EDUCATIONAL TECHNOLOGY AND TOTAL QUALITY MANAGEMENT

Dr M. Selvam

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PREFACE

The process of LPG (Liberalization, Privatization, and Globalization) has brought a radical transformation in all sectors of the economy. All economic activities have been exposed to domestic as well as global competition. In this context, the educational organisations have started the process of restructuring, reorganizing strategies and resource planning for maintaining the quality services to society. Hence forth 21st century is known as the Century of 'Quality and Technology'

Education is an important index of human development. Among various levels of education, Elementary education has a pervasive and influential impact on physical and mental development of students.

In India, recently, the subject education encompassing Total Quality Management and Educational Technology has been gaining attention among academicians. It needs periodical research to keep pace with the emerging development in this field. Total Quality Management and Educational Technology are essential areas to pursue research as the findings and recommendations always go a long way in having policy level impact, upon the elementary school students, teachers, head masters, parents, Block Educational Officers, District Educational Officers and Chief Educational Officers. At the same time, the research activities carried out, documented should also get popularized by the print media or the mass media.

Based on the above view, the author documented research entitled "The Attitude of Primary Teachers towards Total Quality Management in relation to their Attitude towards Educational Technology" is popularised by this book named "Educational Technology and Total Quality Management."

I am thankful to Dr. E. Maanhvizhi, Lecturer, IFIC Branch, DIET, Uthamacholapuram, Salem, Tamil Nadu for her support in bringing out this book.

I am confident that this book would provide immense value to Research Scholars, Educationist, Field Functionaries and Administrators in the field of elementary education.

This book will be more useful to students of B.Ed., M.Ed., faculty members of DIETs and teachers in the field of elementary education, Rural development, Social Science Departments, Pedagogist and General Public.

Dr M. Selvam

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ABOUT THE AUTHOR

Dr M. Selvam, Ph.D., in Education is presently serving as Principal, DIET, Uthamacholapuram, Salem, Tamil Nadu. He discharges the duties as Faculty member for Tamil Nadu School Leadership Academy, Kothagiri, the Nilgiris. He performed as author, academic in-charge and content supervisor for Tamilnadu Textbook Corporation's books named Practicum-D.T.Ed.,(2003), Science Textbook-8th standard and Science Textbook-10th Standard (2019).

He has completed 13 Action Researches, 3 Research Projects and 1 Case study in Education and Educational Management. He has worked as State expert for training on Total Quality Management in Education. He has acted as Key Resource Person for 5 in-service teacher education programmes and as Resource Person for 13 in-service programmes in Tamil Nadu and also in Union Territories such as Pondicherry and Andaman & Nicobar Islands. He authored 15 teacher training modules.

He has published 60 academic papers and research articles in International, National and State Level Journals and Magazines. He has presented papers in over 20 Conferences, Seminars and Workshops. He has worked as author, associate author and associate editor for 4 Seminar Compendiums. He has produced 10 intervention booklets for Action Research. He voluntarily contributed the series of articles in the magazine named 'Dear Students'.

He has introduced new ideas in education such as 'Sema-Stubbic Tutoring System', 'Tempus Teacher', 'Material-Learner– 'Facilitator Approach' and 'Systems Mapping Philosophy'. He has completed 5 voluntary educational projects named 'Literary Project for Mobile Population', Lesson Dictionary Project, 'Physical Development for Primary Students, Reading Skill development, and Pallikkoru Panaimaram Project. He has assisted in NCF–2005 as Sub-Committee

member for Primary Education in State Level. He has scripted more than 40 programmes in AIR, Trichirappalli, Pozhil FM, Thuduppatty and KVK Radio, Namakkal.

He has been conferred "Paryavaran Dronacharya Award" with Silver Medal (1997) by ICWES; "Dr Salim Ali Memorial Feather Conservation Award" (1998) by GESCSSA; " BOLT Award"(2004) by Air India, The Hindu and Dinamalar; "Excellence Award with Cash Prize (2004) by DTERT, Chennai and Vocational Excellence Award (2019) by Rotary Club of Salem Galaxy for his outstanding contribution in the Teaching and Administration Field.

ABOUT THE BOOK

Jawaharalal Nehru, our first prime minister of India rightly pointed out that the future of the nation is determined by the classrooms of India. Similarly the calibre of the classroom is governed by Educational Technology(ET) and Total Quality Management(TQM).

This book is about ET&TQM and their existence in the academic system. In recent times, ET & TQM are essential areas in educational field. Already ET is strongly rooted in the schooling system. TQM has emerged from the corporate sector and it is being vastly used within the business limits. It was incorporated in engineering education in the last decade. This book has been attempted to trace the reality of TQM in teaching and learning processes. Really it is a pioneering exploration of TQM in edificational sector.

ET & TQM can take justifiable credit for advances in the knowledge enlightment zone, but improvement still lies ahead and this book suggests directions towards future progress.

One of the most notable feature of this book is its careful synthesis of ET & TQM in scholastic part. Another popular highlight is extensive discussion of actuality of ET & TQM in the instruction system. Moreover the book contains a strong section on TQM in education category and a new emphasis on the closeness between TQM & ET in the pedagogical area.

It is our earnest hope that this book will receive an enthusiastic response from teaching practitioners like teachers, educators, instructors, tutors, academic trainers, educationist and educational management professionals in meeting the demands of the educational sector.

New Delhi,
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Dr. SB Nangia
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Chapter-1
THEORETICAL FRAME WORK

1.0. INTRODUCTION

"The purpose of education is not to produce people who loiter for jobs, but to produce responsible citizens". - Sardar Patel.

Education is the learning process by which values, attitudes, information and skills are acquired and integrated. Education is bound up with human race. Its boundaries are as wide as those of life. Its implications are rich and varied. It is a continuous process that occurs from birth to death. It is imparted in oral and written form. The UNESCO (United Nations Educational, Scientific and Cultural Organization) has defined literacy in very clear terms that 'literate is an individual who is able to read and write, understand the sentences of daily life'. It should aim at all round development of students. It should impart knowledge and information and also develop character and personality. It should broaden the out look, develop skill and abilities and prepare the students for life and world.

Dreze and Sen (2002) deem education and health as important 'enabling factors' to enhance development. Education is the cornerstone of economic, social and cultural development of a country. An appropriate education system cultivates knowledge, better skills, positive values and attitudes among the people, especially those who acquire it. Education is the main force which influences the quality of life. It has assumed more importance today than even before because in its present role, it is adding new dimensions to our present and future scenario.

Education is a unique feature that plays the most dominant role in the life of mankind. A man who is fully educated is the real human resource and is considered as an important, valuable and tangible asset

to the country. The economic development of the country depends fully upon such real assets. For the reconstruction of the society, education can be modified and made realistic. The aim of the education is not only the acquisition of information but also the development of that best of mind and attitude, which will make us responsible citizens. Education itself is the basic human right and used as a tool to make sensitive about issues and problems. It uses culturlization, conditioning, re-conditioning, learning or re-learning techniques to bring people within the redline zone to change behaviour.

The Latin word 'education' means "bringing out the potentialities of the individual for self development". It has a very wide connotation. In its fundamental sense it is life itself. In an operational context it assumes several forms like primary education, secondary education, vocational education and higher education etc., each of these forms of education performs specific functions and thereby serves specific felt needs of a society. Primary education is most crucial stage of human life. It is the mile stone to build up the beautiful building of total education process, and over all development of personality of human being depends on primary education. Hence, the National Policy on Education, (NPE, 1986) strongly favoured strengthening of the primary school education.

1.1. PRIMARY EDUCATION

The first decade of this millennium aims at Education for All (EFA). Every child has a right to education besides others. Article 45 of the Constitution of India has stated as a Directive Principle that the State shall endeavour to provide free and compulsory education to all children up to 14 years of age within 10 years of commencement of the Constitution. The National Policy on Education (NPE, 1986) gives priority to Universalisation of Primary Education (UPE). Also, it recommended 'access to elementary education with success', 'promotion of equity' and 'improvement of quality'. Quantitatively, India has made phenomenal expansion in primary education. The number of primary institutions has risen to 6,42,737, the number of primary school teachers has escalated to 1,98,539 and the students' enrolment in class I-V has gone up to 110,985,877 in the year 2000. National Policy on Education (NPE, 1986) forced to improve the inattractive environment of school,

unsatisfactory condition of school buildings, lack of facilities and teaching materials etc.,

The Operation Blackboard (OB) scheme was launched in 1987-88 with the aim to improve the human and physical resources available in the primary schools of the country. The scheme provided at least two rooms, two teachers and essential teaching – learning materials to every existing primary school.

The District Primary Education Programme (DPEP) was launched in 1994, as a major initiative to achieve the objective of Universalisation of Primary Education (UPE). The programme takes a holistic view of primary education development and seeks to operationalise the strategy of UPE through district specific planning with the emphasis on decentralized criteria.

The Sarva Shiksha Abhiyan (SSA) launched by the Government of India to universalise elementary education through community ownership of the school system may remove many of the problems associated with primary and upper primary schools. The Indian Government has made a commitment to the goals of the 1990 World Conference on Education for All, held in Jomtien, Thailand. It has set a good of providing education of good quality to all primary school-age children. Improving the quality of primary education and using available resources more efficiently are priorities that no State can ignore. Efforts towards Universalisation of Primary Education (UPE) increased the number of schools, number of students and drop-out rates are on the decrease, but the question arises about the variation in the quality of education among different schools. Success and failure of any system of education has direct affinity with the effective and efficient teachers to a great extent yet other factors also play an equal important role in effective teaching-learning process viz., adequate infrastructural facilities and teaching-learning materials, socio-economic back ground of parents, interested and capable students, efficient administrators, smooth and effective interaction among students, suitability of curriculum, involvement of the community, regular supervision of schools by the higher authorities, in-service training of teachers and work load of teachers etc.,

The nation has made impressive progress towards achievement of the goal of Universalisation of Primary Education (UPE) in the last five decades. There has been enormous progress in terms of increase in the

number of institutions, teachers and students in primary education. But the quality in primary education is still lagging far behind in the system.

Commercialization, memorization, in sufficient teacher- student ratio, demotivation, no definite aims, one sided assessment, poor monitoring and evaluation, poor tie-up between schools and DIETs (District Institutes of Education and Training), poor infrastructural facilities, unplanned expansion of primary schools, lack of research / extension activities and innovations, unfulfilling the expectations of the stake holders, lack of inspiring text books are the reasons for declining quality in primary education.

1.2. QUALITY IN PRIMARY EDUCATION

Although there has been a massive expansion of primary education during the last five decades in India, the quality of primary education has been a crying concern as reflected in the reports of various committees appointed from time to time by Government of India. The global crusade to Universalize Primary Education and improve its quality is now very much on the world agenda especially in the developing countries. Globally, there is overwhelming concern regarding the quality and relevance of education.

The Education Commission's (1964-66) observation is very significant which is evident from the following lines. "Quantitatively education at all levels has shown a phenomenal development in the post independence period. But qualitative improvements in education have not kept pace with quantitative expansion and national policies and programmes concerning the quality of education could be implemented satisfactorily". The National Policy on Education (1986) states: "the new thrust in elementary education will emphasize two aspects – (i) universal enrolment and universal retention of children up to 14 years of age, and (ii) a substantial improvement in the quality of education".

The term 'Quality' has different meanings for different purposes. According to Juran (1980), Quality is 'fitness for use'. Crosby (1984) defined quality as, 'conformance to requirement'. Ishikawa (1985) 'quality product is one which is most economical, most useful and always satisfactory to consumer'. According to Deming (1986) 'quality should be aimed at needs of the customers, present and future'. Franklin (1992) argues that the narrower definition of quality as fitness for purpose derives largely from the manufacturing sector. Harvey

and Green (1993) provide a heuristic framework for attempting to define quality by suggesting that it can be viewed as excellence, as transformative, as fitness for purpose or as value for money. Besides 'quality' emphasis is on 'the continuity'. Indeed, quality is a never ending journey (Navaratnam, 1997). The word 'quality' is an expression of standard of educational inputs, processes and outcomes. The Oxford dictionary defines quality as 'degree of excellence'. It is drawn from Latin word 'Qualis' such as, of what kind. Quality is a term generally used about relative characteristic of an entity or a system with respect to time and space. The term is mostly used in comparative form either over a period of time or between two and more entities / systems. The quality education thus means degree of excellence achieved in learning through systematic instruction.

In education, perception of quality is around student's quality. The parameters can be prescribed and the institutions can be rated on the basis of their performance indicators pertaining to quality parameters. Such as, examination results, employment opportunities, reputation, standing of the institute in society etc., According to Verma (2004 a), quality in higher education can be defined in terms of satisfaction level of stake holders viz., students, teachers, parents, politicians, potential, employers, promoters, funding agencies and the public.

Generally, quality means meeting the expectations of customers. However, quality of education is more than meeting the expectations of customers. Further, measuring customer satisfaction at an educational institute might be regarded by educators as one of the greatest challenge of the quality movement. The technological definition of quality involves matching the technical quality of the product with the technological requirements through quality assurance during the educational process.

Quality of education at primary levels has some targets which is more focusing on students and their desirable achievements in scholastic and non-scholastic areas. Quality education should help every student to acquire communication skills (understanding, speaking, listening, reading and writing), knowledge, appreciation, and understanding in Mathematics, Science, language and Humanitics. It should also help every student to develop analytical thinking and self understanding and a feeling of self worth.

Quality in primary education is a multi-dimensional concept, which should embrace all its functions and activities teaching and

academic programmes, staffing, students, buildings, facilities, equipment, management, technology, services to the community and the academic environment. To attain and sustain quality, certain components are particularly relevant, notably careful selection of staff and continuous staff development, in particular through the promotion of appropriate programmes for academic staff development, including teaching / learning methodology. The quality in education strongly depends upon the quality teacher, quality materials, quality instruction and quality management.

1.3. MANAGEMENT

Management is the organ of the organization. It is concerned with both objective and subjective phenomena. It is concerned with productivity, which implies effectiveness and efficiency. It is the process of designing and maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims. It is responsible for organizing the elements of productive enterprise-money, materials, equipment, and people – in the interest of desirable ends. Management education is the process of learning values, attitudes, information and skills to achieve desired relations between resources and objectives. In the educational sector, its objectives can be characterized as follows:

(*i*) Management arranges for the construction of schools in as many locations as is feasible.

(*ii*) Management delivers inputs to the schools.

(*iii*) Management establishes a system of top-down supervision in an effort to ensure that the inputs are correctly deployed according to central guidelines and

(*iv*) Management is responsible for producing the results in student learning.

All the studies of Govinda (2002) related to Basic Education in India, in all its dimensions in the post – NPE, 1986 phases indicated that; (i) the poor and the disadvantaged have not adequately benefited, (ii) gender equity-still a long way to go and (iii) quality improvement-still to receive serious attention and hastens to underline its relevance to India. The challenges and opportunities emerging in the quality of education every where in the world are of increasing complexity,

resulting from a number of factors: (i) the ever-widening horizons of education, (ii) the quantitative expansion of educational institutions, (iii) the rapidly changing economic, social, political, management and technological context of education, and (iv) the continuing significant change in social expectations from education as a service. The blockade coming in the ways of quality education have to be erased with the help of Total Quality Management (TQM).

1.4. TOTAL QUALITY MANAGEMENT (TQM)

The term Total Quality Control (TQC) was coined by A. V. Feigenbaum (1983), Japan, TQC was later become Total Quality Management (TQM). It is a corporate business management philosophy which recognizes that customer needs and business goals are inseparable. TQM is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. The mission of TQM is to exceed customer's expectations; use best in class practices; eliminate defects; eliminate wastes and motivate all employees. The initiatives of TQM are voice of the customer, bench marking, and control cycle time and employees involvement. The concepts of TQM are the customer focus, make it a good place to works, and create a work culture for minimum utilization or resources and top management must be involved in all decisions.

The concept of quality has a very interesting origin. The idea was first developed in the 1940s by an American, Mr. Edward Deming, who tested it on industrial process using statistical techniques. Although the concept was an American, it was post-war Japan that quickly learnt the lessons of quality control using the ideas of Edward Deming and his associates Joseph Juran and Philip B.Crosby. The Japanese initiated the quality revolution by introducing it in manufacturing and then covering other sectors. The USA (United States of America) which enjoyed the advantages of a monopoly market ignored the compulsions of quality because American business could sell what they produced without difficulty. In the 1970s, with growing competition from Japanese products and loss of markets, the Americans started reflecting on the critical importance of quality. Total Quality Management (TQM) soon became a fact of life in American industry and service segments which continues up to this day. We in India cannot afford to ignore quality for 30 long years like the Americans and not lose our access to global

markets. The philosophy of TQM has its relevance in educational institutions too. Implimentation of TQM has been a major change in educational institutions for the past few years. The National Policies on Education 1968 and 1986 have a considerable impact on evolving and introducing innovative practices in the management of school education and particularly the primary education.

The management is defined as the process of planning, organizing, actuating and controlling an organization's operations in order to achieve a co-ordination of the human and material resources essential in the effective and efficient attainment of objectives.

Quality management, according to Mr. Philip B. Crosby (1984), implies an operating practice where all the transactions of the company are accomplished completely and where relationships with employees, suppliers and customers are aimed at making those successful. The main features of TQM have been succinctly summarized by Hill and Taylor (1991): "Essentially, it is concerned with organizational improvement through the identification and solution of problems by groups of employees at various levels in the structure. This problem solving is usually supported by the development of the teams and a focus on corporate goals. However, the teams primarily identify with problems of specific relevance to their own functions in order to engender a sense of involvement in organizational affairs. TQM is a holistic paradigm which recognizes that all employees can make an impact upon the quality of goods and services provided".

Sallis (1996) defined it as, "the philosophy of TQM is large scale, inspirational and all-embracing, but its practical implementation is small-scale, highly practical and incremental. Drastic intervention is not the means of change in TQM". TQM is incremental and success oriented; it builds success on success.

Total Quality Management has also been termed as Continuous Quality Improvement (CQI) (Frazier, 1997). CQI is not merely a terminology; there are significant implications of the concept. Frazier (1997) suggested six-stage road-map, namely prepare, assess, plan, deploy, sustain and break-through. Navaratnam (1997) offered a six-stage quality journey plan: (i) awareness and self-assessment, (ii) training and team building, (iii) quality planning, (iv) implementation process, (v) comprehensive evaluation and (vi) continuous improvement.

Navaratnam (1997) identified the students, employers, universities, parents, community and government as the customers and stake-holders of school education. Key inputs to schooling are curriculum, students, teachers, support staff, administrators, mangers, facilities, and classroom and government policies. Key processes are curriculum development, accreditation, teaching, enrolment, financing or funding, administration, management, students support services, community services, commercial activities, human resource management, facilities developed and promotion and marketing. Similarly, key out puts are educated and training graduates, research findings and community services.

TQM emphasizes on academic management (management of admission, curriculum, instruction, examination and co-curricular activities), personal management (personal recruitment and induction, staff development, maintenance of personal records, management of staff unions, conducting staff meetings, management of staff welfare, job allocation and management), financial management (budgeting, resource mobilization, resource development and optimization, resource utilization, accounting and auditing), infrastructural management (construction and extension of building, utilization and maintenance of infrastructure, library, laboratory, audio-visual aids, hostel, sanitation, sports and games facilities and vocational education facilities), linkage and interface (parents, old students, immediate neighbourhood and the community, transport and health), student services (management of a student information systems, guidance and counseling facilities, student amenities, incentives and other facilities, involvement and student participation in decision making) and managerial excellence or managing people (understanding self, communication-oral and written, leadership, group dynamics and team building, decision making, conflict management, management of motivation and time management of change).

Total Quality Management (TQM) is a continuous process and formulates action plans, attends customer complaints, finds defective designs, gives education and training, executes one's talents, improves industrial relations, promotes team spirit, understands people, gives importance to inspection, recognizes organizational intelligence, makes innovations and does continuous on-line evaluation.

Total Quality Management (TQM) plays a vital role and improves the following aspects in the educational system: barrier-free atmosphere, attending to complaints, using an appropriate tools, seeking alternatives, instituting the need based training, maintaining effective human relationship, evaluating the input, process and out put, listing out the requirements, creating happier working environment, working an opportunity to direct interaction between the staff and experts and generating product development activities. It aims to yield the following: satisfying the customer's needs, breaking the out dated rules, supporting the system, fulfilling the expectations, enabling fit into a current trends, successing of automation, preventing fears, improving quality, improving customer service, improving work culture and sustaining the highest quality.The applicability of TQM in education drew significant attention of many authors such as De Cosmo et al., (1991), Sherr and Lozier (1991), and Bonser (1992). They pointed out that educational institutions have turned to TQM for many of the same reasons the business have instituted quality programmes.

Total Quality Management (TQM) increases the intensity, extensity and velocity and changing the configuration of educational institutions' power. It refers to the basic elements that include accessing infrastructures, teaching methodologies and teaching techniques, managing the functions of the organization, organizing of service process, filtering the errors in the process of the system, evaluating the teachers' and students' performance and distributing quality to the students. It is the process of improving the basic things and managing teachers to enhance organizational performance.

Total Quality Management (TQM) ensures an effective and efficient development of new knowledge, stimulates new ideas for promoting teaching and learning, creates organizational culture that motivates, promotes and rewards teachers to create and share their teaching experiences, catalyzes teachers for taking challenges to promote quality in teaching and learning, improves students' service and encourages teachers to perform multifunctional responsibilities.

Prof. John Oakland (1993) stated that Total Quality Management (TQM) is a way of managing to improve the effectiveness, flexibility and competitiveness of a business. Total Quality Management (TQM) can at best carry out the following aspects: problems at present and future, shrinking the risk of continuation of the present ills,

commissioning of designing the process, taking its implementation, including the mechanisms, authorizing the learners to solve problems on their own, providing its participants and opportunity to feel the satisfaction of achievement, teaching good leadership and fellowship and creating co-operation among employees of educational institutions.

Total Quality Management (TQM) is the process of ensuring highest quality on a sustained basis throughout an organization through the involvement of people working for the organization. The procedure of quality management should involve goals formulation, detailed plan of action, effective implementation, technological perfection, educating all concerned with quality movement, ensuring team work, mobilizing adequate resources, periodical monitoring, sustained progress record and doing right things. The Total Quality Management (TQM) approach helps the school system to understand what the students want and to provide it, immediately on demand at the lowest cost. It makes easy to create an excellent environment for promoting progress and success for primary school system.

In the Total Quality Management (TQM) totally refers to the whole institution, all staff, all functions and all students. This means the involvement of all the personnel including the students. It is all the activities of the overall management function that determine the quality policy, objectives and responsibilities and implement them by means such as quality planning, quality improvement within the quality system.

1.4.1. Quality Planning

Educational planning is a relatively new concept being utilized in more sophisticated school systems. Quality planning is normally used to provide an analysis for the planning of quality related activities. It is identifying the problems in input like infrastructure, institutional capacity, finance and academic resources and process like instruction, teaching methodologies and administration and output such as standard of students and their achievement and the quality of teachers. It also includes stating the requirements and quality objectives, determining the measurement process, milestones and targets and defining the quality improvement in primary education.

1.4.2. Quality Control

Quality control means checking a particular product (service) against standards and rejecting any products (services) that do not measure up to these standards. It involves operational techniques and activities aimed both of monitoring a process and at eliminating causes of unsatisfactory performance at relevant stages of quality loop in order to result in economic effectiveness. It attempts to supervise on re-engineering the practices of primary education system. Besides, it involves the technical use of applied statistics for improving the quality.

The objective of quality control function at teachers' level, headmasters' level and inspectors' level is to involve with operational techniques and activities carried both at monitoring a process and at eliminating causes of unsatisfactory performance. Thus quality control is concerned with the feed back of the comparative information in order to regulate the process. The entire process of quality control is centered on the basic idea that process limits are so set that the process be readjusted before the outgoing product reaches to a limit of rejection.

