. Total Quality Management, 6, 571-578.

Murgatroyd, S., & Morgan, C. (1992). Total Quality Management and The School. Buckingham Open University Press.

Obessian, A. A. (1998). Quality Management and system change in three suburban public school districts. Dissertation Abstracts International, 59 (7).

Paul, C. L. (1998). The relationship between the principles of Total Quality Management and school climate, school culture, and teacher empowerment. Dissertation Abstracts International, 59 (8).

Quong, T., & Walker, A. (1996). TQM and school restructuring: A case study. School Organization, 16, 219-230.

Rampersad, H. K. (2001). Total Quality Management. An Executive Guide to Continuous Improvement. Berlin: Springer.

Robinson, B. M. (1996). Total Quality Management in education: The empowerment of a school community, Dissertation Abstracts International, 57 (4).

Rodgers, C. G. (1998). Teacher perceptions of Total Quality Management practices in elementary schools, Dissertation Abstracts International, 59 (10).

Sadler, B. R. (1996). An examination of Total Quality Management as perceived by selected Alabama principals, Dissertation Abstracts International, 57 (6).

Sallis, E. (1996) Total Quality Management in Education. London: Kogan Page.

Sashkin, M., & Kiser, K.J. (1993). Putting TQM to Work. What TQM Means, How to Use It and How to Sustain It Over the Long Run. San Francisco: Berrett-Kohler Publishers.

Saylor, J. H. (1992). TQM Simplified a Practical Guide. New York: McGraw-Hill.

Schmidt, W. H., & Finnigan, J. P. (1993). A Practical Guide for Managing in a Total Quality Organization. San Francisco: Jossey Basss Publishers.

Scott, M. J., & Palmer, J. (1994). Eiqht Principles for "Total Quality" Schools. Education, 115, 139-144.

Shiba, S., Graham, A., & Walden, D. (1993). A New American TQM. Four Practical Revolutions in Management. Oregon: Productivity Press.

Suba, K.G. (1997). School qualify satisfaction survey: Assessing expectation for and satisfaction with quality of education provided by elementary schools, Dissertation Abstracts International, 58 (7).

Şişman, M., & Turan, S. (2001). Eğitimde Toplam Kalite Yönetimi. Ankara: Öncü Basımevi.

Tenner, A. R., & De Toro, I. (1992). Total Qualıty Management. Canada: Wesley Publishing Company.

Tok, Ş. (2001). İlköğretim Kurumlarında Toplam Kalite Yönetiminin Uygulanabilirliğine İlişkin Öğretmen ve Yönetici Görüşleri, Eğitim Araştırmaları Dergisi, 3-4,110-115

Tozkoparan, G. (1997). Sıfır Hatalı İnsanı Yaratmak İçin Eğitimde Toplam Kalite, Verimlilik Dergisi, Özel Sayı, 117-130.

Türkmen, İ. (1995). Toplam Kalite Yönetimine Geçiş ve Uygulamada Başarıyı Engelleyen Faktörler, Verimlilik Dergisi, Özel Sayı, 143-154.

Uysal, H. (1998). Toplam Kalite Yönetimi`nin ilköğretime uygulanabilirliği, Gazi Üniversitesi, Sosyal Bilimler Enstitüsü, Yayımlanmamış Yüksek Lisans Tezi, Ankara.

Ünal, S. (1999). Eğitim Örgütlerinde Toplam Kalite Yönetimi Öğeleri Ve Uygulamalarda Karşılaşılan Engeller. Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 19, 341-351.

Yahyagil, M. Y. (1997). Eğitim Sistemine Toplam Kalite Uygulamasının Sağlayacağı Yararlar. 2.TKY Makale Yarışması, Ödül Kazanan Makaleler, Kal-Der Yayınları, 40-47.

APPENDICES

APPENDIX A

(ANKET HAKKINDA AÇIKLAMA)

Sayın öğretmenim,

Bu anket ilköğretimde niteliğin artırılması hakkında, siz öğretmenlerin ve okul yöneticilerinin görüşlerinin ortaya çıkarılmasını amaçlayan bir çalışma kapsamında hazırlanmıştır. Bu anketteki sorulara vereceğiniz samimi yanıtlar, ilköğretimin iyileştirilmesi çalışmalarına ışık tutacaktır. Araştırma ile elde edilen bilgiler- veriler, birleştirilerek değerlendirilecek ve araştırmanın amaçları dışında kullanılmayacağı gibi kimseye de verilmeyecektir. Bu yüzden ankete adınızı yazmanız gerekmemektedir. Katkılarınız için teşekkür ederim.