The head of the institution must be sure of the activities under taken by the members of the institution towards the institution's stated goals. This is the controlling function of the head which involves three main elements: (i) establishing standards of performance, (ii) measuring current performance, (iii) comparing the performance to the established standards and (iv) if deviations are detected, taking remedial action. Through the controlling function, the head keeps the institution on its chosen track. However, control is a more pervasive concept, one that helps head monitor the effectiveness of their planning, their organizing and their leading and make corrective action as and when needed.

1.4.3. Quality Assurance

Quality assurance is described as, systematic, structured and continuous attention to quality in terms of quality maintenance and improvement. It is system based on the premises that everyone in an organisation has a responsibility for maintaining and enhancing the quality of the product or service. Vught and Westerheijden (1993) identified four common elements in the emerging approaches to the external assurance of quality in higher education namely: oversight by a system – wide coordinating body; the centrality of the use of

a critical self-evaluation; the use of academic peers as assessors / evaluators and the publication of a final report. It is a continuance process of adopting various norms, mechanisms and procedures to maintain standards in educational and professional inputs; institutional infrastructure; monitoring the process and performance; and on the basis of that undertaking suitable corrective measures to improve academic and professional standards.

Quality assurance consists of inspection and testing, quality audit system and reliability. It tests the standard of the teachers, their teaching skills, and instructional quality, standard of the academic resources, and availability and utility of physical facilities. The main purpose of quality assurance should be to prevent errors or to identify and eliminate causes of problems for ever. Corrective activities need to be based on analyses of past data so that the causes of problems are determined and taken care of permanently. It can help the primary school system to get barrier-free atmosphere, seek alternates for defective designs make joyful working environment and generate product development activity.

1.4.4. Quality Assessment

Progress and success for a primary school, therefore can materialize only when a school system accepts the assessment and in creating the conditions to enable head teacher, teachers and students to fit into 'self-appraisal'. Quality assessment is to measure the infrastructure status, curricular aspects, teaching-learning process and evaluation methods, academic resources, organization, management and standards of students. The relevant data are collected and analyzed so that the root cause can be identified. A range of possible solutions in generated and a selection is made from the solution which best meets the objectives. The solutions are associated costs, benefits and other implications are estimated and plans for action are developed.

A number of factors influence and control the quality of education. They are: (i) home / family back ground (outside school) factors, (ii) school related factors and (iii) individual related factors. The essential task of Total Quality Management (TQM) is to manage these factors efficiently by creating opportunities, releasing potential, removing obstacles, encouraging growth and providing guidance so that management can achieve their own goals by directing their own efforts towards quality.

1.5. TQM AND PRIMARY SCHOOL

Total Quality Management (TQM) comprises all those techniques and procedures employed in operating the educational organizational in accordance with the established policies. It provides a clear vision and mission of the institution and leads the entire team for fulfillment of the goal. In the field of primary education, some key factors have had direct impact or a positive impact upon the progress of school children. In fact any school can be metamorphosed into a good institution of learning through meticulous attention being directed to parameters such as discipline, dedication, teaching quality, co-curricular and extra curricular activities, value system etc.

Total Quality Management (TQM) aims to achieve the quality school system. It facilitates purposeful leadership, involvement of teachers in curricular planning, consistency among teachers, intellectually challenging teaching, work oriented environment, record keeping, positive climate, and resource utilization in the school system.

1.5.1. TQM and Physical Facilities of the School

Physical and infrastructural facilities improve the quality of teaching – learning process. Both the teachers and students feel motivated and satisfied with adequate infrastructural facilities and create positive environment of learning. (Anand, 1996; Yadav, 1998; Chopra, 1998; Katara, 1999 and Srivastava, 1999). But in some studies, it was found that physical facilities including classrooms, play ground, laboratory, seminar rooms, furniture, library, canteen, and drinking water, residential accommodation for staff, hostel, and blackboards were not adequate (Patra,1998; Reddy, 1999; Rana, 2001; Sethi, 2001 Selvam & Ravivarman, 2005).

The National Policy on Education (NPE, 1986) was the second major initiative to bring out the improvement in the quality of education. Government of India in collaboration with different States launched several programmes to actualize the goal of NPE – 1986. It includes Operation Blackboard (OB) scheme for providing minimum two large all weather room with verandah along with separate toilet facilities for boys and girls, provision of atleast two teachers and one of them a woman, and essential teaching – learning material including black boards, maps, charts, laboratory equipments etc., in primary schools.

Total Quality Management (TQM) is crucial for expanding access and improving learning in India's schools. It helps the schools not only to increase the provision of education facilities but also to improve the quality of education.

1.5.2. TQM and Leadership

In educational administration, the head teacher is the hub of both administrative and educative processes; s/he is not only to be a visionary but also a dynamic leader to develop a congenial organizational culture. S/he is in the centre of a web of interrelationships between teachers, students, parents and the school administration. On his/her ability and skills depends the success of an educational system.

Head teacher is primarily responsible for giving a sense of direction to the activities, integrating the plans of various activities at the institute level and controlling, evaluating the total performance of the staff and students. The actions of head teacher are as much guided by the freedom of action which he earns for himself through the acceptance by the students, faculty and community. The head teacher should accomplish the task through consultation with appropriate authority rather than only rules and regulations. To exercise of minimum authority and to guide the staff as well as students and to win their support for his roles and ideas provides sound base for development.

Total Quality Management (TQM) trains the head teachers in some attributes such as self-awareness can (understanding of one's administrative style and behaviour pattern), self control (the ability to control one's disruptive impulses and moods and to think before acting), motivation (the ability to pursue goals and work with commitment without thought of personal benefit), empathy (the ability to understand and appreciate the feelings and emotions of other stake holders of the school) and social skills (proficiency in managing relationships, finding common ground and building bridges) in order to succeed in his endeavor.

1.5.3. TQM and Primary Teachers

In an ideal educational management, teacher is the authority. S/He has the power, freedom, right and responsibility to carry on academic programmes. The most important input or capital for an educational institution is its teachers and if the teachers are motivated to give

their best to the students, the quality of education is bound to be high. Education can be imparted only by a teacher and never by a method. Because of lack of stress on this aspect of education, the vital part of education remains incomplete. An ideal teacher's business is not only to inform but also to inspire.

The Education Commission Report (1966) says, "Of all the different factors which influence the quality of education and its contribution to national development, the quality, competence and character of teachers are undoubtedly the most significant". Magnificent buildings and equipments are no substitute for a great teacher. Dedicated quality teachers are the most important ingredients of quality education.

Promoting quality education is one of the best contributions that we can make to the future of the national government, and all such agencies should work together to develop innovative policies and expand the existing programmes to promote the recruitment, retention and development of quality teachers.

Total Quality Management (TQM) empowers the capacity of the teachers by making them as possessors of desirable personal qualities, users of effective methods, creators of a good class room atmosphere, masters of teaching skills and professional decision makers who has not only mastered needed competencies but learned when to apply them and how to use them. The obligations of teachers are not confined to the classroom but extend, along with other avenues, to the promotion of an effective functioning of the school and the maintenance of harmonious relations and constructive understanding between the school and the community.

The following attitudes help the teachers to utilize Total Quality Management (TQM) to improve their classroom instruction: (i) an open mind, (ii) a willingness to change, (iii) a willingness to learn some new thing, (iv) a willingness to carefully monitor/assess/evaluate the teaching-learning process, (v) a willingness to learn about some new instructional techniques and how to use them effectively and (vi) a willingness to try new innovative teaching and learning strategies.

1.5.4. TQM and School Climate

Educational management comprises all those techniques and procedures employed in operating the educational organizations in accordance with the established policies. The school and classroom

climate significantly affects the academic achievement of students. It improves considerably in terms of child friendly; activity based pedagogical inputs and facilitating teaching-learning process (Sinha, 1998 and Gyanani, 1998 and Nagpal, 1999). The congenial and healthy climate was found more in open climate institution than closed climate institution (Zaman, 1998 and Kashinath, 2000). The behaviour of the head teachers was found more impartial and cordial in open climate (Chopra, 1998).

In a system of education based on independency, both the children and the teachers should act without any restrictions. Management of the school consists of "facilitating the development of goals and policies basic to teaching and learning, stimulating the development an appropriate programme for teaching and learning, and procuring and managing personnel and material to implement teaching-learning".

Total Quality Management (TQM) builds open climate in the schools. The open organizational climate enables teachers to achieve their best for the benefit of the students. Independency does not only mean doing what we want, but also doing what others want, to actualize certain goals in education.

1.5.5. TQM and Classroom Transaction

Teaching is a social act whereas learning is a self act. Even without a teacher, the learner can learn. So teaching must be a two-way process. There must be interaction between the teacher and the learner. Learners should respond to the teaching. If the responses are satisfactory and favourable then can safely conclude that teaching has become very effective and the learners are benefited by it.

The main thrust is to help the teachers to make the class room transactional approaches more contextualized to the local conditions characterizing school and community. In classroom, a combination of various approaches like lecture method, demonstration method, group discussion, simulated teaching and inquiry approaches should be used in teaching-learning process (Aggarwal, 1996; Bhattacharjee and others, 1999; Reddy, 1999 and Nath, 1999). But many studies have found that all these methods were not used in class room teaching. Only lecture method was frequently used while teaching students; Khader, 1996; Yadav, 1998; and Mishra, 1998 and Sethi, 2001).

Total Quality Management (TQM) aims to make an instruction as a quality commodity. It trains the teachers to the following features – (i) specification of instructional objectives and (ii) optimal sequencing of learning activities and choice of suitable instructional strategies.

1.5.6. TQM and Instructional Materials

The teaching-learning materials, curriculum, text books, blackboard, eraser, chalk, table for teacher, teacher's guide, dictionary, books apart from children's text books or library, maps, globe, charts, flash cards, play materials, games and toys, games equipment, Science kit, mini tool kit, Mathematics kit, musical instruments, supplementary and self-learning materials are essential for the growth and development of teachers and students.

The new curriculum and text-books, prepared under DPEP (District Primary Education Programme), MLL (Minimum Level of Learning) and SSA (Sarva Shiksha Abhiyan) projects generated interest, awareness and also developed competencies among teachers. The materials have colourful pictures including games, activities, puzzles and action songs. (Jayalakshmi, 1997; Padhi and Khamari, 1998; Mishra, 1998 and Srivastava, 1999). The self learning materials made learning easy, permanent and effective (Aggarwal, 1996; Patel, 2000; Patra, 1998; Garg, 2000 and Makwana, 2000).

Total Quality Management (TQM) plans to make effective, efficient and quality instructional materials. These instructional materials help teachers to provide activities, promote learning experience and create interesting classroom.

1.5.7. TQM and Training

Indian primary schools face the problem of declining school quality. Therefore, one of the important interventions is to provide in-service training to primary teachers regularly for improving their professional competencies and quality of education. The National Policy on Education (NPE, 1986) also emphasized in-service education of all teachers within a span of five years.

Teachers' professional competence and commitment determine the quality of education to a great extent. Delors Commission (1996) has rightly emphasized that "there is need to update and improve teacher's knowledge. In-service education is as good as the pre-service

education, even better for quality improvement". Most definitions of professional development emphasize its principal purposes as being the acquisition of subject or content knowledge and teaching skills.

Professional development of teachers begins with initial teacher preparation but continuous learning requires regular in-service education programmes. Many research studies have acknowledged that in-service education plays a significant role for professional development and making them competent teachers. These programmes help them to gain confidence, update knowledge, content and new pedagogy of teaching (Sree, 1995; Joshi, 1997; Das, 1998 and Rajput &Walia, 2002). Many training programmes were organized for teachers under DPEP and SSA, the provision of 20 days training for all teachers every year.

Total Quality Management (TQM) promotes powerful in-service programmes. The in-service programme is a powerful means to bring the benefits of the new ideas into the actual teaching-learning process. Such programmes help in moulding better teachers by improving their knowledge, providing ways to help them develop their competence, empowering them to under take innovative practices and by instilling in them a desire to do a better job of teaching.

1.5.8. TQM and Monitoring

Continuous monitoring of various input measures is of great significance in improving the quality of in-service education, curriculum material, transactional approaches, information and communication technology, community support, physical facilities and school climate. Monitoring of pupil's progress, good academic climate for efficacious levels of achievements, strong administrative leadership, conducive instructional business and activities for pupil acquisition of basic school skills which are the most tangible and indispensable characteristics of effective schools. Some studies supported this view and found positive impact and results due to the provision of inbuilt mechanism of monitoring and evaluation in Special Orientation Programme for Primary Teachers (SOPT), Programme Of Mass Orientation for School Teachers (PMOST), State wide Massive and Rigorous Training for Primary Teachers (SMART-PT) and DPEP projects (Patra 1998; Srivastava 1999; Rama; 2001, Udgata; 1998 and Garg, 2002).

Monitoring and evaluation is an integral part of Total Quality Management (TQM) process. It helps in improving the quality of the

programme by way of knowing the strengths, weaknesses and out come of the programme from time to time and also providing remedial measures accordingly.

1.5.9. TQM and Community Support

The involvement of community in the educational activity of the school was stressed in the National Policy on Education, (NPE, 1986) and Programme of Action (POA, 1992). The 73rd Amendment (1992) of the Constitution envisages establishing Panchayat Raj bodies at village, intermediate and district levels where each Panchayat at village level would constitute a Village Education Committee (VEC) for the administration of education programme. The major responsibility of the VECs would be to mobilize the community to ensure participation of every family in elementary education.

In India after the implementation of District Primary Education Programme (DPEP), community mobilization and involvement turned over a new-leaf. The School Management Committee (SMC), Village Education Committee (VEC), Parent Teachers Association (PTA), Mother Teachers Association (MTA) took part in the welfare activities of the school in respect of school buildings, organization of cultural activities and local festivals (Zaman, 1998; Ahmed, 1999; Das, 1999; Rao, 1999 and Garia, 2002) survey work in relation to education, cent percent enrolment of the children within age group 6 to 14 years, ensuring cent percent attendance of the children and checking drop out, beautification of the school campus, providing water and sanitation facilities including latrine and urinal facilities, raising corpus fund for the welfare activities of the school, donating free text books and uniforms to poor students, repairing the school building and boundary wall, preparation and supply of teaching- learning materials, checking teacher absenteeism, rewarding the competent and committed teachers and donating library books and other reference books for the improvement of the library.

The family makes critical contributions to student achievement from pre-school to high school. When parents are involved in their children's education at home, they do better in school. And when parents are involved in school, children go further in school, and they stay in school longer (Henderson and Berla, 2002). Academic achievement has been evidenced to be influenced by parental behaviour (Wilson, 1976).

Community participation has been emphasized by all educational programmes and policy perspectives. Generally, we tend to believe that help rendered by the community in the activities both academic as well as non-academic of the school is called community participation. But this is not always true. Some times they just attend the functions; motivate the children on the need of regular attendance; help in the educational activities and they can seek advice of the school for other village activities. This means, it is the process of mutual sharing. Community participation may be spontaneous at times and seems to be reluctant at other times.

The failure at times to grasp one another's difficulties and the misunderstandings that arise from it can be eliminated through the Total Quality Management (TQM) process. The Total Quality Management (TQM) analyses and diagnoses the community involvement on school process. It plans to improve the congenial climate in schools for paving road to seek community support for improving the teaching learning process. To create the interest of the community in their school and to make a personal bondage of friendship between the community and school is very necessary and Total Quality Management (TQM) will help to create this healthy atmosphere.

1.6. EDUCATIONAL TECHNOLOGY

The term Educational Technology (ET) was recognized in 1967 with the establishment of the National Council for Educational Technology in the United Kingdom. The United Kingdom Association for Programmed Learning promptly added "Educational Technology" to its title in 1968.

The Definition and Terminology Committee of Association for Educational Communication and Technology (AECT, 1977) presented the following definition: "Educational Technology (ET) is a field involved in the facilitation of human learning through the systematic identification, development, organization, and utilization of a full range of learning resources, and through the management of these process. It includes, but is not limited to, the development of instructional systems, the identification of existing resources, the delivery of resources to learners, and the management of this process and the people performing them".

Instructional problems are analysed and solution sought through the application of knowledge about learning, learners and media resources.

Instructional Technology procedures often result in the creation of new instructions by increasing its effectiveness and efficiency (Locatis & Atkinson, 1984).

The concept of Educational Technology (ET) means the sum total of all educational facilities, media, methods and techniques for optimizing learning. According to this Educational Technology (ET) is characterized by four main features-(i) the description of objectives to be achieved by the learner, (ii) the application of principles of learning to the analysis and structuring of the subject matter to be learned, (iii) the selection and use of the appropriate media for presenting materials, and (iv) the use of appropriate methods of assessing the performance of the learners to evaluate the effectiveness of courses and materials.

Educational Technology (ET) concerns the efforts to provide appropriately designed learning situations which bring to bear the best means of instruction. The means of instruction may involve modification of the learners' environment through techniques of presentation, arrangements of learning activities and organisation of the social and physical surroundings. Its major purpose is to facilitate and improve the quality of human learning.

Educational Technology (ET) implies an approach that makes use of pertinent scientific and technological methods and concepts developed in philosophy, psychology, sociology, linguistics, communication and related fields. The concept of Educational Technology (ET) encompasses a bipartite arrangement of 'technology of education' and 'technology in education'. 'Technology of education' is the base sector which deals with the study of principles, theories, concepts and methods in the instructional process, whereas 'technology in education' refers to the study of use of different media such as audio-visual aids, television and computer to make the instructional process more efficient and effective. According to Grayson (1972) "Educational Technology involves the application of scientifically tested principles of learning to an instructional environment in a consistent and coherent manner. It incorporates the media and may also involve hardware materials and methods of instruction". This view has also been supported by Tickton (1970 & 1971), Carnegie Commission on Higher Education (1972), Saettler (1978) and Siebert (1982).

The five domains of Educational Technology (ET) are:(i) design (message design, instructional strategies and learner characteristics); (ii)

development (print technologies, audio-visual technologies, electronic technologies and integrated technologies),(iii) utilization (media utilization-to bring learners into contact with learning resources and instructional system components),(iv) evaluation (problem analysis, measurement, formative evaluation and summative evaluation) and (v) management (project management, resource management, management of delivery systems and diffusion of innovation).

Educational Technology (ET) aims at maximizing and individualising learning and making it more relevant and productive. It widens the horizons of the classroom and the out side world. Therefore, the potential of Educational Technology (ET) could be explored towards excellence in education. It can be channelised towards communication of knowledge and skills from teacher to student.

1.6.1. Educational Technology in NPE

Educational Technology (ET) has been given a specific place in the National Policy on Education (NPE, 1986) by the provision of a separate section titled, "Media and Educational Technology". It is interesting to note that in this major policy document, Educational Technology (ET) is equated to Media Technology which forms only a part of Educational Technology. Thereby, Educational Technology (ET) is one – dimensional. On the contrary, these are several statements spread over different chapters in the NPE (1986) and POA (1992).

1.6.2. Educational Technology for Primary Schools

Childhood years are significant for intellectual growth and personality development. It is the period of maximum learning and as such is crucial for education of the child. Every child is endowed with the built-in physiological as well as neurological mechanism for learning. This mechanism is, however, to be exploited therefore, felt imperative to make primary school an attractive place for children and to make its programmes interesting to them. Learning in the primary school should be made joyful and entertaining instead of making it dry and drab. Once children are inspired and motivated, they must take interest in learning from the tender age and that would bring down the present high percentage of wastage and stagnation at the primary stage. With a view to making learning interesting as well as effective, various media and materials should be used in the primary schools. They should

be inexpensive and easily available. Education and entertainment can be well integrated through their use and children's learning can be joyful activity. Educational Technology (ET) like films, television, radio programmes will not only serve the students living in far-flung areas but also make their education effective and interesting. This will help and reducing wastage and stagnation.

1.6.3. Educational Technology For Effective TEACHERS

The teacher has to restructure the environment for effective learning and utilize Educational Technology in an integrated manner. Educational Technology (ET) seeks to integrate the relevant principle of psychology, sociology, linguistics, communication and other allied fields. It attempts to incorporate the management principles and resource development, systems analysis and cost effectiveness. It comprises various media and materials ranging from a picture and chalk stick to computer and satellite. But teacher has to utilize them appropriately in right place, in right manner and in right time. These media and means are to clarify and reinforce the learning experiences and further the progress of the learner.

1.7. TQM AND ET

Schools in India have now realised the importance of Educational Technology (ET) in imparting effective education to the students. There is considerable hope and some positive evidence that Educational Technology can expand and improve education at all levels with special reference to the design and content of instructional materials, delivery, and assessment and feed back. The National Policy on Education (1986) envisage a dynamic use of Communication and Educational Technology for enhancing the institutional and learning inputs of formal and non-formal educational arrangements.

Educational Technology (ET), generally, means the application of technology to education in order to further the cause of the later. By and large, it means the use of radio, television, video cassette players, video / data projectors, audio-input devices, multi media networks, authoring systems, simulation / animation packages, graphics / statistics software, image enhancement packages graphic aids, display boards, 3 dimensional aids, experimentation, field trips, demonstrations dramatics, programmed instruction, teaching

machines and Computer Assisted Instruction (CAI), Video Assisted Instruction (VAI), team teaching, co-operative learning and such other technologies, techniques, strategies, activities which can help individuals to learn on their own.

Studies conducted in India and abroad reveal that the wise use of Educational Technology is one of the most important factors, to improve the quality of instruction. Teaching aids comprise the world of both audio and visual media, and involves learning experiences like providing concrete examples, conducting experiences like nature-study, field trips, participating in exhibitions, fairs, conducting demonstration in the class room etc., Teaching aids have been found to be effective in developing clear concepts and better comprehension (Goel, 1985). The use of Computer Assisted Instruction (CAI), in education and improving teaching - learning strategies at formal levels can not be underestimated (Paul, 2003 and Raja, 2003). The use of Over Head Projector (OHP) in the classroom increased the interaction among the participants (Ramaswaminathan, 1999). Besides these, many studies supported that the use of equipment and teaching aids had increased the effectiveness of teaching. These aids had made teaching-learning easy, interesting and without burden (Jangira, 1994; Sree, 1995 and Yadav, 2000).

Total Quality Management (TQM) gives an unprecedented opportunity to enhance skills of teachers in instruction. It facilitates the teachers, with a comfort feeling of using technology and conversant with new technological tools, resources and approaches that ensure that all the pieces are put in place and apply them appropriately. It helps teachers to acquire knowledge on using the educational communication media and other technologies. According to the above discussions, this study has been taken by the investigator.

1.8. STATEMENT OF THE PROBLEM

Primary education is facing challenges as emphasis is shifting from advice to intervention, one time training to continuous learning and on the job training, and from national to international operations. There is an increasing emphasis on reducing cost without compromising on quality. In this changing context, Total Quality Management (TQM) can be used to make conscious efforts to plan for high quality products which have the requisite characteristics to fulfill the needs of the user-industry and

society. The need for inculcating Total Quality Management (TQM) culture in primary schools is recognized.

For understanding the relationship between Total Quality Management and Educational Technology in Primary Education, there are no reference points to start with. There is a hope that Total Quality Management (TQM) brings greater dividends to quality teaching and learning process. If the schools fail to maintain quality and standards in the present-day highly competitive world, the sovereignty of a nation will stand threatened. Total Quality Management (TQM) has thus come to acquire a pride of place in the management of the school. The primary facets of advantages emerge from the facts that Total Quality Management (TQM) in education enables teachers to understand and evaluate new technology options, enhance their intellectual capital, gain insights in their areas of operations, create a flexible and effective organizational structure and tap the potential of Educational Technology (ET). For achieving the excellence in teaching and learning process, the teachers should select Educational Technology (ET).

Total Quality Management (TQM) enables to optimize the classroom's value by promoting the attitude towards Educational Technology (ET) among teachers. Taking into account with these sentiments, the present study "The Attitude of Primary Teachers towards Total Quality Management in Relation to Their Attitude towards Educational Technology" was taken up.

1.9. NEED AND SIGNIFICANCE OF THE STUDY

The emphasis on quality in education is a matter of recent concern. It is obvious that quality in education may be determined with respect to how it develops individuals with exceptional qualities, consistency in process and criteria for evaluation, the value for men and materials involved in the educational process and how it brings out changes in the learners in terms of cognitive, affective and psychomotor domains of human development. It is the need of the hour to improve quality in primary educational system.

Total Quality Management (TQM) is being used for promoting quality in educational systems. In brief many trends such as students' enrolment, physical infrastructure, capacity and competency of teachers, motivation, training needs, instructional issues, institutional and organizational structure, academic accountability, competency

outcomes, standardizing and adaption to learner-consumer demands, technological fluency are influenced by the Total Quality Management (TQM). Of late, Total Quality Management (TQM) as a management process is faced with newer challenges particularly owing to invasion into educational system that is being offered all rounds and working environment having become more volatile and complex.

If an organization is to survive and grow in the emerging competitive environment, everyone working in it should be pursuing value adding activities in classroom practice with prior defined goals and objectives. The platform for such a activities is derived by the use of Educational Technology (ET) in a widespread manner. The proper application of Educational Technology (ET) with the operations of management can fuel the acceleration of excellence in education.

Total Quality Management (TQM) would have a liberalizing influence on educational systems, by making teachers sensitive to and ultimately capable of utilizing the resources and new technologies for improving the effectiveness of instruction. What is however common to most educational institutions in the world as of now, practice Total Quality Management (TQM) in the face of increased demand for enhanced teaching and learning process? It is our belief that attitude towards Total Quality Management (TQM) has to increase the attitude towards access of Educational Technology (ET) among primary school teachers. This research will carry out the practical analysis of "The Attitude of Primary Teachers towards Total Quality Management in Relation to Their Attitude towards Educational Technology".

1.10. SCOPE OF THE STUDY

There is an increasing emphasis on reducing cost without compromising on quality. In this changing context, Total Quality Management (TQM) can be used to make conscious efforts to plan for high quality products which have the requisite characteristics to fulfill the needs of the user-industry and society. The need for inculcating Total Quality Management (TQM) culture in primary schools is recognized. There is no such thing as a long-term, sustainable, competitive advantage without a sustainable effort for continuous improvement.

The essence of the strategy should be the establishment of a Total Quality Management (TQM) culture, through the realization of its three axioms-commitment, scientific knowledge and involvement.

The interdependence of those axioms makes it easy to characterize the Total Quality Management (TQM) environment fully, as well as to define clearly and in brief what we mean by Total Quality Management (TQM): "Total Quality Management is a culture; inherent in this culture is a total commitment to quality and an attitude expressed by everybody's involvement in the process of continuous improvement of products, processes and services, through the use of innovative scientific methods".

There is a hope that Total Quality Management (TQM) brings greater dividends to quality teaching and learning process. If the schools fail to maintain quality and standards in the present-day highly competitive world, the sovereignty of a nation will stand threatened. Thus Total Quality Management (TQM) has come to acquire a pride of place in the management of the school. The primary facets of advantages emerge from the facts that Total Quality Management (TQM) in education enables teachers to understand and evaluate new technology options, enhance their intellectual capital, gain insights in their areas of operations, create a flexible and effective organizational structure and tap the potential of Educational Technology (ET). For achieving the excellence in teaching and learning process, the teachers should select and use Educational Technology (ET). Much reference material is not available to find out the relationship between Total Quality Management (TQM) and Educational Technology (ET) in primary education.

The Total Quality Management (TQM) as an approach and philosophy offers a significant opportunity for its adoption to improve educational quality in a holistic manner. Educational Technology (ET) is the basic necessity for teaching and learning. It is a tool to achieve instructional objectives. If the teachers practice Total Quality Management (TQM) and Educational Technology (ET), they will be in a position to fulfill the educational objectives and national goals. The present study is intended to identify the relationship between the attitudes of primary teachers toward Total Quality Management (TQM) and Educational Technology (ET).

1.11. OPERATIONAL DEFINITIONS OF KEY TERMS

The operational definitions of the important terms used in the present study are discussed and defined herewith.

1.11.1. Attitude

Attitude is the predisposition of an individual to evaluate some aspect of his world in a favorable or unfavourable manner. The aspect of his world that he evaluates includes symbols, objects, ideas and people. Fishblin and Ajzen (1975) have noted, to separate the concept of attitude from behavioural intentions and actual behaviors, both of which are open to a variety of sources of influence.

1.11.2. Primary Teachers

The teachers who are handling the classes from standard I to V in primary schools are called primary teachers.

1.11.3. Total Quality Management (TQM)

The main features of Total Quality Management (TQM) have been succinctly summarized by Saylor (1992): "The Total Quality Management (TQM) philosophy provides overall concept that fosters continuous improvement in an organization. This philosophy stresses a systematic, integrated, consistent organization-wide perspective involving everyone and everything. It focuses primary emphasis on total satisfaction for both internal and external customer, within a management environment that seeks continuous improvement of all processes and systems".

1.11.4. Educational Technology (ET)

The word 'technology' is derived from the Greek word 'technique' meaning 'art of skill'. It is concerned with the development, application and evaluation of system, techniques and aids to improve the process of human learning.

1.12. OBJECTIVES OF THE STUDY

The study was designed and conducted for achieving the following objectives:

1. To develop and validate a tool for measuring the attitude of primary teachers towards Total Quality Management (TQM).
2. To develop and validate a tool for measuring the attitude of primary teachers towards Educational Technology (ET).

3. To study, whether there is any significant relationship between the attitude towards Total Quality Management (TQM) and Educational Technology (ET) among the primary teachers.
4. To find out, whether there is any significant relationship between Total Quality Management (TQM) and Educational Technology (ET) attitude scores of primary teachers with respect to Teacher variables.
5. To find out, whether there is any significant relationship between Total Quality Management (TQM) and Educational Technology (ET) attitude scores of primary teachers with respect to Institutional variables.
6. To find out, whether there is any significant difference between Total Quality Management (TQM) attitude scores of primary teachers with respect to Teacher variables.
7. To find out, whether there is any significant difference between Total Quality Management (TQM) attitude scores of primary teachers with respect to Institutional variables.
8. To find out, whether there is any significant difference between Educational Technology (ET) attitude scores of primary teachers with respect to Teacher variables and
9. To find out, whether there is any significant difference between Educational Technology (ET) attitude scores of primary teachers with respect to Institutional variables.

1.13. HYPOTHESES OF THE STUDY

Based on the objectives of the study the following null hypotheses are formulated:

1. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers.
2. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores with respect to the following Teacher variables - (i) gender, (ii) age, (iii) religion, (iv) marital status, (v) experience, (vi) general educational qualification and (vii) professional qualification.

3. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores with respect to the following Institutional variables - (i) locale of the school, (ii) medium of instruction and (iii) type of management.
4. There is no significant difference between the Total Quality Management (TQM) mean attitude scores of primary teachers with respect to the following Teacher variables - (i) gender, (i) age, (iii) religion, (iv) marital status (v) experience, (vi) educational qualification and (vii) professional qualification.
5. There is no significant difference between Total Quality Management (TQM) mean attitude scores of primary teachers with respect to the following Institutional variables - (i) locale of the school, (ii) medium of instruction and (iii) type of management.
6. There is no significant difference between the Educational Technology (ET) mean attitude scores of primary teachers with respect to the following Teacher variables - (i) gender, (ii) age, (iii) religion, (iv) marital status (v) experience (vi) general educational qualification and (vii) professional qualification and
7. There is no significant difference between the Educational Technology (ET) mean attitude scores of primary teachers with respect to the following Institutional variables - (i) locale of the school, (ii) medium of instruction and (iii) type of management.

1.14. METHODOLOGY IN BRIEF

In the present study, the survey method has been adopted. The sample of the study consisted of primary teachers of Thanjavur district in Tamil Nadu. The sample was selected by disproportionate stratified random sampling technique. Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude Towards Educational Technology (TATET) were used in the present study for data collection. The data was collected by administering above mentioned two tools on individual teachers. On completion of the tools, scoring was done by the investigator and then the obtained data were analyzed by 'r' and 't' test.

1.14.1. Variables of the Study

The Teacher variables (gender, age, religion, marital status, experience, general educational qualification and professional qualification) and Institutional variables (locale of the school, medium of instruction and type of management) were considered for the present study.

1.14.2. Sample for the Study

Population of the study consisted of primary teachers of Thanjavur district in Tamil Nadu. For the selection of sample, the stratified random sampling technique was applied. 619 teachers were selected from the primary schools located in Thanjavur district of Tamil Nadu State. They were divided into groups in terms, of male and female, below 40 years of age and 40 years and above 40 years of age, Hindu and non-Hindu, married and unmarried, below 20 years and 20 years and more than 20 years of teaching experience, graduates and higher secondary graduates, diploma and degree holders, rural and urban school teachers, Tamil and English medium school teachers and Government and aided school teachers.

1.14.3. Tools for the Study

The following two tools were employed in the study.

1. Teachers' Attitude Towards Total Quality Management (TATTQM).
2. Teachers' Attitude Towards Educational Technology (TATET).

Both the tools have adequate validity and satisfactory reliability.

1.14.4. Statistical Techniques used for the Study

The following statistical techniques were used to analyse the data.

1. Correlation co efficient to find out the correlation among the variables and
2. 't' test to find out the significance of difference between the variables.

1.15. LIMITATIONS OF THE STUDY

The following points were the limitations of this study.

1. Thanjavur district is a backward area of Tamil Nadu.
2. The private management schools are limited in number.

1.16. DELIMITATIONS OF THE STUDY

Keeping in view the background of the problem and research design and resources available with the investigator the present study has been limited in this way.

1. The sample has been drawn from the primary schools in Thanjavur district of Tamil Nadu.
2. 619 primary teachers were considered as sample for the study and
3. Certain specific type of variables and types of schools were considered.

1.17. PLAN OF THE STUDY

The thesis has been organized in five chapters. The first chapter deals with the introduction to the study. In the second chapter a review of relevant literature found in India and abroad is presented. In the third chapter, the details about the construction of tools, data collection, organization, scoring etc, are presented. Chapter four deals with a detailed analysis of statistical data and their findings and the fifth and last chapter explains the important results of the thesis and also suggests valid recommendations for future requirements in this area.

1.18. CONCLUSION

In this chapter, conceptual frame work of the present study was made. The next chapter deals the review of related literature.

Chapter-2
REVIEW OF RELATED LITERATURE

2.0. INTRODUCTION

The survey of related literature is an integral part of any research study and time spent in such an endeavour results in careful planning and meticulous execution of the research.

The intensive study and critical analysis of related papers in research journals, unpublished theses and dissertations pertaining to a particular problem make the investigator familiar with the summary of the previous research conducted and written by recognized experts and demarcate how much work has been bone in the field and how much remains to be done. Thus, it could work as a parameter to indicate the quantum of work done in the field and provide a background for the development of the present study. The researcher could highlight how the present investigation arises from the contradictions and inadequacies of earlier investigations.

In a nutshell, review of literature enables the researcher to perceive the gap, avoid the duplication of work, scrutinize the methodology already used, co-ordinate the study with others, get the right direction, view the problem from as many angles as possible and prepare the framework.

The available literature of research presented in this chapter are classified and reviewed under the following heads. They are:

1. Studies related to Total Quality Management (TQM) and
2. Studies related to Educational Technology (ET).

Studies done related to Total Quality Management and Educational Technology both in India and abroad are included in the part of the thesis.

2.1. REVIEWS RELATED TO TOTAL QUALITY MANAGEMENT

Gilmer (1966) specified organisational climate as "those characteristics that distinguish the organization from other organisations and that influence the behaviour of people in the organisations." The notion of climate has become a component of the school effectiveness and reform movement in education.

Rogers, *et al*., (1971) pointed out the Total Quality Management (TQM) is a new philosophy and innovative strategy for quality improvement will go through the five stages: (i) installation, (ii) trial, (iii) adoption, (iv) evaluation and (v) internalization.

Elmore (1978) derived four models of organizational change processes from a review of policy research and other literature on educational programs. Change strategies based on a systems management perspective reflect the following assumptions: (i) Organizations operate rationally and are goal directed, (ii) they are hierarchically structured; (iii) submits can co-operate to maximize overall performance, and (iv) some form of management by objectives enhances goal attainment. This change processes are enhanced by goal setting, monitoring and accountability.

Beeby (1979) suggests that 'quality' may be viewed as 'qualitative change' which can be defined as a simple linear expansion or diminution of current practice, more or less, of what already exists; more buildings, more students and teachers, fewer examinations of the present type and standards.

Brookover, *et al*., (1979) reported that principals of successful schools actively participate in setting instructional goals and determining the performance standard for the students.

Rutter, *et al*., (1979) propound effective principals recognize the unique quality of teachers and help them to achieve their goals. They instill the sense of pride among the teachers, students and parents.

Blumber, *et al*., (1980) pointed out that effective principals are seen as leaders and as they have more power than their colleagues, they are also effective in maintaining support of parents and of the local community.

Clark (1980) contended effective principals possess efficient skills in the field of instructional matters and develop evaluation procedures to assess the teachers and students performance.

The empirical studies of Mukhopadhyay (1981) indicate that resistance to innovation occurs due to attributes of the individuals in the organization itself. Conservation attitude, sense of insecurity and fear of failure, low self-esteem, closed mindedness, inability to sense needs, unwillingness to work, lack of motivation, inadequate exposure to mass media, inadequate contact with change agents and resource agencies are some of the personality characteristics are non-conductive to adoption of innovation.

Sharma (1982) found that the leadership behaviour of the headmaster has direct impact on the school and on its functioning which makes for a good climate.

Bagga (1983) has been conducted a study of the implementation of innovations in Delhi and Haryana schools. Some of the findings of the study were: (i) the extend of implementation of innovations in schools of both Delhi and Haryana varied from 'some' to 'considerable' showing thereby that it was satisfactory and yet it was not 'complete' and 'full' and (ii) academic effectiveness, adaptability, communicability, independence, simplicity, divisibility, relative advantage, and prestige had been perceived as the most important characteristic of an innovation for its successful implementation.

Purkey, *et al*., (1983) distinguished between 'organization/ structure variables' and 'process variables' In the former they included eight variables: (i) emphasis on autonomous management at the school level, (ii) assertive instructional at the school level, (iii)assertive instructional leadership, (iv) low turnover of staff, (v) shared goals, (vi) emphasis on staff development across the school, (vii) concern for academic success, (viii) effective use of time, and central office support. Despite a back of empirical evidence, they appended ninth variable-supportive parents. The process variables identified are: (i) collegial relationships and collaborative planning, (ii) a feeling of community, (iii) clearly defined goals and high expectations, and (iv) 'order and discipline' with little noise, distraction and risk.

Silver, *et al*., (1984) reported an evaluation study of an intensive one-month-residential experience for principles. The major conclusion reached by the researches was that in-service programs can have an effect on participants and their schools, although they expressed doubt that programs typically have such an effect.

According to Bass (1985) "transformational leaders influence followers by arousing strong emotions and identification with the leader, but they may also transform followers by serving as a coach, teacher and mentor".

Ogawa, *et al.,* (1985) concluded that principals exert a small but important and consistent influence on in-school performance.

Panda (1985) found that the work load of private school teachers was more than that of government school teachers due to large size classes and job insecurity. Poor working conditions and heavy work load lead to stress, anxiety, and frustration in teachers.

Deming (1986) has recommended 14 principles for the successful and effective management of quality in an organization. They are:(i) design constancy of purpose for improvement of the product and service, (ii) select new philosophy, (iii) cease dependence on mass inspection to achieve quality, (iv)end the awarding of business on the basis of price, (v) revise constantly and forever the system of production and service to improve quality, (vi) institute leadership, (vii) initiate training on the job, (viii) drive out fear so that every one may work effectively for the company, (ix) remove the barriers between departments, (x) eliminate slogans, exhortations and target, asking for new levels of productivity without providing the workforce with the methods to do the job better; (xi) eliminate work standards that prescribe numerical quotas, (xii) remove the barriers that rob people of their rights to pride of workmanship, (xiii) institute a vigorous program of education and self-improvement and (xiv) put every one in the company to work to accomplish the transformation.

Hanushek (1986) propounded criteria to determine the internal effectiveness of the school. It is ratio between non-monetary inputs and non-monetary outputs in school. In other words, effectiveness of a school can be determined by measuring output in relation to the amount of input.

Juran (1986) offered three basic processes of quality management. They are: (i) quality planning, (ii) quality improvement and (iii) quality control.

Deal (1987) suggests that schools resemble tribes insofar as they evolve values, heroes and heroines rituals, ceremonies, stories, and an informal network of cultural players (priests and priestesses, story tellers, gossips, and spice) that create meaning and commitment. Schools

that encourage shared symbols and symbolic activity are able to build organic bridges across well-known, and often competing, subcultures of teachers, students, parents and administrators.

Chaffe, *et al*., (1988) identified nine areas to provide a broad context within which to consider application of TQM. These are: (i) find internal contradictions, (ii) develop a comparative awareness, (iii) clarify the identification of the institution, (iv) communicate, (v) act on multiple, changing forms, (vi) treat every problem as if it has multiple solutions, (vii) treat every solution as a fleeting solution, (viii) look for consequences in unlikely places and (ix) be aware of any solution that hurts people or undermines strong values.

Jehan (1988) reported that (i) there were marked differences the infrastructure facilities in the schools under different managements in Andhra Pradesh and (ii) private schools were in a much better condition followed by Zilla Parishad (ZP) schools and government schools took the third position.

Kluge (1988) reported that organizational commitment is associated with organizational adaptability.

Mohanty (1988) studied the pattern and problems of administration and supervision of primary schools in Orissa. He found that supervision is to be separated from administration, particularly at the grass-roots level, so as to enable inspectors to freely look to the academic growth of leaders.

Singh (1988) found organizational climate is significantly related to teachers' attitude. An open climate leads to more positive attitude and a closed climate to less positive attitude.

Windham (1988) measured effectiveness of a school in terms of input process and output.

Gonsalves (1989) attempted to critically analyse the job satisfaction of the primary teachers. He found that the percentage of teachers who were satisfied with their job was less than 50% with respect to all types of teachers.

Romzek (1989) suggested that commitment affords the employee a chance to develop a sense of belongingness and to fulfill the human need for meaningful work. Organizational commitment has been used to predict employee's absenteeism, performance, turnover and other work related behavior.

Saraph, *et al*., (1989) listed the critical factors of total quality control. The list of factors includes the role of top management, the role of the quality department, training, product/service design, supplier quality management, process management, quality data reporting and employee relations.

Vasantha's (1989) study focuses on modern management techniques in school administration among the schools of Tamilnadu. Her study revealed that there was no awareness of and encouragement for the application of modern management techniques in school administration in all the schools studied.

Weindling (1989) identifies eight factors that seem to be related to effective schools. The effective or high attaining schools tend to be characterized by the following: (i) academic emphasis which refers to such aspects as high expectations by teachers, a belief that all students can learn and a belief that teachers teach; regular setting and marking of home work; and visible rewards for academic excellence and growth, (ii) classroom management in terms of high proportion of lesson time spent on the subject matter of the lesson (as distinct from setting up equipment, dealing with disciplinary matters, etc.), (iii) keeping good order, (iv) school management, (v) clear goals and continual monitoring of students' progress, (vi) staff development programme, (vii) support from district authorities and (viii) parental involvement and support.

Yukl (1989) advocates that transformational leadership can be viewed both as 'micro level influence process between individuals, and as a macro level process of mobilizing power to change social systems and reform institutions'.

Chakraborti (1990) reported that the teachers in open and congenial climate schools enjoyed more job satisfaction and had higher morale that those in closed climate schools.

Dhyani (1990) studied working conditions of teachers in terms of school buildings and physical facilities. He found that a large number of schools did not have basis facilities like drinking water, sanitary, electricity and play ground. Negligible percent of schools had adequate facilities of almirah, boxes, libraries and map-stands.

Fernandez (1990) studied the psychological aspects of human relations in educational administration of heads of schools. The study revealed that the pattern of distribution of grades of human relations in terms of the relative degree and sharing of responsibilities was not

normal; it was much skewed, i.e. there was a heavier concentration in the high – and the moderate – sharing groups as compared to the low-sharing one.

Mandliya, *et al*., (1990) studied the organised academic programmes and school supervision by the educational administrative officers and found that much needs to be done to improve the educational condition.

Overbaugh (1990) showed relationship between frustration and service conditions and significantly higher job stress among private and semi-government school teachers as compared to those in government schools.

Sahoo (1990) suggests that the authoritarian and bureaucratic styles of the headmasters were negatively correlated with school effectiveness. On the other hand nurturant and participative styles positively correlated with this variable, though the correlations were not significant. He observes that the participative styles of leadership is favored by the assistant teachers.

Subudhi (1990) found that management training to principals enhances their capacity and changes their attitude to bring about desirable changes in their respective institutions. It increases the productivity of the institution.

Choudhary, *et al*., (1991) studied the school supervision performed by the Range and Education Officers. The study revealed that regarding the aspects like the teacher-headmaster relationship, the role of teachers in the development of the school, the teachers-parents association, discipline, etc. The Education Officers expected minute supervision whereas the range officers did not find time to supervise these activities.

Decosmo, *et al.,* (1991) explained that the intensifying adaptation of TQM philosophy in education was due to resource constraints and increasing pressure.

Govinda, *et al*., (1991) analyzed the quality of primary education in with specific reference to the varying socio-economic developmental contexts in which the primary education institutions are functioning. They revealed that the level of infrastructure facilities provided in the schools played an important role in improving the teaching-learning environment and consequently, learner achievement levels and overall school quality.

Pradhan (1991) attempted to investigate the effect of the school organisational climate on the creativity, adjustment and academic

achievement of secondary school students in Orissa. He found that the school organisational climate was found to significantly affect the students' scores of creativity and their academic achievement.

Sherr, et al., (1991) contended TQM as an alternative to many of the management practices in education. TQM is a style of management that has worked for several decades overseas and is receiving growing attention in the United States. It professes a systematic approach to operation, not random approach.

Bonser (1992) states that the move towards TQM in higher education is due to the escalating number of students, the lack of consistent leadership style, the increasing accountability to the public and changing attitude towards universities. These pressures demand peak quality performance from universities in all areas of endeavour. Gomathinayagam (1992) found that the perception by teachers of the panel inspection is only related to the encouragement of professional efficiency of the teachers.

Jayajothi (1992) found that the principal is responsible for the organisational climate and the teacher morale in Central schools.

Singh (1992) found that a variety of factors including the leadership style of the head determine the job satisfaction of staff.

Solanki (1992) attempted to study the relationship between the educational management and the organizational climate of the secondary schools of Saurashtra region. He found that the educational management of a school depends upon the resources of the school system. It was independent of sex and organizational management but mostly depended upon the human, educational and physical dimensions of the resources.

Taj (1992) found that the attitude towards the profession, job satisfaction and personal-interpersonal social adequacy were found to be significant predictors of the administrative behaviour of secondary school heads.

Cole (1995) experimented with application of Total Quality Management in faculty selection. He concluded that application of TQM resulted in improved processes in optimizing job definition and improvement of recruitment methodologies creating better alignment between faculty needs and expectations.

Davies, et al., (1995) reported that Total Quality Management project seems to offer of valuable model for school improvement and the development of a learning institution.

According to Stensaasen (1995) the Deming theory is promising in its applications to education at all levels. It can be applied to most spheres of society.

According to Divoky, *et al*., (1996) the basics of process management include processing customer requirements, applying measurements to the process and product characteristics, and pursuing on-going design improvements.