Özlem Koral
Orta Doğu Teknik Üniversitesi
Eğitim Bilimleri Bölümü-Yüksek Lisans Öğrencisi

BÖLÜM I: KİŞİSEL BİLGİLER

Bu bölümde kişisel bilgilere ilişkin sorulara yer verilmiştir. Lütfen size uygun seçeneğin yanındaki parantezin içine (X) işareti koyunuz ve doldurulması gereken boşlukları doldurunuz.

1. Okulunuzun adı:.....

2. Cinsiyetiniz: 1. ( ) Kadın 2. ( ) Erkek

3. Kaç yıldır öğretmenlik yapıyorsunuz ? 1. ( ) 1 yıldan az
2. ( ) 1-5 yıl
3. ( ) 6 -10 yıl
4. ( ) 11-15 yıl
5. ( ) 16-20 yıl
6. ( ) 21 yıl ve üzeri

4. Branşınız: .....

5. En son mezun olduğunuz okul: 1.( ) Önlisans Programı
2. ( ) Eğitim Enstitüsü
3. ( ) Lisans Tamamlama Programı
4. ( ) Fakülte
5. ( ) Yüksek Lisans
6. ( ) Doktora
7. ( ) Başka (Lütfen yazınız) .....

APPENDIX B

(QUESTIONNAIRE)

ÖNERMELER	Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen Katılıyorum	Herzaman	Bazen	Hiç
	Katılma Dereceniz					**Okulunuzda Uygulanma Derecesi**		
1. Okulun hedefi, bütün halinde başarının ve sürekli iyileşmenin yollarını arayarak amaç sürekliliği oluşturmak olmalıdır.								
2. Okulda, kaliteyi, teknolojinin değil;insanın ürettiği anlayışı, benimsenmelidir.								
3. Okulda, yönetim ve öğretimde gelişme sağlamak için tüm okul çalışanları sürekli olarak eğitilmelidir.								
4. Okulda eğitim-öğretim faliyetlerinin uygulanmasında kısa, orta ve uzun dönemli planlamalar yapılmalıdır.								
5. Okul sürekli olarak değişen ve ve gelişen bir kurum olmalıdır.								
6. Okulda, eğitim-öğretim süreçlerini iyileştirmeye yönelik faliyetler, takım çalışmaları yapılarak gerçekleştirilmelidir.								
7. Okulda, eğitim-öğretim süreçlerini iyileştirmeye yönelik faliyetlerin sonuçlarını, denetleyip, değerlendirerek gelişmesini sağlayan bir kurul oluşturulmalıdır.								
8. Okulda, yöneticiler ve öğretmenler, eğitim alanındaki yenilik ve gelişmeleri sürekli olarak takip etmelidir.								
9. Okul, eğitim dışındak ilgili diğer alanlardaki uygulamaları ve teknolojideki gelişmeleri takip ederek, eğitime uyarlamalıdır								
10. Okul başarısı, öğrencilerin sınavlardan aldıkları puanlar ile değil; okulun, amaçlarına ne derece ulaştığına bakılarak belirlenmelidir.								
11. Okul, öğrencilerin, kendilerine sunulan bilgileri ezberledikleri yer değil; bilgiye nasıl ulaşacaklarını ve kullanacaklarını öğrendikleri bir yer olmalıdır.								
12. Eğitim-öğretim hizmetinde hatalar önceden kestirilerek zamanında müdahale edilmelidir.								
13. Okuldan mezun öğrencilerin daha sonraki hayatlarında ne ölçüde başarılı oldukları düzenli olarak takip edilmelidir.								
14. Okulda öğrenciler birbirine rakip değil; başarılarını artırmak için işbirliği yapan kişiler olmalıdır.								
15. Okulda öğretmenler, birbirine rakip değil; aynı amaç için çalışan ve işbirliği yapan kişiler olmalıdır.								
16. Öğretmenler; öğrencilerin daha başarılı olmaları için önlerindeki engelleri kaldırmaya çalışan kişiler olmalıdır.								
17. Öğrenciye kazandırılacak davranışlar; yöneticilerin, öğretmenlerin, öğrencilerin ve velilerin katılımıyla önceden belirlenmelidir.								
18. Öğrencilerin öğretim yaşantıları, öğrencilerin ilgi, istek, beceri ve ihtiyaçlarını dikkate alacak biçimde düzenlenmelidir.								
19. Okulun, öğrencilerin eğitim-öğretim ile ilgili şikayet, eleştiri ve beklentileri konusunda düzenli olarak bilgi toplamalıdır.								
20. Okul, okul çalışanları, öğrenci, veli ve çevrenin gelişen ve değişen beklentilerine cevap verebilmelidir.								
21. Okul; öğretmenlerin ve diğer okul çalışanlarının, eğitim-öğretim ile ilgili şikayet, eleştiri ve beklentileri konusunda düzenli olarak bilgi toplamalıdır.								