Dowlatshahi (1996) pointed out that once a common-cause variation is established in the teaching and learning process, an attempt should be made to correct it by the use of the principles and practices of Total Quality Management.

According Idrus (1996), Fox valley Technical College, which has eight years of experience in implementation of TQM, is probably the best example to take in terms of the benefits accrued.

Saxena, *et al*., (1996) studied the school effectiveness and learner's achievement at primary stage covering eight states, viz. Assam, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharastra, Orissa and TamilNadu under DPEP. The State interventions in the form of OB scheme, Mid-day meals programme, free textbooks, and scholarship for regular attendance are found to be having positive impact in one or more states.

Hansen, *et al.,* (1996) in an experiment, applied Total Quality Management (they called it Total Quality Improvement) in class room. They applied the principles of customer focus (students), team process and continuous improvement. The researchers concluded that the TQI approach changed the role of the teacher.

Singh (1996) reported that physical facilities, teacher stay period, academic support to teachers and the role of head teacher, private management, independent primary schools and the academic pressure helped in reducing the gender achievement gap in turn improving the level of achievement.

Askling (1997) discusses the impact of external quality monitoring on interval strategic management and quality enhancement. She concludes that external evaluation is only one of several factors influencing institutional quality and internal monitoring.

Frazier (1997) suggested identification of internal and external customers and survey the customers for valid requirements and satisfaction. In the context of Total Quality Management, the focus is

essentially on the customer or the beneficiary and hence it is important to list down external customers as well as internal customers of an educational institution.

Navarathnam (1997) offered a six-stage quality journey plan: (i) awareness and self assessment, (ii) training and team building, (iii) quality planning, (iv) implementation process, (v) comprehensive evaluation and (vi) continuous improvement.

Owlia, *et al*., (1997) through their studies at various institutions reported the following benefits due to implementation of TQM philosophy in educational institutions: (i) enhancement in the moral of the students and staff, (ii) improvement in staff performance, (iii) improvement in quality of teaching, (iv) increased customer satisfaction, (v) saving in time and reduction in costs, (vi) enhancement in team working culture and (vii) empowerment of people at all levels.

Kulsun (1998) analyses the effect of organisational climate of schools on job satisfaction of secondary school teachers. Results reveal significant differences in the level of job satisfaction of teachers working in the open climate type and familiar climate type schools. Teachers working in paternal climate and closed type schools did not differ in their level of job satisfaction.

Paul (1998) conducted a study on the relationship between the principles of TQM and school climate, school culture and teacher empowerment. The result established a very high correlation among TQM principles and school climate.

Pradhan (1998) discusses various strategies to reduce work stress and burnout among employees in organizations. The source of burnout is mole characteristics, job characteristics, inter-personal relationships, organizational structure and climate and human resource management system. He delineates strategies in each of these areas to deal with work stress and burnout. These include role analysis, job redesign, job enrichment, taking time off, limiting job spillover, supportive behaviour, decentralization, participative decision-making and climate surveys.

Rodgers (1998) conducted a study on teacher perceptions of TQM practices in elementary schools. The study aimed at studying the extent of TQM practices in Maricopa Country Public Schools. The study found that one of the 56 public school districts was implementing TQM practices. There was a significant difference between teachers'

perceptions in a total quality school verses teachers in a non-total quality school in all nine surveyed areas. TQM teachers exhibited high morale and job satisfaction.

Horsburgh (1999) suggests that there are more important factors impacting on innovation in learning than external quality monitoring. She concludes that, overall, the greatest impact on student learning was the curriculum, factors that influence the curriculum and the teachers. The most direct impact on student learning was from teacher practices how they help students learn and the assessment practices they employed.

Dahiya (2000) found that the following issues can be identified as far as provision of primary education in Delhi is concerned: (i) inadequate / absence of access to a comparable quality of primary education and (ii) over crowding in the existing government schools due to lack of buildings, furniture, equipment, teaching learning materials and teachers.

Fourie, *et al.,* (2000) recommended the creation of learning opportunities for academics in relation to teaching. Specifically, they suggest the use of dialogue techniques in order to encourage academics to improve their practices by talking to their colleagues about teaching. They also point to the importance of self-evaluation initiatives, which can serve as the basis of quality assurance programmes.

As noted by Newton (2000) the values and expectations of academics should be taken into account in any quality improvement initiative in that the success of quality monitoring systems rests upon the effort and commitment of academic staff.

Srivastava (2000) conducted a study on teachers' perception to their involvement in the decision – making process of the headmasters and found that nearly half of the teachers opined that the headmasters discuss the problems prevailing in the school; more or less same proportions of teachers perceived that their advices were considered in decision – making process and more than two-thirds of the teachers were satisfied with the decisions only on same occasions and the similar proportions feel that the headmaster is successful only on occasions in solving the problems.

Khera, *et al*., (2001) did a study of self perceived and subordinate perceived leadership behaviour of heads of secondary schools. Their major findings were (i) the leadership behaviour of heads of schools as perceived by them is normally distributed; (ii) the leadership behaviour of heads of schools as perceived by their teachers is normally distributed

and (iii) the leadership behaviour of heads as perceived by their teachers does not differ significantly from that perceived by themselves.

Mizikaci (2001) researched the effectiveness of TQM implementations at Baskent University. Conducted as a programme evaluation case study, she examined the effectiveness of TQM implementations in programmes in terms of a systems approach in three levels; inputs, transforming process and outputs. Data were gathered in a multi-source manner including all defined customers of the university, namely shareholders, students, teachers, managers, coordinators, parents, graduates and employers. Findings showed that TQM is implemented in a desired level only in documentation systems and procedures but not in a desired level in educational impact, academic improvement and customer satisfaction.

Wolf (2001) found, for the Netherlands, that there is strong correlation between the attitude of a school's management about the inspector's work during their assessments and investigations on the one side and the final evaluation outcome by the inspectorate of the quality of schools on the other side.

Joy, *et al.,* (2002) conducted a study on computer assisted instruction: Attitudes of teachers and correlates. The study revealed that there was significant difference between the experimental and control group in their attitude towards computer education. As a result of training in computer assisted instruction, the attitude of the experimental group became more favourable towards computer education.

Karunakaran (2002) conducted a study on total quality culture in higher secondary schools in Dharmapuri district. The study found that the total quality culture in higher secondary schools in Dharmapuri district, is 79.9% of the maximum possible score.

Natarajan (2002) formulated a study on school organisational climate and job satisfaction of teachers. He concluded that organisational climate differs from school to school. Open climate is helpful for very high level of job satisfaction among the post graduate teachers of higher secondary schools. Except the sex of teachers, the other variables viz. marital status, location of school, type of school, type of management in which they work and the subject they teach do not cause difference in their job satisfaction.

Vadivambal, *et al*., (2002) studied relationship between the adequacy of teachers and performance of the students in the primary schools.

Their study revealed that simply the number of teachers would not help in producing good results.

Sharma, *et al*., (2003) stated that quality circles are feasible in education along with stressing the need of appropriate implementation, management support and sustained, deliberate efforts for extensive influences of quality circles in education.

Selvam, *et al*., (2003) conducted a study on impact of parental literacy on academic achievement of students. The objective of their study was to find out the academic achievement of First Generation Learners (FGL) and Non First Generation Learners (NFGL). The sample of the study comprised of 214 student of primary schools (78 FGLs and 136 NFGLs) from four different primary schools in Thiruvidaimaruthur block in Thanjavur district of Tamil Nadu. To know about the parents education an inquiry form was used. To know the academic achievement the enrolment and stagnation details of the students, the schools records for the period between 1997 – 1998 and 2001-2002 (i.e standards one to fourth) were referred. This study concludes that parental literacy has positive impact on the academic achievement of children.

Gnanadevan (2004) conducted a study on resolution of conflicts by heads of schools and found that heads of schools use different methods such as avoiding, competing, silencing, compromising, transferring, collaborating, confrontation, smoothing, arbitration and negotiation for resolving conflicts though the frequency of using them varies. The negotiation is the most frequently used method and silencing is the least frequently used method for resolving conflicts by heads of schools.

Rao (2004) concluded a study on the relation between physical facilities, teachers' facility and the academic attainment in municipal secondary schools and found that the academic achievement of students depends largely on the availability of physical, human and other infrastructure facilities in the schools.

Selvam, *et al*., (2004) conducted a study on attitude of elementary school head masters towards inclination operations to Total Quality Management for securing excellence. The objectives of their study were-to find the significant between a) male and female, b) rural and urban, v) graduate and non-graduate and d) below 10 years of experience and above 10 years of experience of headmasters with regard to Total Quality Management (TQM) at elementary school level. The sample

of the study comprised of 76 elementary school headmasters from Kumbakonam and Thiruvidaimaruthur blocks of Thanjavur district in Tamil Nadu, randomly selected. The data was collected through a questionnaire developed by the investigator and analysed using 't' test. This study confirms that the male, rural, non-graduate and below ten years of experienced head masters are having lower mean score than the female, urban, graduate and above ten years of experienced headmaster with regard to attitude towards TQM.

Selvam, *et al*., (2004) conducted a study on Total Quality Management in elementary education programme. The objectives of their study were to find out the difference between the variables such as structure of institutions (middle schools, higher secondary schools) and system of governance (government managed schools, government aided private management schools) of elementary education programme in terms of Total Quality Management. The sample of the study comprised of 195 elementary school students in Thiruvidaimaruthur block of Thanjavur district, Tamil Nadu. The purposive sampling technique has been followed the study. The data was collected through a checklist developed by the investigator and analysed using Mean. This study clears that TQM differs, according to the structure and governance of schools. The TQM practice in higher secondary schools is higher than that of middle schools. It may be due to highly qualified teachers and their awareness of TQM in higher secondary schools. The TQM in elementary education programme of aided schools is higher than that of government schools. This may be due to adequate financial status, good infrastructure, and positive attitude towards TQM and resource mobilization in aided schools.

Selvam, *et al*., (2004) conducted a study on possibilities of quality teaching in elementary schools. The objective of their study was to know the Block Resource Teachers (BRTs) view on possibilities of quality teaching in elementary schools. The sample of the study comprised of 67 BRTs were randomly selected form 15 locks of Thanjavur district of Tamil Nadu. The data was collected through a questionnaire developed by the investigator. The responses of BRTs were grouped under tow major headings: 'Yes' (if the BRTs think that there are possibilities for quality teaching) and 'no' (if the BRTs have no hope on qualitly teaching). The data was analysed using percentage. The study revealed that the mean score of possibilities of quality teaching in elementary schools was 54%.

Srikanthan*, et al*., (2004) summarised the core elements of the generic model addressing quality management in education as follows: (i) a clear focus on transformation of the learners, (ii) enhancing them through adding value to their capability and ultimately empowering them, (iii) a synergistic collaboration at the learning interface which transcends not only the traditional power relationships but breaks the barrier among institutions and reaches out into developing new external partnerships with the community and, (iv) a strategic focus on assessment of the student as a means of embedding and improving learning.

Selvam, et al., (2005) studied eminence of Total Quality Management in elementary education. The objective of their study was to find out the status of Total Quality Management (TQM) in elementary education programme in Thanjavur district of Tamil Nadu. The sample of the study comprised of 125 parents of elementary school students of Thiruvidaimaruthur block of Thanjavur district, randomly selected. The data was collected through a questionnaire developed by the investigator. The data analysed using average of scores. The study revealed that the elementary schools picked up some of the ingredients related to TQM.

Selvam, et al., (2005) studied the infrastructural background for facilitating quality primary schools. The objective of their study was to find out the infrastructural background for facilitating a quality environment to promote teaching learning process. The sample of the study consisted of 105 primary school teachers from 4 blocks of Thanjavur district in Tamil Nadu, randomly selected. The data was collected through a questionnaire developed by the investigator. All item of the questionnaire were of 'yes' or 'no' type. The data was analysed using percentage. It is clear from the findings and discussions of the study that infrastructure has been taken into serious consideration for quality in education.

Selvam, et al., (2005) established the fact that adoption level of quality assurance in the instructional practice of primary schools is low to moderate. The objective of their study was to know whether the teachers practice quality assurance to raise the standard of instruction in primary education. The sample of the study comprised of 33 Block Resource Teachers (BRTs) were randomly selected from 15 blocks of Thanjavur district in Tamil Nadu. The data was collected through a questionnaire

developed by the investigator and analysed using percentage. It has been observed that majority of the primary teachers did not practice quality assurance in the teaching process.

Swatantradevi, et al., (2005) studied quality planning for total quality in primary education system. The objective of their study was to know whether the teachers practice quality planning for achieving the total quality in primary education system. The sample of the study comprised of 85 Block Resource Teachers (BRTs) of Thanjavur district of Tamil Nadu, randomly selected. The data was collected through a questionnaire developed by the investigator and analysed using percentage. The study clearly reveals the fact that the preparation of quality planning in the primary education system is low. It is a fact that no change in quality can come in without proper planning, experiments, taking efforts, undergoing hardships, having a positive attitude, dedication and professionalism in true term.

Szanto (2005) reported that the self-evaluation guidebooks or manuals written by the agencies are usually very demanding as to the amount of data and information required from institutions to be evaluated. This means that higher education institutions complain that the self evaluation process imposes a significant burden on them, with much extra work and resources being needed to prepare the self-evaluation documents.

Gnanadevan (2006) studied the attitude of teachers towards educational innovations. His research study revealed that the attitude of teachers towards educational innovations is highly favourable.

In a study by Selvam (2006) it was observed that TQM conditions are occurred and put efforts a collectively to enhance the excellence of the elementary education system in Erode district.

Selvam, *et al*., (2006) conducted a study on incumbency of quality control for quality classroom process in primary education. The objective of their study was to know whether the primary schools adopt quality control mechanism as classroom process. The sample of the study comprised of 85 Block Resource Teachers (BRTs) were randomly selected form 15 blocks of Thanjavur district of Tamil Nadu. The data was collected through a questionnaire developed by the investigator. All items of the questionnaire were of 'yes' or 'no' type. The data was analysed using percentage./ The study revealed that primary teachers apply quality control at optimum level for some of the aspects of classroom practice.

Selvam, et al., 2006, studied permanence of Total Quality Management in Primary Education Programme. The objective of their study was to puzzle out the perpetuity of Total Quality Management (TQM) in primary education programme in Erode district of Tamil Nadu. The sample of the study comprised of 86 channel partners (18 supervisors of Block Resource Centres, 33 coordinators of cluster Resource centres and 17 teachers) of primary education programme from Erode district, randomly selected. The data was collected through a questionnaire developed by the investigator and analysed using Mean opinion score. The findings of the study were – 1) The permanence of TQM in primary education programme has been highly impressive scoring the overall mean value of 3.80 at five point scale. 2) The study revealed that TQM has been practiced by the primary schools.

2.2. REVIEWS RELATED TO EDUCATIONAL TECHNOLOGY

Singh (1980) conducted a study on technology in education-growth and development in the secondary schools of Bihar with special reference to Monghyr district and its impact on the teaching-learning process. The study revealed that a majority of teachers had opined that Educational Technology had changed the classroom teaching-learning process to a great extent and had also made an attitudinal change among the pupils.

Singh, *et al*., (1984) revealed that 75 percent of the teachers favoured the ETV programmes being syllabus based and most of the teachers felt that environmental studies for classes I and II and general science for classes III, IV and V should be given top priority.

Wad (1984) conducted a study on the scope of communication media such as radio, television in education at high school level in Maharashtra State. The study revealed that the need of communication media in the teaching learning process had been felt by the teachers and parents also, but yet the radio and TV programmes had not attained a 'must value' in the learning process.

Good, *et al*., (1988) argue that small-group instruction is not a panacea but an attractive instructional format that, when properly implemented (e.g., careful organization and appropriate curriculum tasks) could enable teachers to achieve certain goals: meaningful practice on subject matter of appropriate difficulty and interest, learning pro social skills, taking different approaches to problem solving, verbalizing thoughts about mathematics, and growing in social intelligence.

Guskey (1988) concluded that mastery learning approach has allowed many teachers to dramatically increase the number of students in their classrooms who learn, and learn very well what they as teachers have set out to teach.

Morgan (1988) investigated if student's perceptions of classroom life and their social integration differed between classrooms where co-operative learning was structured at least 30% of time versus classrooms where it was structured less than 30% of the time. The study revealed that students in classrooms where co-operative learning strategies were used at least 30% of the time had a more positive view of classroom life. And their achievement scores reflected more growth than students in low use class rooms.

Nagan (1988) found that Mathematics could be taught more effectively through the use of computers and computer assisted programmes, and that the contribution of electronic devices such as computers and calculators in increasing understanding in Mathematics is indisputable.

Forman (1989) investigated how two girl students of grade VII with different initial instances toward a complex task in geometry can help each other incorporate new experimentation and reasoning strategy into their repertoire. He found that peers could serve as teachers and pupils for each other. He concluded that children could take an active role in discovering and applying mathematical concepts.

Singh's (1989) makes an effort to find out the effectiveness of two training strategies in developing teaching competence. One group of student teachers was exposed to Observe-Demonstrate Practice (ODP) teaching strategy, i.e., observe good teaching in the real classroom situation, then see a demonstration on video film on a particular teaching skill, followed by practice. In another teaching strategy the sequence was Demonstration followed by Practice followed by Observation (DPO). The results of the study indicated that both the teaching strategies were significantly effective in gaining understanding of microteaching and in developing a positive attitude towards teaching.

Slavin (1989) contends that research shows that co-operative learning programms enhance various affective outcomes, including inter group relations, acceptance of main steamed academically handicapped students by their classmates, self-esteem, liking of class or subject, and acceptance of others.

Stodolsky (1989) found that only at the lower levels of skills-driven subjects (e.g., reading and Mathematics) are teachers likely to follow explicit directions in manuals. In many curricular areas, teachers use the text book as a guide and select from it. Thus current practice in selected subjects does allow for decision making on the part of the classroom teacher. For many teachers, therefore, the textbook can provide and excellent and useful resource, without usurping the position of the teacher.

Bonapare (1990) measured the effects of two forms of classroom organisation, co-operative mastery learning and competitive mastery learning on the mathematical achievement and self-esteem of 240 urban second-grade pupils. It was found that co-operative mastery learning form of classroom organisation was superior to the competitive-mastery learning form of classroom organisation. A significant correlation between mathematical achievement and self-esteem was found.

Chaudhary (1990) conducted a study on teacher's attitude towards School Television (STV) and its relation with job satisfaction. He found that job satisfaction was associated with the authority responsible. For work allocation, intensive case studies revealed that the majority of teachers did not operate STV regularly and the majority of TV sets were out of order. Teachers perceived STV as a good tool for teaching and were fairly satisfied with their job. Teachers teaching classes IV and V showed a more positive attitude towards STV than teachers teaching classes I-IV.

Dutta (1990) conducted an experiment to study the effect of microteaching on general teaching competence and to see how microteaching influences teachers' attitudes. He found that both microteaching and the additive pattern were superior to conventional teaching and both proved more effective in developing positive attitudes towards teaching.

Narayanan (1990) reviewed studies on Social inquiry model in Indian situations and concluded that (i) it gives clear and distinct ideas of concepts and principles; (ii) it enhances understanding of the subject matter through interactions with others, and (iii) it encourages how to work productively with learners of different personalities.

Abrol, et al, (1991) conducted a study on TV viewing among children of Delhi schools. The study was based on a sample of 750 students drawn from 44 primary and secondary government schools.

The findings reveal that the majority of the mothers were restive to their children's TV viewing, and no significant difference was found in the amount of TV viewing by male and female children. Viewing was independent of IQ of viewers and it was heavy on Saturdays and Sundays.

A Study by Latham (1991) showed that retained effect of students using the colour version of the lesson was higher that those using the achromatic version.

Solachi (1991) conducted a study on availability and utilization of Educational Technology in the higher secondary schools of a district in Tamilnadu. The study revealed that the utilization rate was higher in urban schools as compared to rural schools. Government and aided schools also differed in their utilization rate. The aided schools did a better job. Between boys and girls schools, the boys' schools utilized Educational Technology more. Science teachers as compared to Humanities teachers utilized more of non-projected and projected visual aids. They also utilized more of community resource technology.

Gor (1992) in a study on developing teaching competency of primary school-teachers found that microteaching strategies produce significant effect on attitude towards teaching profession, and also found microteaching a very effective technique.

A Study by Lai (1992) indicated that hypermedia environment is effective in vocabulary learning.

The study of Ibrahim (1995) examined whether field dependence / field independence and experience in using computers had any relation with attitudes of teachers towards computers. He found significant differences in attitudes towards computers between filed dependent and field independent teachers, less experienced and experienced teachers less experienced and more experienced teachers and experienced and more experienced teachers.

Persico (1995) examined academic and social progress of 13 tutees that participated in a pilot sixth-grade peer-tutoring programme. The research question was:" can a peer tutoring programme meet the academic and social needs of middle school level children?" It was found that students benefited from the peer-tutoring programme. The social interaction with a peer tutor helped to improve the academic performance of the tutees.

Stevens (1995) concluded that students who were taught in class using computers experienced significantly more confidence towards computers, less anxiety towards computers and a more positive attitude towards learning process that did not use computers.

Fuchs, *et al*., (1997) explored the effectiveness of peer-assisted learning strategies by comparing the reading progress of three learner types-low-achieving students with and without disabilities and average achieving pupils to corresponding controls. The sample of 120 students from 40 classrooms of 12 schools was taken and schools were randomly assigned to Peer Assisted Learning Strategies (PALS) and no-PALS group. Students in PALS classrooms made significantly greater progress than their counterparts in no-PALS classrooms across three reading measures.

A study by Nocente (1997) indicated that students with below grade level reading ability made greater gain, if audio was available.

A study by Radwan (1997) supported that the intelligent CAI makes significant improvement in the learning skills of the students.

Rangarajan, *et al*., (1998) found that CAI as a modern instructional technology can be exploited for achieving different instructional objectives in Physics as a curricular subject at higher secondary level. CAI packages in Physics are helpful to the practicing teachers in such a way that even the most difficult content areas can be taught to the pupils more effectively.

Toppin (1998) conducted a study on attitudes of college students toward computers. Descriptive results indicated that the majority of students surveyed have low anxiety, high confidence, high liking and high usefulness attitudes towards computers.

Tsuei (1998) states that Multimedia CAI is source for effective communication and providing new dynamic environment for learners. Also multimedia software has a great potential in facilitating student's creativity.

Singh, *et al*., (2001) formulated a study on English language proficiency of students in different English language teaching systems. The study was designed to compare two equated samples of students one studying in the traditional system of school education and the other in the innovative system. The innovative system of education refers to the semester system with new techniques of teaching and evaluation like seminars, group discussions, periodical assessments

(objective type of tests) and emphasis on co-curricular activities for all round development of students. Students of both the systems were found to exhibit the same level of proficiency only in one skill viz. listening. In all the other skills i.e. speaking, reading and writing the performance of the students in the innovative system was found to be significantly higher.

Katherine (2001) conducted a study on application of Educational Technology in teaching of Mathematics at secondary school level in Bharathidasan University jurisdiction. The study reveals that all the teachers of Bharathidasan University jurisdiction are having positive attitude towards the application of Educational Technological Aids at secondary level.

Natesan (2001) concluded that learning mathematical concepts through video film can increase the rate of learning. A follow-up discussion followed after video instruction programme can make the learning more concrete and effective and more over it makes the learning more interesting and realistic.

Ponnusamy, *et al*., (2001) undertook students' achievement and cooperative learning method in Mathematics at upper primary level. The major findings of this study were: (i) cooperative learning contributes a lot to improve the academic performance of the students in VII and VIII standards in learning Mathematics, (ii) the standard has no effect on the performance of experimental group students and so the effectiveness of cooperative learning can be generalized and (iii) the gender has no effect on the performance of experimental group students and so the effectiveness of cooperative learning can be generalized.