	Katılmıyorurm	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen Katılıyorum		Herzaman	Bazen	Hiç
22. Öğretim programları ve uygulamaları**;** velilerin, öğrencilerin ve çevrenin beklentilerinin önünde olmalıdır.									
23. Okulun başarısı; öğrencilerin, ailelerin ve çevrenin okuldaki verilen eğitimden ne derece doyum elde ettiklerine bağlı olarak belirlenmelidir									
24. Okulun, velilerin eğitim-öğretim ile ilgili şikayet, eleştiri ve beklentileri konusunda düzenli olarak bilgi toplamalıdır.									
25. Okul, velileri müşterileri ve başarıya ulaşmada ortakları olarak görmelidir.									
26. Okuldaki eğitim-öğretimin kalitesi, okulun belirlediği ölçütlere göre değil; okulun sunduğu hizmetten faydalananların memnuniyetine göre belirlenmelidir									
27. Okul, çevrenin (alt-üst okul, piyasa...vb.) eğitim-öğretim ile ilgili şikayet, eleştiri ve beklentileri konusunda düzenli olarak bilgi toplamalıdır.									
28. Öğrenci, öğretmen, veli, yöneticiler ve çevre aynı amaç için çalışmalı, işbirliği yapmalı ve birbirlerini desteklemelidir.									
29. Okulda en başarılı çalışmalar; yöneticiler, öğretmenler, diğer personel, öğrenciler ve velilerin kararlara katılımı ile gerçekleştirilebilir.									
30. Okul yöneticileri; okul çalışanları ve öğrencilerin daha başarılı olmaları için önlerindeki engelleri kaldıran ve onlara destek vermeye çalışan liderler olmalıdır.									
31. Okul yöneticileri, kendi liderlik etkinliklerini dönemsel olarak gözden geçirmelidir.									
32. Okul yönetimi, , hızlı, akıcı, çok yönlü iletişim şeklini yeğlemelidir.									
33. Okul yönetimi, okulda korkuya ve baskıya değil; sevgi, saygı ve güvene dayalı bir ortam yaratmalıdır.									
34. Okul yöneticisi, hiyerarşik engelleri kaldırarak, okul içinde birlikte çalışmayı özendirici bir ortam hazırlamalıdır.									
35. Okul yöneticisi, okul çalışanlarının fikir, yetenek ve girişimciliklerinden faydalanmalıdır.									
36. Okul yöneticisi, çalışanları ve öğrencileri sorumluluk almaya teşvik edici bir ortam yaratmalıdır.									
37. Okul yönetimi, okul çalışanları ve öğrencilerin yaptıkları işten gurur duymalarına yardımcı olmamalıdır.									
38. Okul yönetimi, başarılı çalışmalar için okulda ödül sistemi kurmalıdır.									
39. Okul yönetimi, çalışanlarını sadece maddi ödüllerle değil, kendini gerçekleştirme, değer verme , takdir etme gibi unsurlarla motive etmelidir.									
40. Okul yöneticisi, okulda ortak bir amaç duygusu oluşmasını sağlamalıdır.									
41. Okul yönetimi, öğrenme ve öğretme etkinliklerinde sürekli olarak daha iyiyi arama çabalarını, okul geneline yaygınlaştırmalıdır.									
42. Okul yönetimi, takım çalışması yaparak, örgütsel bir misyon ve vizyon belirlemelidir.									
43. Okul yönetimi, en az maliyetle eğitimde en yüksek kaliteyi sağlamalıdır.									
44. Okul yönetimi, sadece işlerin doğru yapılmasını değil; doğru işlerin yapılmasını sağlamalıdır.									
45. Okul yönetimi, eğitim-öğretim hizmetlerinin kalitesini destekleyecek girdileri (bilgi, araç- gereç, öğretmen...vb) yerinde ve zamanında doğru olarak kullanılmasını sağlamalıdır.									