Selvam (2001) did an action research entitled a study on the competence of V standard students in knowing the principle and classification of lever. With regard to source of action research, it could be noted that using TLMs for science teaching becomes highly effective than text books.

Tholappan (2001) identified that there is a significant difference between the experimental group and the control group in their performance in Economics when taught through conventional method and OHP.

The multimedia package was tried out with a set of IV standard students by Vaidyanathan, *et al*., (2001) and they found out that it was a better method than the conventional method.

Dubey, *et al*., (2002) conducted a study on effectiveness of instructional material on thinking skill of classification in terms of achievement of students at primary level. This study inferred that the instructional material on thinking skill of classification could positively influence the achievement of students on the criterion test.

Maniar, *et al.,* (2002) studies usage of internet for educational purpose. The study revealed that internet services for educational purposes were utilized sometimes. The respondents used it more for class assignment in comparison to research work and other educational purposes. Significant difference was found in the internet usage for class assignment in relation to the years of exposure.

Chinnappan (2002) did a study on play-way method in remedial teaching of English alphabet. The main aim of the study was to find out the difficult letters (the English alphabet) which posed problem of recognition for children, the reasons and the remedial measures. It was also an attempt to find out the effectiveness of play-way method in the remedial teaching of the English alphabet in standard III. The result indicated that the play-way method is more effective than the conventional method.

Gnanasundaratharasu, *et al*., (2002) proved that the pupils who learnt Social science through Video Assisted Instruction (VAI) are better than the pupils who learnt through the conventional method and they concluded that VAI is relatively more effective in teaching Social science at primary level.

Ruth, *et al.,* (2002) conducted an experimental study among the students of standard III makes a clear point, i.e. children like to learn by involving and indulging in activities that enrich their learning experiences. The major findings of the study were: (i) the school atmosphere can be made lively and attractive through play-way and activity based teaching and increase in daily attendance and enrolment, (ii) the parents were impressed with such purposeful activities and got interested in sending children to school and (iii) the zeal and interest of the children was well felt through activity-based teaching.

David (2002) studied effectiveness of using photographs along with real specimens on the attainment of the competency in Environmental science. He concluded that this technique is proved to be more effective than the traditional method in understanding the concept by the pupils in the classroom.

Huneke (2002) conducted a study on student integration and attitudes towards technology use as predictors if institutional commitment. The findings of the study included a number of significant relationships, such as that the variables of academic and social integration had a much greater impact on students institutional commitment than the variables related to students attitudes toward technology use.

Lukow (2002) conducted a study on learning styles as predictors of student attitudes toward the use of technology in recreation courses. The results indicating the frequent use of computers for "one to one" communication (e-mail) and web surfing supported the literature regarding the steady increase in the use of electronic mail and the internet by students in higher education.

Manimekalai, *et al.,* (2002) conducted a study on effectiveness of activity approach to teach geographical concepts from globe model at primary level. This study confirmed that activity approach to teach geographical concept has achieved the required academic out come of the students of standard V.

Natrajan (2002) has done an investigation into the impact of tape recorder in inculcating value education among the teacher trainees. The result indicated that tape recorder is found to be more effective in inculcating value education among the teacher trainees.

Pandey (2002) reported that CAI was found to be more effective than the traditional method.

Radhamani, *et al*., (2002) conducted an experimental study on audio tutorial in enhancing the academic achievement of the sixth standard students. The audio tutorial method was found to be more effective in improving the performance of students in learning Social science than the conventional method.

Shahapur (2002) made an attempt to study the attitude of secondary school students towards Computer Assisted Learning (CAL). The results showed that (i) boys of aided schools have a more favourable attitude towards CAL than boys of government schools, (ii) girls of aided schools differ in attitude towards CAL from girls of government schools, (iii) there is a significant difference between boys and girls of aided schools in respect of their attitude towards CAL and (iv) no significant difference is found between the boys and girls of government schools in respect of their attitude towards CAL.

Varank (2002) found that teachers who received the training scored higher on attitude scales, with more positive attitude towards computer use in the classroom, than those teachers who had received no training. Similarly, instruction scored higher on motivation scales than students who had received similar lessons without computer support.

Akila, *et al*., (2003) conducted a study on effectiveness of video software in teaching and learning social science among the V standard pupils. Their study reveals that the video softwares in social science for V standards for the four selected units produced by the ET Cell of the DTERT, Chennai is very effective.

Anbuchelvan, *et al*., (2003) concluded that Activity Based Teaching (ABT) was effective in teaching Science among the students of standard III.

Das (2003) conducted a study on computer-assisted instruction: Attitudes of teachers and correlates. The study revealed that there was significant difference between the experimental and control group in their attitude towards computer education. As a result of training in Computer Assisted Instruction (CAI), the attitude of the experimental group became more favourable towards computer education.

Easwari (2003) has studied effect of pupil location on the mastery of EVS competencies in standard I. She concluded that there is a significant gain in the mastery of competency in EVS due to the reformed pupil's location. Thus the location of the pupils gives an impact on mastery of competency.

Jayanthi (2003) found that the use of OHP gave scope to the students to be very active and involved unlike the conventional system.

Kukreti, *et al*., (2003) concluded that in terms of student's achievement CAI is more effective than the traditional lecture method.

Paul, et al., (2003) concluded that the secondary grade teachers have low attitude towards CAI.

Ponnusamy, *et al*., (2003) has investigated the use of instructional media in primary schools. They concluded that most of the primary school teachers were not utilizing bulleting board, transparencies, slides, audiotapes and TV in their schools. But, most of them were utilizing models and newspapers in their class room activities.

Rama (2003) studied effectiveness of play-way technique in teaching of Science at upper primary stage. The findings of the study showed

that the difference in the means of both experimental and controlled groups is 12.17 which is significant. This study discovered that play-way technique of teaching Science is superior to formal method.

Santhi, *et al*., (2003) found that Video Assisted Instruction (VAI) is more effective and creates interests of the children on learning lessons.

The study of Satapathy, *et al*., (2003) aimed at finding out the effectiveness of activity-based classroom transaction in terms of quality of achievement of the pupils and retention of the competencies learnt. The result of the study showed that activity-based classroom transaction is very effective in promoting learning and improving achievement and retention of the competencies. It makes learning very durable for pupils, both in small and large-sized classes.

Selvi (2003) conducted a study on effectiveness of Computer Assisted Instruction. This study revealed that the mean score of CAI group is greater than the mean score of TTM (Traditional Teaching Method) group.

Vasanthi, *et al*., (2003) have developed CAI multimedia software on Electro Chemistry and Banding. They tested its effectiveness for teaching Chemistry for I year B.E students. From the findings, it could be concluded that teaching Chemistry through CAI was found to be more effective than teaching through the traditional method.

Robinson, *et al*., (2004) pointed out that achievement in science is affected by learning style and study habits. It is seen that kinesthetic / tactile learning as well as group learning facilitate high performance in Science. Thus science teachers in middle schools should plan more group activities to facilitate higher performance in Science.

Doss, *et al*., (2004) studied learning approaches and academic performance of college students. The major findings in the study were: (i) achievement approach is the predominant one among the college students, (ii) the place of residence and the institutional back ground of the college had significant influence on learning approaches and (iii) the academic performances of the college students was related to their approaches to learning.

Gupta's (2004) research study revealed that group study method improved the academic performance of not only weak students but also bright ones.

Geetha (2004) did an experiment with scaffolding, reciprocal teaching and shared learning for learning Mathematics for zone of

proximal development through the application of Vygotskian principle. The findings of the study showed that the pupils expressed eagerness to learn through activity-oriented method and they could understand the concepts better with reference to social context.

Begum (2004) has investigated the effect of mediated learning experience on communicative competence of primary teacher trainees. Her major findings were: (i) there is a significant difference in the mean scores of the pre and post-tests of the study as the calculated 't' value is greater than that of the theoretical value, (ii) the mediated learning experiences provided by the mediator is very effective in forming a 'good start' among the teacher trainees to enhancing the communicative competences and (iii) the mediated learning experiences created a real interest and enthusiasm among the learners.

Prabahakaran, *et al*., (2004) conducted a study on effectiveness of assignment strategy in teaching Tamil to slow learners of the V standard students. This study reveals that there is a significant difference between the pre-test and post-test mean scores of the experimental group of slow learners while using the assignment strategy.

Sadananthan, *et al*., (2004) conducted a study on effectiveness of lecture cum field trip in teaching History. From the study, it is inferred that if History is taught through lecture supplemented with field trips, learning becomes meaningful. Students will get direct experience and make genuine interest in learning.

Sethumadhavan (2004) prepared an instructional package for art of healthy and productive living. His study concludes that instructional package for art of healthy and productive living is effective for the students of standard V.

Annaraja, *et al*., (2005) found that the power point presentation is effective in teaching Zoology. Further, the use of power point presentation has improved the knowledge, understanding and skill levels of the students. This may be due to the fact that the animation effect of the slides motivated the students in learning. Further the effects of the colour of the slides draw the attention of the learners in learning.

Cox (2005) conducted a study on learning styles and students attitudes toward the use of technology in higher and adult education courses. The results of the ANOVA showed no significant findings, which demonstrates that in the population for this study, no

relationship exists between attitude towards the use of technology and learning style.

Kailasavani (2005) used cubes for developing the skills of writing the chemical symbols of elements among the VII standard students through play-way method. She found that the play-way method is more effective than traditional method of teaching.

Paul (2005) developed a power point package for improving the achievement level of III standard children in Environmental Science. He concluded that the attainment of competency on population could be achieved by providing direct experience to the learners through power point.

Sharma et al., (2005) conducted a study on the status of computer education in schools of Bhiwani. The study revealed that all teachers working in schools of Bhiwani have positive attitude towards computer education. They have recognized that with passage of time, everyone will have to acquire computer literacy if they want to cope with the technological complexities of everyday life.

Selvam (2005) developed and tested supporting cards for teaching Environmental science. He observed that these cards played very important role in teaching and learning processes and knowledge of the students and these cards can be used for effective teaching and productive learning.

Selvam, et al., (2005) tried to improve the performance of scholastic achievement of science concept on "Life cycle of Riccia" among VII standard students through "Sema-stubbic Tutoring System". The difference between the pre-test and post-test scores of scholastic achievement of students was statistically significant. It implies that the "Sema-stubbic Tutoring System" was significantly different from that of the traditional teaching in terms of improving the performance of scholastic achievement among VII standard students.

Muthukrishnan, *et al*., (2006) reported that learner friendly task-based approach in transformation of reported speech in English is more effective than customised approach.

Parvathi, *et al*., (2006) studied the impact of activity based teaching in primary mathematics. The study indicates that the activity based teaching techniques improves the interest of students in learning and ensures retention of the knowledge gained.

2.3. CONCLUSION

An extensive review of literature made it possible for presentation of some salient observations under classified headings. All these observations were used in the conceptualization of the problem, selection of variables and formation of the problem, selection of variables and formation of hypotheses for experimental verification. The next chapter deals the research design of the present study.

Chapter-3
RESEARCH DESIGN

3.0. INTRODUCTION

Research design decides the fate of any research proposal and its outcome. As much it is regarded as the heart of any research designing provides a picture for the whole study before starting the work. It is, in simple language, a plan of action. A research design is a plan of action, a plan for collecting data in an economic, efficient and relevant manner. So the design of the study is the heart of any research. The following aspects have been discussed in details which are concerned with the research design of the present study entitled "The Attitude of Primary Teachers towards Total Quality Management in Relation To Their Attitude towards Educational Technology". The research procedure of the present study is described under the following major headings viz.

(*i*) Tools used for the collection of data,

(*ii*) Sample used for the study,

(*iii*) Variables of the study,

(*iv*) Data collection procedure, scoring and consolidation of data and

(*v*) Statistical techniques used for the analysis of data.

Details of the framework adopted for carrying out the research study are given in this chapter.

3.1. RESEARCH PROCESS

Before embarking on the details of research methodology and techniques, it seems appropriate to present a brief overview of the

research process. Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps.

The chart medicates that the research process consists of a number of closely related activities, as shown through I to VII. But such activities overlap continuously rather than following a strictly prescribed sequence. At times, the first step determines the nature of the last step to be undertaken. If sequence procedures have not been taken into account in the early stages, serious difficulties may arise which may even prevent the completion of the study. The various steps involved in a research process are not mutually exclusive, nor they are separate and distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research process the requirements of the subsequent steps. However, the following order concerning various steps provides a useful procedural guideline regarding the research process.

(*i*) Formulating the research problem,

(*ii*) Extensive literature survey,

(*iii*) Developing the hypothesis,

(*iv*) Preparing the research design,

(*v*) Determining the sample design,

(*vi*) Collecting the data,

(*vii*) Execution of the project,

(*viii*) Analysis of data,

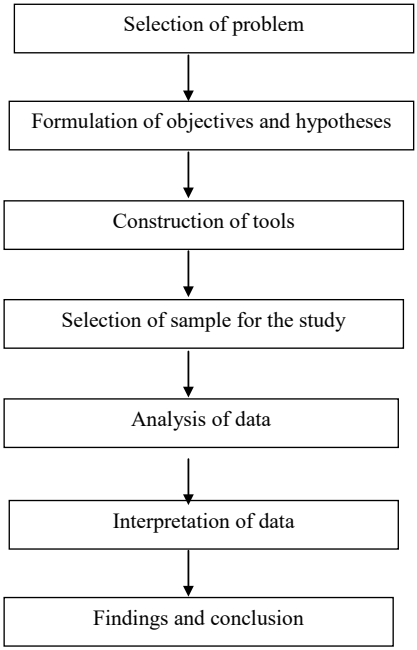
(*ix*) Hypothesis testing,

(*x*) Generalization and interpretation and

(*xi*) Preparation of the report or presentation of the results i.e., formal write-up of conclusions reached.

3.2. RESEARCH PROCEDURE

The following flow chart explains the research procedure of the present study.



3.3. TOOL

A research tool plays a major role in any worthwhile research as it is the sole factor in determining the sound data and in arriving at perfect conclusions about the problem or study on hand, which ultimately, helps in providing suitable remedial measures to the problem concerned.

3.4. DEVELOPMENT OF TOOLS

An attitude represents an individuals feeling for or against something. It is also found as the degree of acceptance given by an individual for something. An attitude is one's mental disposition or degree of acceptance directed towards an object, which may either concrete, or abstract. Psychological researches help us to understand the major characteristics of attitude. They are:

(*i*) Pre-dispositions to behaviour in the attitudinal concept,

(*ii*) Mostly learned behaviours and hence not inherited or in hate dispositions,

(*iii*) More or less permanent and persistent for a reasonable period of time,

(*iv*) Directed towards a goal or an object,

(*v*) Can be indirectly inferred from one's covert or overt behaviour and

(*vi*) Essential components of one's personality and are organized within the personality system of the person.

3.4.1. Measurement of Attitude

The following methods are used to measure the attitudes.

(*i*) Asking an individual directly to find out how he feels about a subject,

(*ii*) Asking the individuals to check in a lot of prepared statements with which he is in agreement. The degree of agreement can also be indicated and

(*iii*) Inferring attitudes form a person's reactions to projective tests.

Attitude questionnaires (also called opinionnaires) and rating scales are generally used for measurement of attitudes. In this study the investigator followed Likert's technique in developing the attitude scales towards Total Quality Management (TQM) and Educational Technology (ET).

3.4.2. The Likert's Scale

The Likert's method of attitudes scale is popular and simple. This method is consisted of multiple choice type statement.

3.4.2.1. Step I (Construction)

(*i*) The statements should be collected which are relating to the social or psychological object in question.

(*ii*) The statements should be such that they represent different degrees of acceptance of the object and

(*iii*) The statements can be collected from a wide variety of sources like authoritative books dealing with them, research literature, and newspaper statement, etc. A very large pool of items is adequate for developing a good attitude scale.

3.4.2.2. Step II (Editing Of Items)

The collected statements will have to be edited or modified in order to

(*i*) Avoid double statement,

(*ii*) Avoid abstract or complex ideas or terminology,

(*iii*) Cover all statements expressing all degrees of acceptance (rejection),

(*iv*) Cover aspects and dimensions relating to the object and

v. Include approximately equal number of positive and negative items.

3.4.2.3. Step III (Item Analysis)

The preliminary pool of items is printed in the form of an attitude questionnaire with a five point responses given against each statement as shown below.

Statement	Strongly Agree	Agree	Undecided	Disagreed	Strongly Disagree

Each item in the scale is scored as described. In scoring, positive and negative items are distinguished. An opinion favorable to the purpose is taken as positive item and other is taken as negative item. The scoring is as shown below.

Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Positive	5	4	3	2	1
Negative	1	2	3	4	5

The draft is administered on a representative sample. The answer sheets are arranged in the decreasing order of the total scores. From the total answer sheets; top 27% answer sheets and the bottom 27% answer sheets are used for item analysis. The 't' value can be calculated using the following formula.

$$t = \frac{M_H - M_L}{\sqrt{\frac{\nabla (X_H - M_H)^2 + \nabla (X_2 - M_2)^2}{n(n-1)}}}$$

Where,

M_H - Mean Score in the item of the high group

M_L - Mean Score in the item of the low group

X_{H-}-Any representative score of the high group

X_L - Any representative score of the low group

n - Sample size in either the high or low group.

Items showing high 't' values are considered to be better as compared with items of low 't' values. This is so because a good item is one, which produces a higher, mean score in the high group and lower mean score in the low group. Statements showing high 't' values are selected.

3.4.2.4. Step IV (Final Scale)

The selected items were arranged in such a way that positive and negative items alternate. This arrangement will help us to cover the real intention of a measuring tool. The final scale is administered on a large sample.

3.5. TOOLS FOR THE STUDY

Researchers and policy-makers for evaluating "Total Quality Management in education" and "Educational Technology" used different tools. There is a strong demand for improving education quality in schools in India and most other countries. In view of he significance of the role in education played by teachers, Policy-makers recommended that the teachers should accept the responsibility and be accountable for their part in the declining standards of education and cooperate to contribute positively in a constructive manner.

Total Quality Management in education is emerging and striving for its existence in Indian educational system. Hence, a deep probe of research is still required in India. Moreover, Educational Technology has been recommended for improving teaching quality in Indian academe. For teacher effectiveness, knowledge of Educational Technology seems to be essential.

Attitude is the moving spirit of all functions of one's life. Teacher is the heart of the school system. Therefore, the investigator was to develop sensitive instruments, which could measure the attitude of primary teachers towards Total Quality Management & Educational Technology and provide an empirical evidence for administrative decisions.

The major aim of the study is to find out the relationship between the attitude towards Total Quality Management and Educational Technology among the primary teachers. With this purpose the investigator is developed the following tools for the present study.

1. Teachers' Attitude Towards Quality Management (TATTQM). (Selvam, Vincent De Paul and Swatantra Devi, 2004) and
2. Teachers' Attitude Towards Educational Technology (TATET).

   (Selvam, Vincent De Paul and Swatantra Devi, 2004).

   Both the tools have adequate validity and satisfactory reliability.

3.5.1. Development of Teachers' Attitude Towards Total Quality Management (Tattqm)

Almost all the above said principles were strictly followed in the development of Teachers' Attitude Towards Total Quality Management. The Total Quality Management dimensions such as infrastructure, head teacher, quality teaching, teaching-learning materials and students were considered for collecting items. Forty five statements representing different degree of acceptance with regard to different aspects of Total Quality Management were collected from variety of sources. The collected items were presented to five experts to offer their opinion regarding the objectivity, suitability, clarity and relevance of items. The experts opinions have been taken into consideration, and on the basis of the remarks and suggestions offered by them, overlapping of items are identified. As per their suggestion, forty five items were reduced to thirty five items.

Thirty five statements were administered to 118 primary school teachers working in Thanjavur district of Tamilnadu. The responses made by the teachers served were subjected to item analysis. Item showing higher 't' values were selected for the final study. Totally 20 items were selected for the final study. The scale has 10 positively worded items and 10 negatively worded items. The items numbered 1,5,6,7,9,12,13,16,17 and 18 are positive and others are negative items. The maximum score that one can obtain is 100 and minimum is 20 on the Teachers' Attitude Towards Total Quality Management (TATTQM).

Table-3.1 't' value and significance level for the statements in the TATTQM.

Item No (Draft)	't' value	Level of significance	Item selected
1.	2.104	0.044	No
2.	7.000	0.000	Yes
3.	3.778	0.000	Yes
4.	0.000	1.000	No
5.	7.940	0.000	Yes
6.	3.495	0.001	Yes
7.	2.884	0.005	No
8.	2.385	0.021	No
9.	3.215	0.003	No
10.	3.415	0.001	Yes
11.	3.483	0.002	Yes
12.	4.941	0.000	Yes
13.	4.078	0.000	Yes
14.	3.720	0.001	Yes
15.	2.937	0.005	No
16.	3.215	0.003	No
17.	6.325	0.000	Yes
18.	3.215	0.003	No
19.	3.440	0.001	Yes
20.	6.494	0.000	Yes
21.	2.396	0.023	No
22.	4.030	0.000	Yes
23.	4.910	0.000	Yes

Item No (Draft)	't' value	Level of significance	Item selected
24.	2.645	0.011	No
25.	4.303	0.000	Yes
26.	4.030	0.000	Yes
27.	0.291	0.772	No
28.	1.397	0.169	No
29.	2.224	0.030	No
30.	4.313	0.000	Yes
31.	5.268	0.000	Yes
32.	4.303	0.000	Yes
33.	4.910	0.000	Yes
34.	2.396	0.023	No
35.	3.163	0.003	No

(Items having the significance level equal and below 0.002 alone selected for the finalization of TATTQM).

3.5.1.1. Administration of TATTQM

The TATTQM is self-administrating scale. The purpose of the scale was frankly explained to the subjects. It was assured that their replies would be kept confidential. The subject was required to read the instruction carefully and answered according to the instruction. It was exposited that no items should be omitted. There was no time limit for the scale.

3.5.1.2. Scoring of TATTQM

All the 10 positively worded items are given a score of '5', '4', '3', '4', and '1' respectively, for 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. All the 10 negatively worded items are given a score of '1, '2, '3', '4', and '5' respectively, 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The scores of individual are taken as the sum of the scores obtained by the individual in positively and negatively worded items.

3.5.1.3. Reliability of TATTQM

The reliability of TATTQM was found to be 0.7600 (N=118) by Split-Half method. The Cronbach's alpha value is 0.8034.

Table -3.2 Reliability of the Teachers' Attitude Towards Total Quality Management (TATTQM)

Method	No. of items	Sample	Co-efficient
Split - Half	20	118	0.7600
Cronbach	20	118	0.8034

3.5.1.4. Validity of TATTQM

The tool constructed was given to two faculty members of Department of Education of two different universities and three faculty members of District Institute of Education and Training (DIET). They were asked to check the content nature of the item and the ambiguity of the statements. Their suggestions were incorporated before finalizing the tool.

3.5.2. Development of Teachers' Attitude Towards Educational Technology (Tatet)

The Teachers' Attitude Towards Educational Technology (TATET) was developed for measuring primary teachers' attitude towards Educational Technology. For scale construction, initially statements pertaining to Educational Technology in different aspects were recognized. To begin with seventy items were taken up regarding the construction of the scale. After seeking expert opinion from the intellectuals in the field of Education and Educational Technology, forty statements were dropped. Thirty statements were administered to 118 primary school teachers working in Thanjavur district of Tamilnadu. The responses made by the teachers served were subjected to item analysis. Item showing higher 't' values were selected for the final study. Totally 15 items were selected for the final study. The scale has 8 positively worded items and 7 negatively worded items. The items numbered 1,2,6,7,10,11,13 and 14 are positive and the remaining items are negatively worded. The maximum possible score of the scale is 75 and the minimum score is 15 and each statement is followed by five responses representing five levels of acceptance.

Table-3.3 't' value and significance level for the statements in the TATET.