	Katılmıyorurm	Katılmıyorum	Kararsızım	Katılıyorum	Tamamen Katılıyorum		Herzaman	Bazen	Hiç
46. Okul yönetimi, okul ihtiyaçlarının karşılanmasında, hizmet sunulan çevrenin imkanlarının işe koşulmasını sağlamalıdır.									
47. Okulda, öğretmenlerin bireysel başarısından çok; grup halinde başarısını belirlemeye yönelik kontrol yapılmalıdır.									
48. Okulda, ölçme ve değerlendirmeler, öğrenme ve öğretme sürecini düzeltme ve geliştirmeye yönelik olarak yapılmalıdır.									
49. Öğrenme ve öğretme stratejileri, sürekli olarak gözden geçirilmelidir.									
50. Okul denetimi, hatayı ve eksikliği bulmak amacıyla değil; düzeltme ve geliştirmeye yönelik olarak yapılmalıdır.									
51. Eğitimde bilgiden çok ,bilgi edinme süreci ve üretme yeteneği kontrol edilmelidir.									
52. Denetim, daha ziyade okul çalışanlarının profesyonel gelişimini desteklemeye yönelik olarak yapılmalıdır.									
53. Okul yöneticileri, öğretmenler ve diğer personel kendi kendilerini denetlemelidir.									
54. Denetim sonrası değerlendirmeler, denetlenenlerle birlikte yapılmalıdır.									

APPENDIX C

Descriptive statistics related to the perceptions of teachers in MLO and non –MLO schools

ITEM NO	MLO SCHOOLS				NON-MLO SCHOOLS				TOTAL			
	N	%	M	SD	N	%	M	SD	N	%	M	SD
1	197	100	4.53	.76	208	99.5	4.58	.69	405	99.8	4.56	.72
3	197	100	4.42	.80	205	98.1	4.52	.78	402	99	4.47	.79
4	197	100	4.47	.77	206	98.6	4.56	.82	403	99.3	4.52	.80
5	194	98.5	4.65	.60	203	97.1	4.62	.75	397	97.8	4.63	.68
6	196	99.5	4.50	.69	208	99.5	4.46	.82	404	99.5	4.48	.76
7	197	100	4.28	.93	207	99	4.28	1.09	404	99.5	4.28	1.01
8	197	100	4.74	.47	208	99.5	4.73	.59	405	99.8	4.73	.53
9	195	99	4.57	.67	206	98.6	4.54	.65	401	98.8	4.56	.66
12	194	98.5	4.48	.68	209	100	4.43	.83	403	99.3	4.45	.76
14	197	100	4.56	.68	208	99.5	4.62	.63	405	99.8	4.59	.65
15	197	100	4.76	.48	208	99.5	4.61	.79	405	99.8	4.68	.66
17	197	100	4.54	.68	209	100	4.50	.80	406	100	4.52	.74
19	196	99.5	4.56	.61	208	99.5	4.42	.77	404	99.5	4.49	.70
21	196	99.5	4.45	.68	209	100	4.34	.86	405	99.8	4.44	.78
23	196	99.5	3.75	.99	207	99	3.65	.98	403	99.3	3.70	.99
25	195	99	3.82	1.05	206	98.6	3.85	1.08	401	98.8	3.84	1.06
26	197	100	3.55	1.20	208	99.5	3.37	1.20	405	99.8	3.45	1.20
27	196	99.5	3.74	.97	208	99.5	3.64	.99	404	99.5	3.69	.99
30	197	100	4.73	.49	209	100	4.65	.71	406	100	4.69	.61
31	197	100	4.73	.54	209	100	4.58	.72	406	100	4.65	.64
32	193	98	4.63	.65	208	99.5	4.54	.78	401	98.8	4.58	.72
33	197	100	4.77	.50	208	99.5	4.75	.54	405	99.8	4.76	.52
34	197	100	4.81	.40	208	99.5	4.68	.58	405	99.8	4.74	.50
35	197	100	4.81	.40	209	100	4.77	.47	406	100	4.79	.44
36	197	100	4.77	.42	208	99.5	4.72	.54	405	99.8	4.74	.48
37	197	100	4.74	.47	208	99.5	4.70	.60	405	99.8	4.72	.54
38	196	99.5	4.60	.71	207	99	4.44	.97	403	99.3	4.52	.86
39	197	100	4.76	.50	209	100	4.67	.62	406	100	4.71	.57
43	196	99.5	3.92	.96	209	100	3.80	.80	405	99.8	3.86	.88
44	196	99.5	4.67	.54	209	100	4.62	.54	405	99.8	4.64	.54