Item No (Draft)	't' value	Level of significance	Item selected
1.	1.438	0.161	No
2.	3.754	0.001	Yes
3.	3.215	0.002	Yes
4.	3.483	0.002	Yes
5.	2.675	0.012	No
6.	4.910	0.000	Yes
7.	2.104	0.044	No
8.	7.693	0.000	Yes
9.	3.483	0.002	Yes
10.	4.030	0.000	Yes
11.	2.946	0.006	No
12.	4.605	0.000	Yes
13.	2.675	0.012	No
14.	6.731	0.000	Yes
15.	3.215	0.002	Yes
16.	4.313	0.000	Yes
17.	1.000	0.325	No
18.	2.104	0.044	No
19.	2.675	0.012	No
20.	2.675	0.012	No
21.	1.000	0.325	No

Item No (Draft)	't' value	Level of significance	Item selected
22.	3.754	0.001	Yes
23.	2.104	0.044	No
24.	3.215	0.002	Yes
25.	3.215	0.002	Yes
26.	2.675	0.012	No
27.	1.438	0.161	No
28.	3.215	0.002	Yes
29.	2.396	0.023	No
30.	1.791	0.083	No

(Items having the significance level equal and below 0.002 alone selected for the finalization of TATET).

3.5.2.1. Administration of Tatet

The TATET is self-administrating scale. The tool was administered by distributing the questionnaire to the primary school teachers after explaining the purpose of the study to them. It was assured that their replies would be kept confidential. The investigator had read the instructions aloud, while the respondent followed his/her tool. The researcher ensured that the respondent had understood the directions properly. Respondent were asked to answer each item honestly. It was exposited that no items should be omitted. There was no time limit for the scale.

3.5.2.2. Scoring of Tatet

All the 8 positively worded items are given a score of '5', '4', '3', '2' and '1' respectively for 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. All the 7 negatively worded items are given a score of '1', '2', '3', '4' and '5' respectively for 'strongly

agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The scores of individual are taken as the sum positively and negatively worded items.

3.5.2.3. Reliability of Tatet

The reliability of the TATET was found to be 0.8175 (N=118) by Split-Half method. The Cronbach's alpha value is 0.8242.

Table -3.4 Reliability of the Teachers' Attitude Towards Educational Technology (TATET).

Method	No. of items	Sample	Co-efficient
Split - Half	15	118	0.8175
Cronbach	15	118	0.8242

3.5.2.4. Validity of Tatet

The tool constructed was given to two professors of Department of Educational Technology and three senior lecturers of District Institute of Education and Training. They were asked to check the content nature of the item and the ambiguity of the statements. Their suggestions were incorporated before finalizing the tool.

3.6. PILOT STUDY

The investigator selected at random twenty primary schools from Thanjavur district. The Teachers' Attitude Towards Total Quality Management (TATTQM) and Teacher's Attitude Towards Educational Technology (TATET) were given to the 40 primary teachers. The investigator clarified their doubts while answering the questionnaires regarding their ambiguity either in construction of items or in conceptualization. All were analyzed and found to be fit.

3.7. METHODOLOGY FOR THE FINAL STUDY

The investigator followed the survey method for the present study. The Questionnaires were developed and administered to the primary teachers in Thanjavur District of Tamilnadu. The primary teachers have responded to the questionnaires. The data thus collected were put into

appropriate statistical analysis. The methodology for the final study is represented in the following table.

Table - 3.5 Showing the Research process of the study.

S. No.	Research Design		Particulars
	Variables	Teacher variables	(i) Gender (ii) Age (iii) Religion (iv) Marital status (v) Experience (vi) General educational qualification (vii) Professional qualification
		Institutional variables	(i) Locale of the school (ii) Medium of instruction (iii) Type of management
2	Population		3593 Primary teachers in Thanjavur District
3	Sample		619 Primary teachers
4	Sampling technique		Stratified Random Sampling
5	Tools		(i) Teachers' Attitude Towards Total Quality Management (TATTQM) and (ii) Teachers' Attitude Towards Educational Technology (TATET)
6	Method		Survey method
7	Data collection		Questionnaire method
8	Statistics		(i) 'r' and (ii) t-test

3.7.1. Variables of the Study

The Teacher variables (gender, age, religion, marital status, experience, general educational qualification and professional qualification) and Institutional variables (locale of the school, medium of instruction and type of management) were considered for the present study.

3.7.2. Sampling Technique used for the Study

The disproportionate stratified sampling method was employed in this study. In this method, the entire population was divided into smaller homogenous groups or strata, and then a sample was selected within each group.

3.7.3. Sample of the Study

Population of the study consisted of 3593 primary teachers of Thanjavur district. For the selection of sample, the stratified random sampling technique was applied. From the population, the sample of 619 teachers were selected from the primary schools located in Thanjavur district of Tamil Nadu State. They were divided into groups in terms of male and female, below 40 years and 40 years and above 40 years of age, Hindu and Non-Hindu, married and unmarried, below 20 years and 20 years and above 20 years of experience, graduates and higher secondary graduates, teachers with Diploma and Degree in Education, rural and urban school teachers, Tamil and English medium school teachers and Government and aided school teachers.

Table- 3.6 Description of the Sample selected for the study.

SL. No	Sample	Category	Sample Size	Total
1	Gender	Male	138	619
		Female	481	
2	Age	Below 40 years	516	619
		40 years and above 40 years	103	
3	Religion	Hindu	498	619
		Non-Hindu	121	
4	Marital status	Married	524	619
		Unmarried	95	
5	Experience	Below20 years	527	619
		20 years and above 20 years	92	

SL. No	Sample	Category	Sample Size	Total
6	General educational qualification	Graduates	291	619
		Higher secondary graduates	328	
7	Professional qualification	Diploma in Education	493	619
		Degree in Education	126	
8	Locale of the school	Rural	423	619
		Urban	196	
9	Medium of instruction	Tamil	595	619
		English	24	
10	Type of management	Government	421	619
		Aided	198	

3.7.4. Data Collection

The Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude Towards Educational Technology (TATET) could be administered to a group or an individual. It is, as evident from the instruction on the cover page, both are self-administered. The TATTQM and TATET take about 10 – 15 minutes to fill-out. By using (√) mark, respondent should make his / her answer below in any one of five specified categories: 'Strongly Agree', 'Agree', 'Undecided', 'Disagree', and 'Strongly Disagree'. The respondents should fill the required demographic information and the items in the questionnaires. The researcher ensured that the respondent had understood the directions properly. Respondent were asked to answer each item honestly. Respondent were asked to check whether all items have been answered.

3.7.5. Scoring Procedure

The scoring of the tools Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude Towards Educational Technology (TATET) were made by using the procedure which was described under the development of tools. The Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude

Towards Educational Technology (TATET) can be scored by manually by attributing the values 5, 4, 3, 2, 1 to response categories ('Strongly Agree', 'Agree', 'Undecided', ' Disagree' and 'Strongly Disagree') of positive items, and 1, 2, 3, 4, 5 to response categories ('Strongly Agree', 'Agree', 'Undecided', ' Disagree' and 'Strongly Disagree') of negative items. The maximum score that one can obtain is 100 and minimum is 20 on the Teachers' Attitude Towards Total Quality Management (TATTQM). The topmost score that one can earn is 75 and least is 15 on the Teachers' Attitude Towards Educational Technology (TATET).

3.7.6. Statistical Techniques used for the Study

The following statistical techniques were used in the study:

1. Product moment correlation were applied to verify the relationship between the attitude towards The Total Quality Management and Educational Technology among the primary teachers and
2. 't'-test was used to find out the significant difference between the sub-variables in on Total Quality Management and Educational Technology.

3.8. CONCLUSION

In this chapter, the investigator explained the method and procedure followed for the present study under the caption like development of the tool, sampling technique and collection of data. Analysis and interpretation of data are dealt in detail in the next chapter.

Chapter-4

ANALYSIS AND INTERPRETATION OF DATA

4.0. INTRODUCTION

The next steps in the process of research after the collection of data are the organization, analysis and interpretation of data and formulation of conclusions and generalizations to get a meaningful picture out of the raw information collected. The analysis and interpretation of data involve the objective material in the possession of the researcher and his subjective reactions and desires to be derived from the data.

The present investigation aims at studying "the attitude of primary teachers towards Total Quality Management in relation to their attitude towards Educational Technology".

The purpose of this chapter is to present the analysis and interpretation of data obtained from 619 primary teachers from the study area. Analysis of data means to study the tabulated material in order to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting the parts together in new arrangements for the purpose of interpretation.

In order to make a survey of the relationship between Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores of primary teachers, a carefully designed Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude Towards Educational Technology (TATET) tools were used and the data was collected from the respondents in the study area. The data is systematically classified and tabulated, scientifically analyzed, intelligently interpreted in this chapter.

The mean scores were utilized to find out the relationship between the attitudes towards Total Quality Management (TQM) and Educational

Technology (ET) of primary teachers. The critical ratio was used to study the difference in the sub-samples of each variable. Accordingly, each hypothesis was rejected or accepted.

4.1. STATISTICAL TREATMENT OF THE DATA

The investigator had used the following statistical analysis of the data to arrive at meaningful conclusions.

4.1.1. Descriptive Analysis

Mean and Standard Deviation for the entire sample and its various sub-samples such as gender, age, religion, marital status, experience, general educational qualification, professional qualification, locale of the school, medium of instruction and type of management were calculated for (i) Total Quality Management attitude scores and (ii) Educational Technology attitude scores.

4.1.2. Correlation Analysis

Pearson's product moment co-efficient of correlation was calculated to find out the nature of relationship between the attitude towards Total Quality Management (TQM) and Educational Technology (ET).

4.1.3. Differential Analysis

't' test had been used to find out the significance of the difference between the various pairs of sub samples in respect of (i) Total Quality Management (TQM), and (ii) Educational Technology(ET).

4.2. LEVEL OF SIGNIFICANCE

In the present study, the level of significance refers to 0.05 level and 0.01 level.

4.3. HYPOTHESES TESTING

4.3.1 Correlation Analysis

Hypothesis -1

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of Thanjavur District.

Table-4.1: Correlation Between Total Quality Management and Educational Technology Mean Attitude Scores Among the Primary Teachers of Thanjavur District

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Primary teachers	619	617	0.422	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.422 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of Thanjavur District.

Hyphothesis -2

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the male teachers of Thanjavur District.

Table-4.2: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the male teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Male teachers	138	136	0.357	0.256	0.196	0.01

Result

From the table, it is found that the calculated 'r' value 0.357 is greater than the table value 0.256 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the male teachers of Thanjavur district is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the male teachers of Thanjavur District.

Hypothesis - 3

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of Thanjavur District.

Table - 4.3: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the female teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Female teachers	481	479	0.424	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.424 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the female teachers of Thanjavur District is rejected.

Inference

It is interred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM)

and Educational Technology (ET) mean attitude scores among the female teachers of Thanjavur District.

Hypothesis - 4

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers below 40 years of age of Thanjavur District.

Table - 4.4: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the primary teachers of below 40 years of age

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Primary teachers below 40years of age	516	514	0.408	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.408 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers below 40 years of age of Thanjavur is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers below 40 years of age of Thanjavur District.

Hypothesis - 5

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of 40 years and above 40 years of age of Thanjavur District.

Table - 4.5: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the primary teachers of 40 years and above 40 years of age

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Primary teachers of 40 years and above 40years of age	103	101	0.479	0.256	0.196	0.01

Result

From the table it is found that the calculated 'r' value 0.479 is greater than the table value 0.256 at 0.01 level of significance. Hence the null hypothesis that their exists e no significant relationship between the Total Quality Management (TQM)and Educational Technology (ET) mean attitude scores among the primary teachers of 40 years and above 40 years of age of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of 40 years and above 40 years of age of Thanjavur District.

Hypothesis - 6

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the Hindu teachers of Thanjavur District.

Table - 4.6: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the Hindu teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Hindu teachers	498	496	0.409	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.409 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the Hindu teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the Hindu teachers of Thanjavur District.

Hypothesis -7

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the Non- Hindu teachers of Thanjavur District.

Table - 4.7: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the Non-Hindu teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Non-Hindu teachers	121	119	0.457	0.256	0.196	0.01

Result

From the table, it is found that the calculated 'r' value 0.457 is greater that the table value 0.256 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the non-Hindu teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM)

and Educational Technology (ET) mean attitude scores among the non-Hindu teachers of Thanjavur District.

Hypothesis - 8

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the married teachers of Thanjavur District.

Table - 4.8: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the married teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Married teachers	524	522	0.430	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the married teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the married teachers of Thanjavur District.

Hypothesis - 9

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the unmarried teachers of Thanjavur District.

Table-4.9: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the unmarried teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Unmarried teachers	95	93	0.375	0.270	0.208	0.01

Result

From the table, it is found that the calculated 'r' value 0.375 is greater than the table value 0.270 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the unmarried teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the unmarried teachers of Thanjavur District.

Hypothesis -10

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers below 20 years of experience of Thanjavur District.

Table -4.10: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers below 20 years of experience

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers below 20 years of experience	527	525	0.433	0.115	0.088	0.01

Result

From the table it is found that the calculated 'r' value 0.433 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers below 20 years of experience of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers below 20 years of experience of Thanjavur District.

Hypothesis -11

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with 20 years and more than 20 years of experience of Thanjavur District.

Table - 4.11: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers with 20 years and more than 20 years of experience

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers with 20 years and more than 20 years of experience	92	90	0.344	0.256	0.196	0.01

Result

From the table, it is found that the calculated 'r' value 0.344 is greater than the table value 0.256 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with 20 years and more than 20 years of experience of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with 20 years and more than 20 years of experience of Thanjavur District.

Hypothesis -12

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers who are graduates of Thanjavur District.

Table - 4.12: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers who are graduates

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Graduate teachers	291	289	0.366	0.182	0.139	0.01

Result

From the table, it is found that the calculated 'r' value 0.366 is greater than the table value 0.182 at 0.01 level of significance**.** Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers who are graduates of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers who are graduates of Thanjavur District.

Hypothesis -13

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers who are higher secondary graduates of Thanjavur District.

Table - 4.13: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers who are higher secondary graduates

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Higher secondary graduate teachers	328	326	0.482	0.182	0.139	0.01

Result

From the table, it is found that the calculated 'r' value 0.482 is greater than the table value 0.182 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers who are higher secondary graduates of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers who are higher secondary graduates of Thanjavur District.

Hypothesis -14

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Diploma in Education of Thanjavur District.

Table - 4.14: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers with Diploma in Education

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers with Diploma in Education	493	491	0.430	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Diploma in Education of Thanjavur District is rejected.

Inference

It is inferred from the above findings that, there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Diploma in Education of Thanjavur District.

Hypothesis -15

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Degree in Education of Thanjavur District.

Table - 4.15: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers with Degree in Education

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers with Degree in Education	126	124	0.414	0.256	0.196	0.01

Result

From the table, it is found that the calculated 'r' value 0.414 is greater than the table value 0.256 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Degree in Education of Thanjavur District is rejected.

Inference

It is inferred from the above findings that, there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Degree in Education of Thanjavur District.

Hypothesis -16

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the rural teachers of Thanjavur District.

Table - 4.16: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the rural teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Rural teachers	423	421	0.430	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that their exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the rural teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the rural teachers of Thanjavur District.

Hypothesis -17

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the urban teachers of Thanjavur District.

Table- 4.17: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the urban teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Urban teachers	196	194	0.403	0.182	0.139	0.01

Result

From the table, it is found that the calculated 'r' value 0.403 is greater than the table value 0.182 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the urban teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the urban teachers of Thanjavur District.

Hypothesis -18

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of Tamil medium schools of Thanjavur District.

Table - 4.18: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers of Tamil medium schools

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers of Tamil medium schools	595	593	0.420	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.420 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of Tamil medium schools of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of Tamil medium schools of Thanjavur District.

Hypothesis -19

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of English medium schools of Thanjavur District.

Table - 4.19: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the teachers of English medium schools

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Teachers of English medium schools	24	22	0.400	0.515	0.404	0.05

Result

From the table, it is found that the calculated 'r' value 0.400 is less than the table value 0.404 at 0.05 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of English medium schools of Thanjavur District is accepted.

Inference

It is inferred from the above findings that there is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of English medium schools of Thanjavur District.

Hypothesis - 20

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the government school teachers of Thanjavur District.

Table - 4.20: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the government school teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Government school teachers	421	419	0.307	0.115	0.088	0.01

Result

From the table, it is found that the calculated 'r' value 0.307 is greater than the table value 0.115 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the government school teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the government teachers of Thanjavur District.

Hypothesis - 21

There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the aided school teachers of Thanjavur District.

Table - 4.21: Correlation between the Total Quality Management and Educational Technology mean attitude scores among the aided school teachers

Sample	Sample size	df	Calculated 'r' value	Table value		Level of significance
				0.01	0.05	
Aided school teachers	198	196	0.498	0.182	0.139	0.01

Result

From the table, it is found that the calculated 'r' value 0.498 is greater than the table value 0.182 at 0.01 level of significance. Hence the null hypothesis that there exists no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the aided school teachers of Thanjavur District is rejected.

Inference

It is inferred from the above findings that there is a significant positive relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the aided school teachers of Thanjavur District.

4.3.2. Differential Study

Hypothesis -22

There is no significant difference between the male and female teachers in their mean attitude scores towards Total Quality Management (TQM).

Table- 4.22: Significance of Difference in the mean attitude scores towards TQM between male and female teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Gender	Male teachers	138	617	70.19	10.73	3.94	1.96	2.58	Significant at 0.01 level
	Female teachers	481		74.33	10.94				

Result

The above table indicates the calculated 't' value 3.94 is greater than the table value 2.58 at 0.01 level of significance. Hence the null hypothesis that there exists no significant difference the male and female teachers in their mean attitude scores towards Total Quality Management (TQM) is rejected. It implies that there is a significant difference between the male and female teachers in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that female teachers have more favorable attitude than male teachers towards Total Quality Management (TQM).

The mean attitude scores towards TQM between male and female teachers have been presented graphically in figure 4.1.

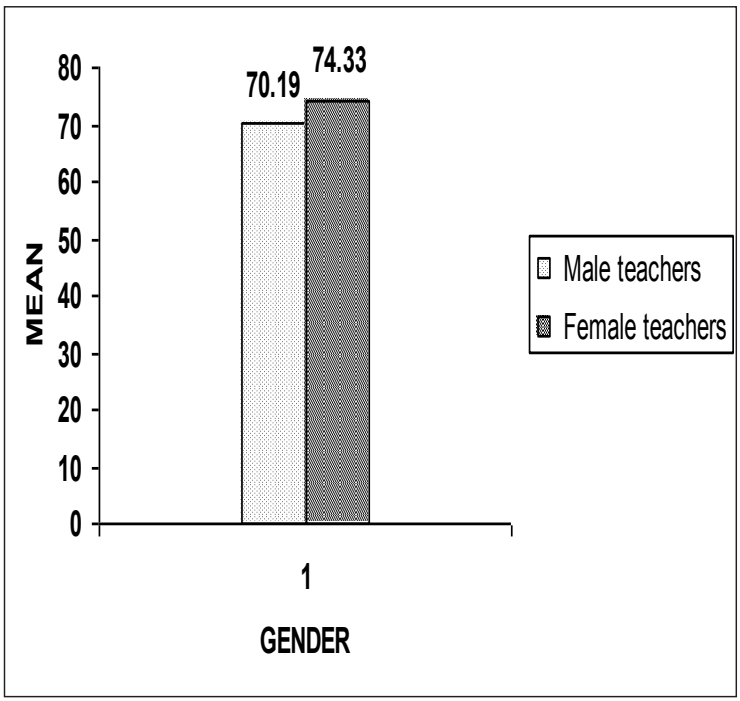


Figure- 4.1 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between Male and Female Teachers

Hypothesis - 23

There is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.23: Significance of Difference in the mean attitude scores towards TQM between teachers below 40 years of age and 40 years and above 40 years of age

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Age	Below 40 years of age	516	617	73.66	11.05	1.256	1.96	2.58	Not Significant at 0.05 level
	40 years and above 40 years of age	103		72.17	10.85				

Result

The above table indicates the calculated 't' value 1.256 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers below 40 years of age and 40 years and above 40 years of age have equal level of attitude towards Total Quality Management.

The mean attitude scores towards TQM between the teachers within 40 years of age and above 40 years of age have been presented graphically in figure 4.2.

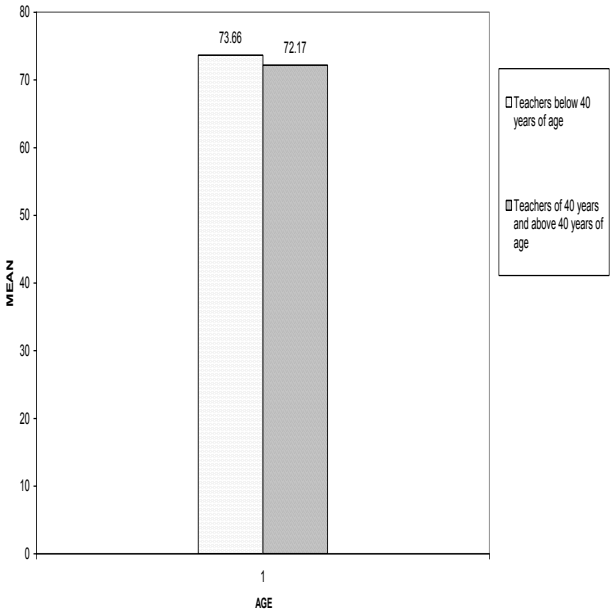


Figure- 4.2 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between Teachers Below 40 Years of Age and 40 Years and Above 40 Years of Age

Hypothesis - 24

There is no significant difference between the Hindu and Non-Hindu teachers in their attitude scores towards Total Quality Management (TQM).

Table - 4.24: Significance of Difference in the mean attitude scores towards TQM between Hindu and non Hindu teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Religion	Hindu teachers	498	617	73.60	10.70	0.870	1.96	2.58	Not Significant at 0.05 level
	Non-Hindu	121		72.63	12.27				

Result

The above table indicates the calculated't' value 0.870 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the Hindu and non-Hindu teachers of Thanjavur District in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers do not differ in their Total Quality Management attitude with respect to their religion.

The mean attitude scores TQM between Hindu and non Hindu teachers have been presented graphically in figure 4.3

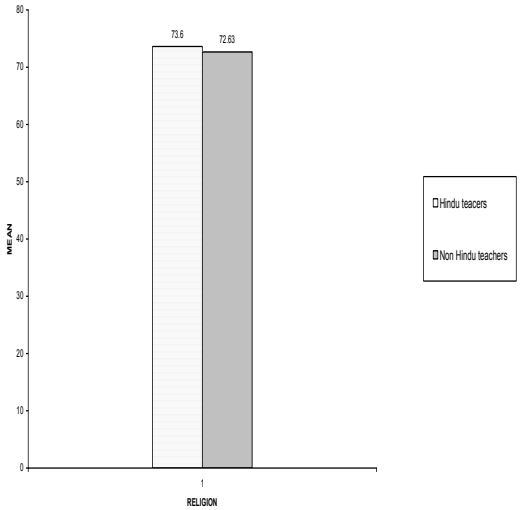


Figure- 4.3 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between the Hindu and Non Hindu Teachers

Hypothesis - 25

There is no significant difference between the married and unmarried teachers in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.25: Significance of Difference in the mean attitude scores towards TQM between married and unmarried teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Marital status	Married teachers	524	617	73.23	11.07	0.951	1.96	2.58	Not Significant at 0.05 level
	Unmarried teachers	95		74.40	10.78				

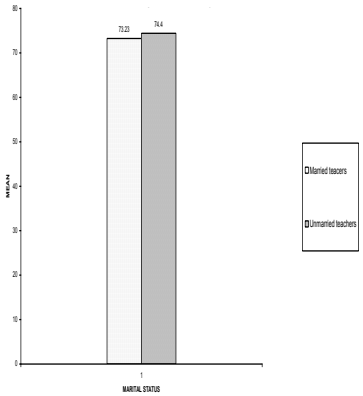
Result

The above table indicates the calculated 't' value 0.951 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the married and unmarried teachers in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the married and unmarried teachers in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the married and unmarried teachers have equal level of attitude towards Total Quality Management.

The mean attitude scores towards TQM between married and unmarried teachers have been presented graphically in figure 4.4.



Graph-4.4 Bar Diagram showing the Mean Attitude Scores Towards TQM Between Married and Unmarried Teachers

HYPOTHESIS - 26

There is no significant difference between the below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Total Quality Management (TQM).

TABLE - 4.26: Significance of Difference in the mean attitude scores towards TQM between the teachers below 20 years and 20 years and more than 20 years of experience

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Teaching experience	Below 20 years	527	617	73.76	10.87	1.918	1.96	2.58	Not Significant at 0.05 level
	20 years and more than 20 years	92		71.38	11.71				

Result

The above table indicates the calculated 't' value 1.918 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers do not differ in their attitude towards Total Quality Management with respect to their experience. The mean attitude scores towards TQM between the teachers below 20 years and 20 years and more than 20 years of experience have been presented graphically in figure 4.5.

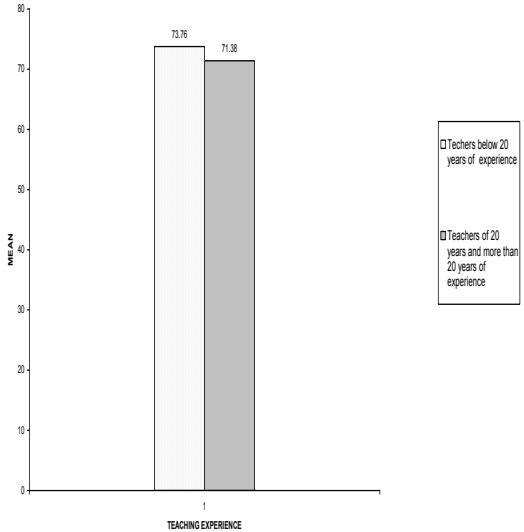


Figure- 4.5 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between the Teachers Below 20 Years and 20 Years and More than 20 Years of Experience

Hypothesis - 27

There is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.27: Significance of Difference in the mean attitude scores towards TQM between the teachers who are graduates and higher secondary graduates

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
General Educational qualification	Graduates teachers	291	617	73.01	11.10	0.858	1.96	2.58	Not Significant at 0.05 level
	Higher secondary graduate teachers	328		73.77	10.96				

Result

The above table indicates the calculated 't' value 0.858 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers who are graduates and higher secondary graduates have equal level of attitude towards Total Quality Management.

The mean attitude scores towards TQM between the graduates and higher secondary graduate teachers have been presented graphically in figure 4.6.

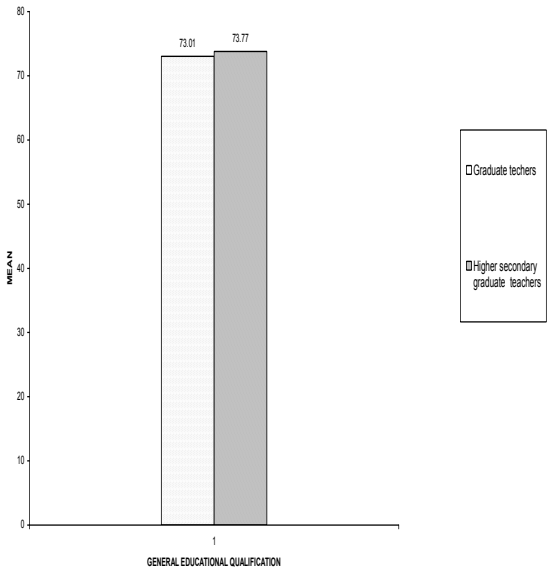


Figure- 4.6 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between the Teachers Who are Graduates and Higher Secondary Graduates

Hypothesis -28

There is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.28: Significance of Difference in the mean attitude scores towards TQM between the teachers with Diploma and Degree in Education

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Professional Qualification	Diploma in Education	493	617	73.75	11.11	1.511	1.96	2.58	Not Significant at 0.05 level
	Degree in Education	126		72.09	10.61				

Result

The above table indicates the calculated 't' value 1.511 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers with Diploma and Degree in Teacher Education in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the teachers with Diploma and Degree in Teacher Education in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that teachers with Diploma and Degree in Education have more or less equal level of attitude towards Total Quality Management.

The mean attitude scores towards TQM between the teachers with Diploma and Degree in Teacher Education have been presented graphically in figure 4.7.

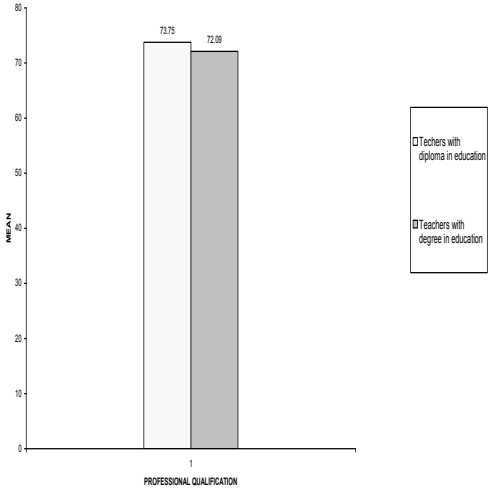


Figure- 4.7 Bar diagram Showing the Mean Attitude Scores Towards TQM Between the Teachers with Diploma and Degree in Education

Hypothesis - 29

There is no significant difference between the rural and urban teachers in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.29: Significance of Difference in the mean attitude scores towards TQM between the rural and urban teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Locale	Rural	423	617	73.22	10.79	0.631	1.96	2.58	Not Significant at 0.05 level
	Urban	196		73.82	11.53				

Result

The above table indicates the calculated't' value 0.631 is less than the table value 1.96 at 0.05 level of significance. Hence the null

hypothesis that there exists no significant difference between the rural and urban teachers in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the rural and urban teachers in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the rural and urban teachers do not differ in their attitude towards Total Quality Management.

The mean attitude scores towards TQM between the rural and urban teachers have been presented graphically in figure 4.8.

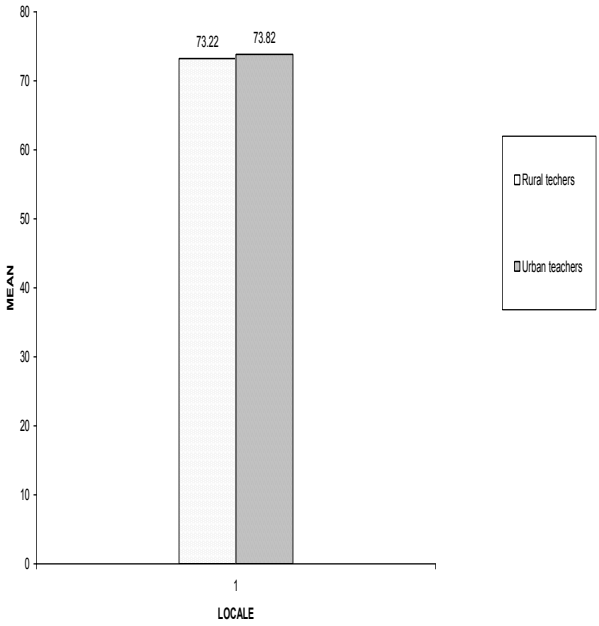


Figure- 4.8 Bar Diagram Showing The Mean Attitude Scores Towards TQM Between the Rural and Urban Teachers

Hypothesis - 30

There is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.30: Significance of Difference in the mean TATTQM score between teachers of Tamil and English medium schools

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Medium of instruction	Tamil	595	617	73.57	10.97	1.833	1.96	2.58	Not Significant at 0.05 level
	English	24		69.37	11.83				

Result

The above table indicates the calculated 't' value 1.833 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers both Tamil and English medium schools have more or less equal levels of attitude towards Total Quality Management.

The mean attitude scores towards TQM between the teachers of Tamil and English medium schools have been presented graphically in figure 4.9.

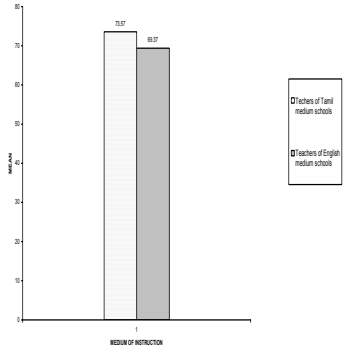


Figure- 4.9 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between the Teachers of Tamil and English Medium Schools

Hypothesis - 31

There is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Total Quality Management (TQM).

Table - 4.31: Significance of Difference in the mean attitude scores towards TQM between the teachers of government and aided schools

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Type of management	Government schools	421	617	73.09	11.13	1.053	1.96	2.58	Not Significant at 0.05 level
	Aided schools	198		74.09	10.79				

Result

The above table indicates the calculated 't' value 1.053 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers of government and aided schools in their mean attitude scores towards Total Quality Management (TQM) is accepted. It implies that there is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Total Quality Management (TQM).

Inference

It is concluded that the teachers of government and aided schools have equal level of attitude towards Total Quality Management.

The mean attitude scores towards TQM between the teachers of government and aided schools have been presented graphically in figure 4.10.

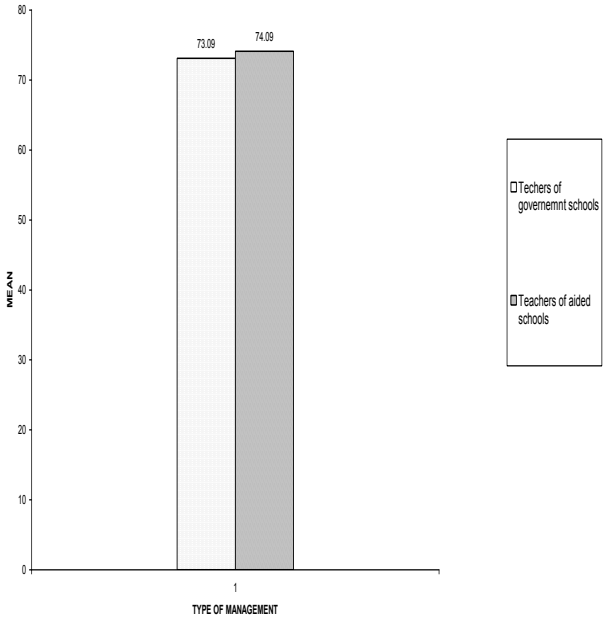


Figure- 4.10 Bar Diagram Showing the Mean Attitude Scores Towards TQM Between the Government and Aided School Teachers

Hypothesis - 32

There is no significant difference between the male and female teachers in their mean attitude scores towards Educational Technology (ET).

Table- 4.32: Significance of Difference in the mean attitude scores towards ET between male and female teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Gender	Male teachers	138	617	57.87	6.72	3.086	1.96	2.58	Significant at 0.01 level
	Female teachers	481		60.01	7.30				

Result

The above table indicates the calculated 't' value 3.086 is greater than the table value 2.58 at 0.01 level of significance. Hence the null hypothesis that there exists no significant difference between the male and female teachers in their mean attitude scores towards Educational Technology (ET) is rejected. It implies that there is a significant difference between the male and female teachers in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that female teachers have more favourable attitude than male teachers towards Educational Technology (ET).

The mean attitude scores towards ET between male and female teachers have been presented graphically in figure 4.11.

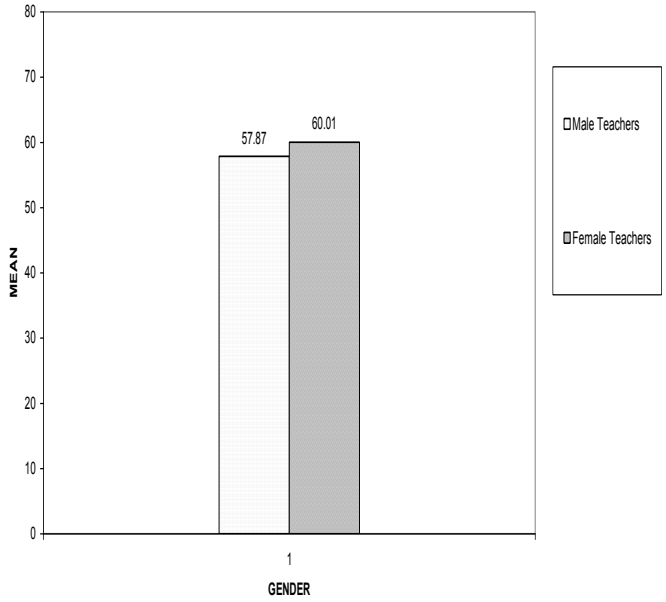


Figure- 4.11 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Male and Female Teachers

Hypothesis - 33

There is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Educational Technology (ET).

Table - 4.33: Significance of Difference in the mean attitude scores towards ET between the teachers below 40 years of age and 40 years and above 40 years of age

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Age	Below 40 years of age	516	617	59.72	7.10	1.476	1.96	2.58	Not Significant at 0.05 level
	40 years and above 40 years of age	103		58.57	7.77				

Result

The above table indicates the calculated 't' value 1.476 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers below 40 years of age and 40 years and above 40 years of age have equal level of attitude towards Educational Technology. The mean attitude scores towards ET between the teachers below 40 years of age and 40 years and above 40 years of age have been presented graphically in figure 4.12.

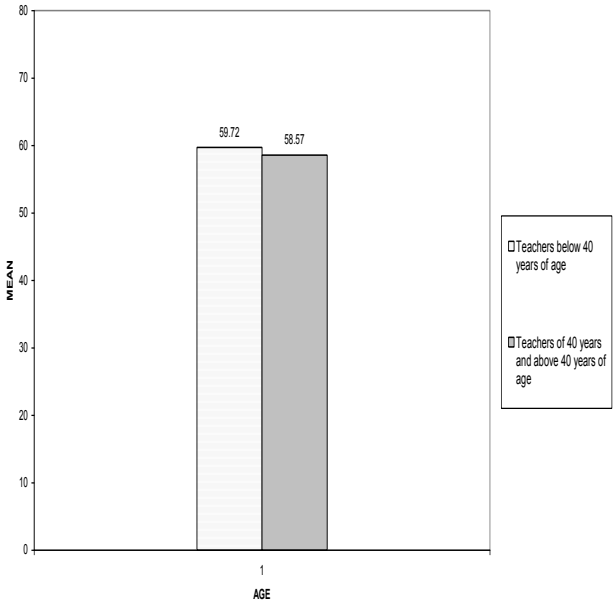


Figure- 4.12 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Teachers Below 40 Years of Age and 40 Years and Above 40 Years of Age

Hypothesis - 34

There is no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Educational Technology (ET).

Table -4.34: Significance of Difference in the mean attitude scores towards ET between the Hindu and non Hindu teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Religion	Hindu teachers	498	617	59.61	6.93	0.579	1.96	2.58	Not Significant at 0.05 level
	Non-Hindu teachers	121		59.19	8.34				

Result

The above table indicates the calculated 't' value 0.579 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers do not differ in their Educational Technology attitude with respect to their religion.

The mean attitude scores towards ET between the Hindu and non Hindu teachers have been presented graphically in figure 4.13.

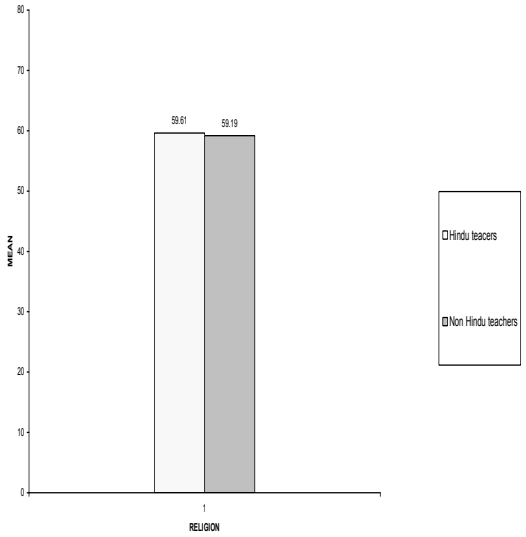


Figure- 4.13 Bar Diagram Showing the Mean Attitude Scores Towards Between the Hindu and Non Hindu Teachers

Hypothesis - 35

There is no significant difference between the married and unmarried teachers in their mean attitude scores towards Educational Technology (ET).

Table - 4.35: Significance of Difference in the mean attitude scores towards ET between married and unmarried teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Marital status	Married teachers	524	617	59.49	7.22	0.332	1.96	2.58	Not Significant at 0.05 level
	Unmarried teachers	95		59.76	7.27				

Result

The above table indicates the calculated 't' value 0.322 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the married and unmarried teachers in their attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the married and unmarried teachers in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the married and unmarried teachers have equal level of attitude towards Educational Technology.

The mean attitude scores towards ET between the married and unmarried teachers have been presented graphically in figure 4.14.

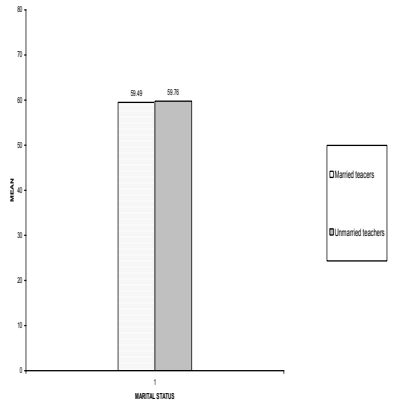


Figure- 4.14 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Married and Unmarried Teacher

Hypothesis - 36

There is no significant difference between the below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Educational Technology (ET).

Table - 4.36: Significance of Difference in the mean attitude scores towards ET between the teachers below 20 years and 20 years and more than 20 years of experience

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Teaching experience	Below 20 years	527	617	59.75	7.13	1.80	1.96	2.58	Not Significant at 0.05 level
	20 years and more than 20 years	92		58.28	7.66				

Result

The above table indicates the calculated 't' value 1.80 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers do not differ in their attitude towards Educational Technology with respect to their experience. The mean attitude scores towards ET between the teachers below 20 years and 20 years and more than 20 years of experience have been presented graphically in figure 4.15.

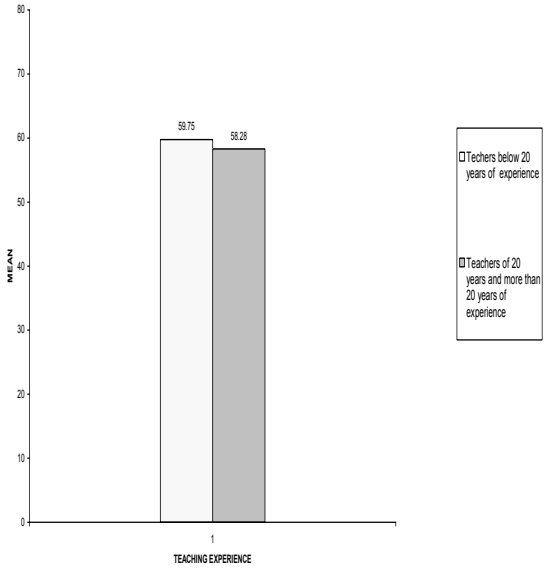


Figure- 4.15 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Teachers Below 20 Years and 20 Years and More than 20 Years of Experience

Hypothesis - 37

There is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Educational Technology (ET).

Table - 4.37: Significance of Difference in the mean attitude scores towards ET between the teachers who are graduates and higher secondary graduates

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
General Educational qualification	Graduate teachers	291	617	59.51	7.23	0.123	1.96	2.58	Not Significant at 0.05 level
	Higher secondary graduate teachers	328		59.61	7.23				

Result

The above table indicates the calculated 't' value 0.123 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers who are graduates and higher secondary graduates towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers who are graduates and higher secondary graduates have equal level of attitude towards Educational Technology.

The mean attitude scores towards ET between the teachers who are graduates and higher secondary graduates have been presented graphically in figure 4.16.

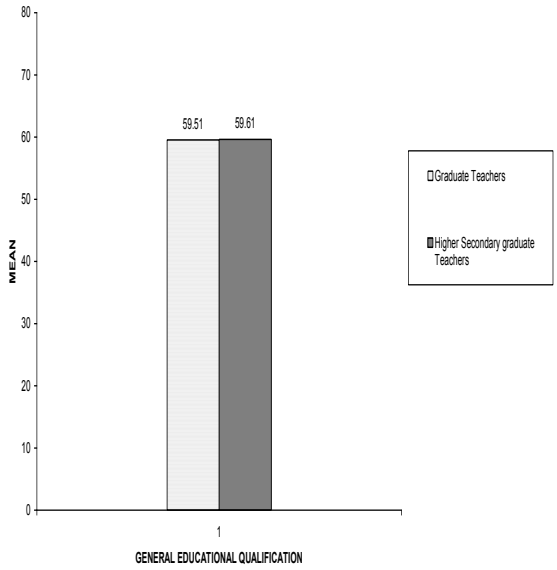


Figure 4.16 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Teachers Who are Graduates and Higher Secondary Graduates

Hypothesis - 38

There is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Educational Technology (ET).

Table - 4.38: Significance of Difference in the mean attitude scores towards ET between the teachers with Diploma and Degree in Education

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Professional Qualification	Diploma in Education	493	617	59.36	7.09	1.203	1.96	2.58	Not Significant at 0.05 level
	Degree in Education	126		60.22	7.71				

Result

The above table indicates the calculated 't' value 1.203 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers with Diploma and Degree in Education have more or less equal level of attitude towards Educational Technology.

The mean attitude scores towards ET between the teachers with Diploma and Degree in Education have been presented graphically in figure 4.17.

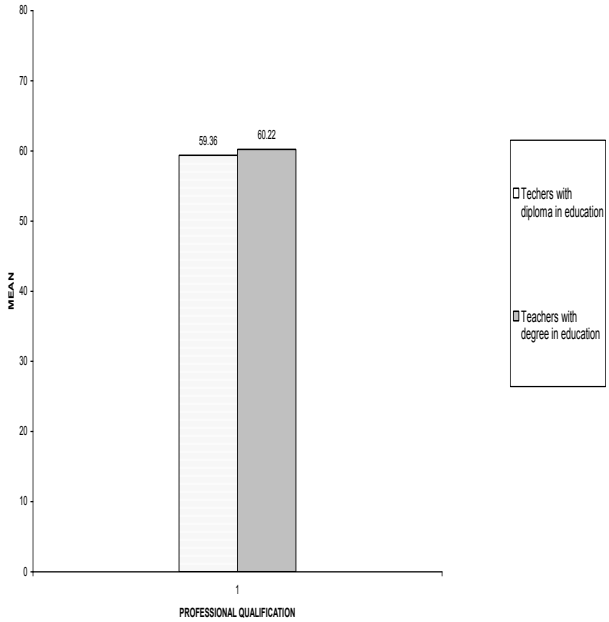


Figure- 4.17 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Teachers with Diploma and Degree in Education

Hypothesis - 39

There is no significant difference between the rural and urban teachers in their mean attitude scores towards Educational Technology (ET).

Table - 4.39: Significance of Difference in the mean attitude scores towards ET between the rural and urban teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Locale	Rural teachers	423	617	59.35	7.14	0.931	1.96	2.58	Not Significant at 0.05 level
	Urban teachers	196		59.93	7.40				

Result

The above table indicates the calculated 't' value 0.931 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the rural and urban teachers in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the rural and urban teachers in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers do not differ in their attitude towards Educational Technology.

The mean attitude scores towards ET between the rural and urban teachers have been presented graphically in figure 4.18.