48	196	99.5	4.64	.56	205	98.1	4.68	.56	401	98.8	4.66	.56
49	196	99.5	4.70	.50	205	98.1	4.70	.57	401	98.8	4.70	.54
50	195	99	4.72	.52	207	99	4.75	.53	402	99	4.74	.53
51	195	99	4.61	.68	209	100	4.59	.62	404	99.5	4.60	.65
53	197	100	4.60	.79	207	99	4.63	.65	404	99.5	4.61	.72
54	194	100	4.69	.64	209	100	4.66	.68	403	99.3	4.67	.66

APPENDIX D

Descripitive statistics related to the perceptions of teachers about the degree of TQM implementation

ITEM	MLO SCHOOLS				NON-MLO SCHOOLS				TOTAL			
	N	%	M	SD	N	%	M	SD	N	%	M	SD
1	197	100	2.1	.52	207	99	2.17	.59	404	99.5	2.15	.55
3	197	100	1.95	.56	207	99	1.87	.59	404	99.5	1.91	.57
4	197	100	2.02	.61	208	99.5	1.96	.62	405	99.8	1.99	.62
5	193	98	1.90	.62	201	96.2	1.98	.61	394	97	1.94	.62
6	197	100	1.91	.58	208	99.5	1.88	.54	405	99.8	1.90	.56
7	193	98	1.76	.60	207	99	1.55	.54	400	98.5	1.65	.58
8	197	100	1.97	.47	208	99.5	1.95	.53	405	99.8	1.96	.50
9	197	100	1.87	.52	209	100	1.80	.56	406	100	1.84	.54
12	195	99	1.69	.58	209	100	1.91	.55	404	99.5	1.80	.58
14	196	99.5	1.79	.56	208	99.5	1.86	.57	404	99.5	1.82	.56
15	197	100	1.83	.63	209	100	1.97	.66	406	100	1.90	.65
17	195	99	1.76	.57	208	99.5	1.84	.61	403	99.3	1.80	.58
19	196	99.5	1.59	.55	209	100	1.62	.55	405	99.8	1.60	.55
21	193	98	1.63	.57	208	99.5	1.75	.55	401	98.8	1.70	.56
23	195	99	1.67	.57	208	99.5	1.75	.53	403	99.3	1.71	.55
25	192	97.5	1.80	.58	207	99	1.74	.55	399	98.3	1.77	.56
26	196	99.5	1.71	.56	206	98.6	1.65	.54	402	99	1.68	.55
27	195	99	1.54	.58	208	99.5	1.57	.53	403	99.3	1.56	.56
30	196	99.5	1.82	.58	209	100	1.83	.54	405	99.8	1.82	.56
31	195	99	1.72	.64	209	100	1.66	.56	404	99.5	1.69	.60
32	197	100	1.75	.60	208	99.5	1.85	.55	405	99.8	1.80	.58
33	197	100	1.86	.62	207	99	2.16	.56	404	99.5	2.01	.61
34	197	100	1.87	.64	208	99.5	1.98	.57	405	99.8	1.93	.61
35	197	100	1.93	.58	209	100	1.94	.57	406	100	1.94	.58
36	197	100	1.96	.61	208	99.5	1.96	.56	405	99.8	1.96	.59
37	197	100	1.95	.61	206	98.6	1.96	.54	403	99.3	1.96	.58
38	195	99	1.75	.69	207	99	1.8	.63	402	99	1.80	.66

39	196	99.5	1.80	.62	209	100	1.81	.60	405	99.8	1.80	.61
43	196	99.5	1.87	.62	209	100	1.95	.58	405	99.8	1.91	.60
44	196	99.5	1.87	.51	208	99.5	2.03	.52	404	99.5	1.96	.52
48	197	100	1.79	.60	206	98.6	1.85	.60	403	99.3	1.82	.60
49	196	99.5	1.79	.57	207	99	1.89	.57	403	99.3	1.84	.57
50	197	100	1.75	.57	207	99	1.90	.57	404	99.5	1.82	.57
51	195	99	1.74	.52	209	100	1.77	.55	404	99.5	1.75	.54
53	196	99.5	1.75	.57	207	99	1.90	.59	403	99.3	1.83	.58
54	196	99.5	1.57	.56	208	99.5	1.71	.63	404	99.5	1.64	.60