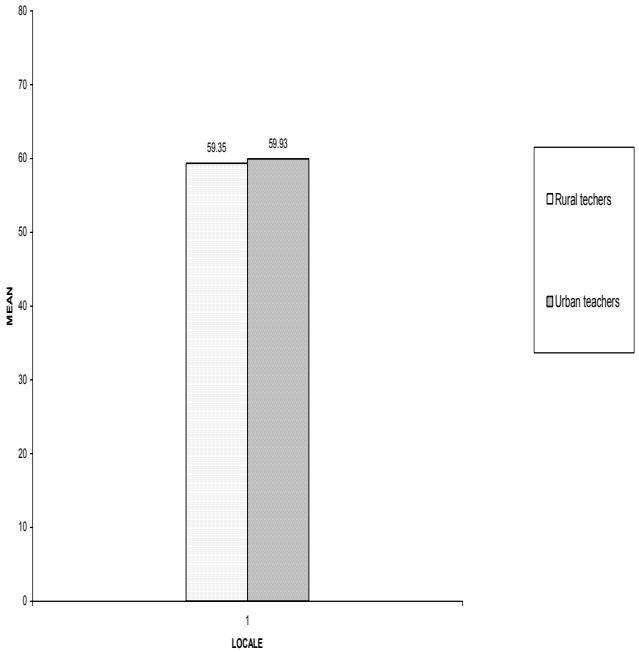


Figure- 4.18 Bar Diagram Showing the mean Attitude Scores Towards ET Between the Rural and Urban Teachers

Hypothesis - 40

There is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Educational Technology (ET).

Table - 4.40: Significance of Difference in the mean attitude scores towards ET between the teachers of Tamil and English medium schools

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Medium of instruction	Tamil	595	617	59.62	7.27	1.522	1.96	2.58	Not Significant at 0.05 level
	English	24		57.33	5.57				

Result

The above table indicates the calculated 't' value 1.522 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers both Tamil and English medium schools have more or less equal levels of attitude towards Educational Technology.

The mean attitude scores towards ET between the teachers of Tamil and English medium schools have been presented graphically in figure 4.19.

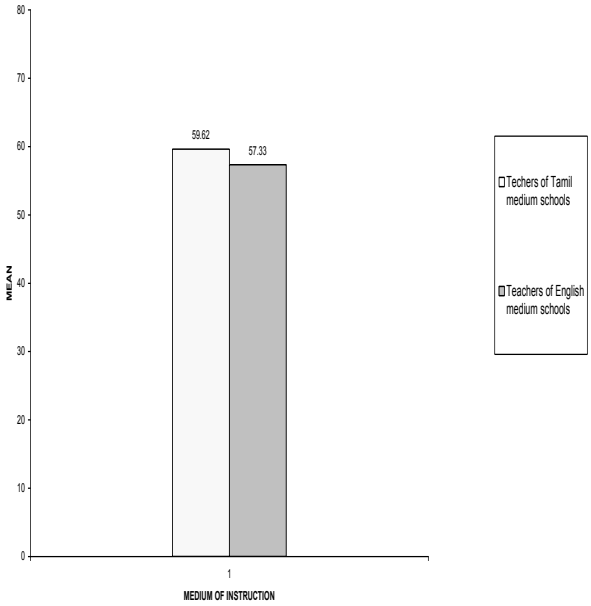


Figure- 4.19 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Teachers of Tamil and English Medium Schools

Hypothesis - 41

There is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Educational Technology (ET).

Table - 4.41: Significance of Difference in the mean attitude scores towards ET between the government and aided school teachers

Variable	Category	N	df	Mean	SD	C.R. value	Table value at		Remarks
							0.05 level	0.01 level	
Type of management	Government	421	617	59.43	7.29	0.510	1.96	2.58	Not Significant at 0.05
	Aided	198		59.75	7.10				

Result

The above table indicates the calculated 't' value 0.510 is less than the table value 1.96 at 0.05 level of significance. Hence the null hypothesis that there exists no significant difference between the teachers of government and aided schools in their mean attitude scores towards Educational Technology (ET) is accepted. It implies that there is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Educational Technology (ET).

Inference

It is concluded that the teachers of government and aided schools have equal level of attitude towards Educational Technology.

The mean attitude scores towards ET between the teachers of government and aided schools have been presented graphically in figure 4.20.

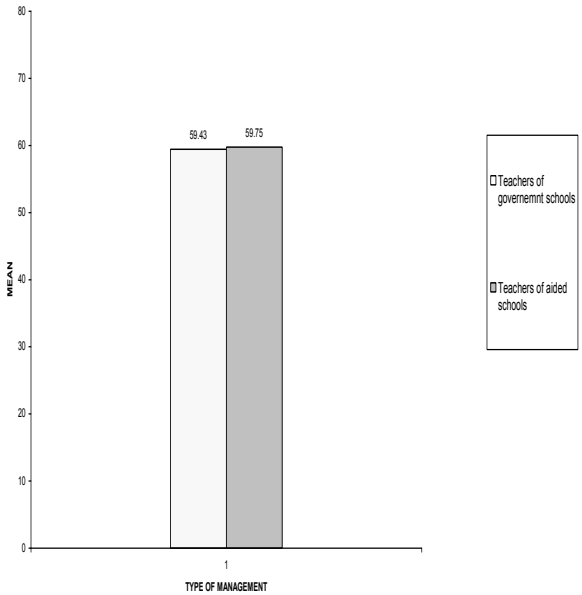


Figure- 4.20 Bar Diagram Showing the Mean Attitude Scores Towards ET Between the Gowernemnt and Aided School Teachers

4.4. CONCLUSION

In this chapter the data collected from the primary teachers of Thanjavur district of Tamilnadu are analysed and interpreted. Thus, on the analysis of the data gathered from the sample through the Teachers' Attitude Towards Total Quality Management (TATTQM) and Teachers' Attitude Towards Educational Technology (TATET) the overall trend indicates that there is a significant relationship between Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of Thanjavur District. The next chapter deals with the summary of the findings and conclusions.

Chapter-5
SUMMARY AND CONCLUSION

5.0. INTRODUCTION

Quality in and of education has always been a priority area and a prominent agenda of various committees and commissions in education. Consistent efforts have been made in the past to improve the quality of primary education. The National Policy on Education (NPE, 1986) and Programme of Action (POA, 1992) have recommended a number of measures for improvement in the quality of education through reforms in content and processes of classroom teaching, improvement in school facilities, provision of additional teachers, standardizing levels of learning at primary stage and so on.

For improving the quality in education, a large number of national and state level programmes were launched. Among them, some centrally sponsored interventions were: Operation Blackboard (OB), Minimum Levels of Learning (MLL), Restructuring and Reorganization of Teacher Education, Programme for Mass Orientation of School Teachers (PMOST), Special Orientation Programme for Primary Teachers (SOPT), State wide Massive and Rigorous Training for Primary Teachers (SMART-PT), Joyful Learning, etc, which aimed to improve the quality of primary education in schools. District Primary Education Programme (DPEP) is also one such major initiatives in this direction. The scheme of 'Sarva Shiksha Abhiyan' (SSA) was approved by the Central Cabinet on the 16th of November 2000. SSA has been functioning in the field of elementary education to improve the enrolment of children and to increase the quality in education. Although there has been substantial improvement in access, enrolment, retention and reduced gender disparities at

various levels, the qualitative improvement in education in general and learner's achievement in particular has not recorded as much progress as was desired.

5.1. PRIMARY EDUCATION

Primary education is shaped according to the prevailing social and philosophical milieu and is regarded as the foundation for the entire superstructure of children's moral, spiritual, intellectual and physical development. The basic objectives of primary education are: (i) All boys and girls in India should grow up as citizens of a new social order, based on co-operative work,(ii) Every individual should have full opportunity for the balanced and harmonious development of all his faculties, (iii) Every individual should acquire capacity for self reliance in aspects of cleanliness, health and culture and (iv) Every individual should understand social and moral implications of life.

Primary schools in India face a wide chain of challenges such as internal management, financial management, and faculty deployment of teachers, back of authority, threat to functional autonomy, and external management such as inadequate monitoring of teachers' performance, poor support system, academic management, pupil teacher ratio, quality teaching, community involvement, infrastructure facility and direction in management. The micro problems of primary teachers are language skills, subject knowledge, child-centered innovative teaching-learning methodology, use and development of teaching-learning methodology, use and development of teaching-learning materials and their macro problems are low motivational level, back of resources and high performance expectation. There are number of problems in primary schools, but the Total Quality Management (TQM) and Educational Technology (ET) will help to solve them.

5.2. QUALITY OF EDUCATION

Quality is contextual. It is very difficult to give a comprehensive definition of quality. Quality is not an act, it is a habit. It generally signifies the degree of excellence. It is the totality of features and characteristics of the product, process or service that bear on its ability to satisfy stated or implied needs. In the educational context, quality is seen as a complex issue as education is concerned with human being. When we describe human being as product, the description cannot

encapsulate all the characteristics of learners in the same way, as one would describe the quality of commodities. Hence, the definition of quality varies depending upon the individual, institution, and educational situation, social and national context. Some quality thinkers view quality as 'fitness for use', or 'conformance to requirement'. Thus quality can be defined as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (Bureau of Indian Standards, 1988). The discussion on quality in education system has been well led by Astin (1993) when he pointed out that 'you-cannot-define-it-but-you-know-it-when-you-see-it'. He argued that there are four views of excellence as reputation, excellence resources, excellence as content and excellence as outcome.

Deshmukh (2002), is of the view that quality of an institution depends on the commitment and objectives identified by an institution namely: (i) Ensuring that the institute's goals are clearly defined (ii) Rethinking every task, (iii) Replacing the tendency of blaming other people for failure, (iv) A commitment to continuous monitoring of performance evaluation of progress, (V) Satisfying the internal and external customers/stakeholders needs.

Quality in education means specifying worthwhile learning goals and enabling students to achieve them. This process of enabling students to achieve their learning goals involves distinguishing between different kinds of learning and different kinds of learners.

There is no simple definition for quality of education. It has been defined differently by different philosophers, practitioners and educationists. Quality education must ensure the child's all round development i.e., physical, mental, social, emotional and spiritual aspects of his/her personality, and should enable him/her to best use his/her potential. Education is a life learning process. There is need to evolve strategies that could improve all aspects of primary education simultaneously i.e., decentralized contextual planning, need-based training of teachers, educational technology, strengthening external supervision and total quality management practices.

5.3. TOTAL QUALITY MANAGEMENT

Quality concept is not a new one. Historically during the fifth century BC Egyptians demonstrated a commitment to quality in the construction of their pyramids. During the early days of manufacturing,

an operator's work was inspected and a decision made whether to accept or reject it. The focus was just to accept or reject the products based on the specification. No effort was made on defect prevention. In the 1920's statistical theory began to be applied effectively to quality control, and in 1924, Shewhart made the first attempt of a modern control chart. His work was later developed by Deming and the early work of Shewhart, Deming, Dodge and Romig constitutes much of what today comprises the theory of Statistical Process Control (SPC). In 1969, Feigenbaum presented a paper in a conference and the term 'total quality' was used for the first time, and referred to wider issues such as planning, organisation and management responsibility. Company wide quality management was common in Japanese companies by the late 1970's. Total Quality Management (TQM) came into existence in 1980 through the western world. TQM is now part of a much wider concept that addresses overall organisational performance and recognizes the importance of quality processes. As we move into the 21st century, TQM has developed in many countries into holistic frameworks, aimed at helping organisations achieve excellent performance, particularly in customer delight and business results.

Total Quality Management is an integrated organizational approach in delighting both external and internal customers by meeting their expectations on a continuous basis through every one involved with the organization working on continuous improvement in all products, services and procedures along with proper problem solving methodology. The central focus in Total Quality Management is customer satisfaction, indicator of quality being the customer response to a product. With this central focus on customer satisfaction, Total Quality Management sets out to develop an organizational philosophy and management strategies to achieve the philosophy.

TQM is a practical but strategic approach to run an organization which focuses on the needs of its customers and clients. It aims to reject any outcome other than excellence. TQM is not a set of slogans, but a deliberate and systematic approach to achieve appropriate levels of quality in a consistent fashion which meet or exceed the needs and wants of customers. It can be thought of as a philosophy of never-ending improvement only achievable by and through people.

Murgatroyd and Morgan (1993) define "TQM as. .. the systematic management of an organisation, customer-supplier relationships in

such a way to ensure sustainable steep-slope improvement in quality performance". Oakland (1993) conceptualizes TQM as a "Management process which improve the effectiveness, flexibility and competitiveness of a business".

Recent literature on quality reveals a number of quality concepts and quality deployment programmes. For example, three basic processes of quality management are offered by Juran (Juran & Gryna, 1970; Juran, 1986): quality planning, quality improvement and quality control. Deming (1981, 1982, and 1986) has recommended 14 principles for the successful and effective management of quality in an organisation. Along the same lines, Crosby (1979) offers a 14-step zero-defect quality improvement programme for an organization.

5.4. EDUCATIONAL TECHNOLOGY

Educational Technology Aids to improve the process of human learning. "Educational Technology is a complex integrated process involving people, procedures, devising, implementing, evaluating and managing solutions to those problems involved in all aspects of human learning". In other words, Educational Technology is the technology that prescribes the design of instructional materials and then structures learning interactions for maximum benefit.

The instructor has to play a pivotal role for the success of the Educational Technology. The teaching aids either modern or traditional only supplement the efforts of the instructor to enhance the learning process. They cannot be a substitute for him. The technologies assist him to do his work in an efficient manner and to achieve the educational objectives.

Technology is the process of creatively applying certain known and tested principles to a given practical purpose (or problems). Thus Technology is application of scientific methods to practical situation (Romiszowski, 1981). Just as other fields of technology, Educational Technology also solves educational problems in practical situation. Educational Technology improves teaching-learning process. It helps the teachers to classify, establish, and correlate and co-ordinate accurate concepts. It enables pupils to make learning, more concrete, effective, interesting, and meaningful. It also provides significant gains in information learning, retention and recall, thinking and reasoning activity, imagination, better assimilation and personal growth and development.

Educational Technology, in its wide sense understood today, includes "the development, application and evaluation of systems, techniques and teaching aids to improve human learning". The main objective of using of Educational Technology is to improve learning. However, this purpose can be fully achieved only if the teacher uses the hard ware and software properly. The growing use of Educational Technology in today's schools has helped to release the teacher from the routine role of 'pouring information'. Now he can devote his time and effort to the more important tasks like planning, arranging and evaluating learning experiences and outcomes and can encourage his students by giving proper guidance and counseling.

5.5. TOTAL QUALITY MANAGEMENT AND EDUCATIONAL TECHNOLOGY

TQM facilitates to improve teaching and learning. In the literature of TQM, quality is seen as meeting the requirements and expectations of the customer. In the field of education, the teacher's skill is vital and therefore should form part of the stated quality requirements. Besides, Educational Technology is playing a prime role in promoting the skill among teachers. TQM and ET are equally important in improving the learner's achievement.

5.6. NEED FOR THE STUDY

There is a hope that TQM brings greater dividends to quality teaching and learning process. If the schools fail to maintain quality and standards in the present-day highly competitive world, the sovereignty of a nation will stand threatened. Thus TQM has come to acquire a pride of place in the management of the school. The primary facets of advantages emerge from the facts that TQM in education enables teachers to understand and evaluate new technology options, enhance their intellectual capital, gain insights in their areas of operations, create a flexible and effective organizational structure and tap the potential of Educational Technology. For achieving the excellence in teaching and learning process, the teachers should select and use Educational Technology. Much reference material is not available to find out the relationship between Total Quality Management and Educational Technology in primary education.

Taking into account with these sentiments, the present study "The Attitude of Primary Teachers towards Total Quality Management in Relation To Their Attitude towards Educational Technology" was taken up.

5.7. STATEMENT OF THE PROBLEM

The concept of Total Quality Management (TQM) was developed by an American, W. Edwards Deming. It was developed for improving the production of quality goods and services. The concept of TQM is also applicable to academics. Many educators believe that the Deming's concept of TQM provides guiding principles for needed educational reform.

TQM is a management philosophy that supports the process of continuous improvement within an organization and where total emphasis is placed on the customer. TQM builds ethics, integrity and trust, develops training, team work and leadership and promotes conducive learning environment in the school and emphasizes the use of Educational Technology among the teachers. In order to achieve the quality education in the academic scenario, Educational Technology is crucial to the success of the school. It, it is hoped that TQM improves the Educational Technology in the school system. The investigator wants to make the practical evidences that TQM promotes Educational Technology in the schools. Generally, Total Quality Management improves the knowledge, attitude and skill among the employees of the system. Hence, the investigator selected this topic entitled "The Attitude of Primary Teachers towards Total Quality Management in Relation To Their Attitude towards Educational Technology**".**

5.8. OPERATIONAL DEFINITIONS OF KEY TERMS

The operational definitions of the important terms used in the present study are given below:

5.8.1. Attitude

Attitude is the predisposition of an individual to evaluate some aspect of his world in a favorable or unfavourable manner. The aspect of his world that he evaluates includes symbols, objects, ideas and people. Fishblin and Ajzen (1975) have separated the concept of attitude from behavioural intentions and actual behaviors, both of which are open to a variety of sources of influence.

5.8.2. Primary Teachers

The teachers who are handling the classes from standard I to V in primary schools are called primary teachers.

5.8.3. Total Quality Management (Tqm)

The main features of TQM have been succinctly summarized by Saylor (1992): "The TQM philosophy provides overall concept that fosters continuous improvement in an organization. This philosophy stresses a systematic, integrated, consistent organization-wide perspective involving everyone and everything. It focuses primary emphasis on total satisfaction for both internal and external customer, within a management environment that seeks continuous improvement of all processes and systems".

5.8.4. Educational Technology (Et)

The word 'technology' is derived from the Greek word 'technique' meaning 'art of skill'. It is concerned with the development, application and evaluation of system, techniques and aids to improve the process of human learning.

5.9. OBJECTIVES OF THE STUDY

The following are the objectives of the present study.

1. To develop and validate a tool for measuring the attitude of primary teachers towards Total Quality Management (TQM).
2. To develop and validate a tool for measuring the attitude of primary teachers towards Educational Technology (ET).
3. To study, whether there is any significant relationship between the attitude towards Total Quality Management (TQM) and Educational Technology (ET) among the primary teachers.
4. To find out whether there is any significant relationship between Total Quality Management (TQM) and Educational Technology (ET) attitude scores of primary teachers with respect to Teacher variables.
5. To find out, whether there is any significant relationship between Total Quality Management (TQM) and Educational Technology (ET) attitude scores of primary teachers with respect to Institutional variables.

6. To find out, whether there is any significant difference between Total Quality Management (TQM) attitude scores of primary teachers with respect to Teacher variables.
7. To find out, whether there is any significant difference between Total Quality Management (TQM) attitude scores of primary teachers with respect to Institutional variables.
8. To find out, whether there is any significant difference between Educational Technology (ET) attitude scores of primary teachers with respect to Teacher variables and
9. To find out, whether there is any significant difference between Educational Technology (ET) attitude scores of primary teachers with respect to Institutional variables.

5.10. HYPOTHESES OF THE STUDY

Based on the objectives of the study the following null hypotheses were formulated:

1. There is a no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers of Thanjavur District.
2. There is no significant relationship between Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the male teachers of Thanjavur District.
3. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the female teachers of Thanjavur District.
4. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the primary teachers below 40 years of age of Thanjavur District.
5. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude score among the primary teachers of 40 years and above 40 years of age of Thanjavur District.
6. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the Hindu teachers of Thanjavur District.

7. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the non-Hindu teachers of Thanjavur District.
8. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the married teachers of Thanjavur District.
9. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the unmarried teachers of Thanjavur District.
10. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers below 20 years of experience of Thanjavur District.
11. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with 20 years and more than 20 years of experience of Thanjavur District.
12. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers who are graduates of Thanjavur District.
13. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers who are higher secondary graduates of Thanjavur District.
14. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Diploma in Teacher Education of Thanjavur District.
15. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers with Degree in Teacher Education of Thanjavur District.
16. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the rural teachers of Thanjavur District.

17. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the urban teachers of Thanjavur District.

18. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of Tamil medium schools of Thanjavur District.

19. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the teachers of English medium schools of Thanjavur District.

20. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the government school teachers of Thanjavur District.

21. There is no significant relationship between the Total Quality Management (TQM) and Educational Technology (ET) mean attitude scores among the aided school teachers of Thanjavur District.

22. There is no significant difference between the male and female teachers in their mean attitude scores towards Total Quality Management (TQM).

23. There is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Total Quality Management (TQM).

24. There is no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Total Quality Management (TQM).

25. There is no significant difference between the married and unmarried teachers in their mean attitude scores towards Total Quality Management (TQM).

26. There is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Total Quality Management (TQM).

27. There is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Total Quality Management (TQM).

28. There is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Total Quality Management (TQM).

29. There is no significant difference between the rural and urban teachers in their mean attitude scores towards Total Quality Management (TQM).

30. There is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Total Quality Management (TQM).

31. There is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Total Quality Management (TQM).

32. There is no significant difference between the male and female teachers in their mean attitude scores towards Educational Technology (ET).

33. There is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Educational Technology (ET).

34. There is no significant difference between the Hindu and non-Hindu teachers in their mean attitude scores towards Educational Technology (ET).

35. There is no significant difference between the married and unmarried teachers in their mean attitude scores towards Educational Technology (ET).

36. There is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Educational Technology (ET).

37. There is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Educational Technology (ET).

38. There is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Educational Technology (ET).

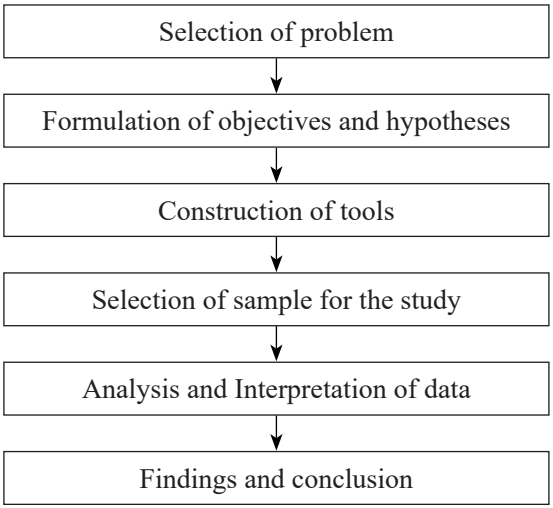
39. There is no significant difference between the rural and urban teachers in their mean attitude scores towards Educational Technology (ET).

40. There is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Educational Technology (ET).

41. There is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Educational Technology (ET).

5.11. PLAN FOR THE STUDY

The following flow chart explains the plan for the study.



5.12. METHODOLOGY IN BRIEF

The investigator followed the 'Survey' method for the present study. The questionnaires were distributed to the primary teachers in Thanjavur District of Tamilnadu. The teachers from the primary schools in Thanjavur district have responded the questionnaires. The data thus collected were put into appropriate statistical analysis. The methodology includes:

(*i*) Selection of sample

(*ii*) Preparation of tools

(*iii*) Pilot study

(*iv*) Administration of the tools and

(*v*) Analysis and interpretation

5.12.1. Tools Used for the Study

The following two tools were employed in the study.

1. Teachers' Attitude Towards Total Quality Management (TATTQM). (M.Selvam, Dr.S.Vincent De Paul and Dr.T.K.Swatantra Devi, 2004) and
2. Teachers' Attitude Towards Educational Technology (TATET). (M.Selvam, Dr.S.Vincent De Paul and Dr.T.K.Swatantra Devi, 2004).

Before the final study the investigator conducted a pilot study, which consisted of 118 primary teachers in Thanjavur district of Tamil Nadu. Both the tools have adequate validity and satisfactory reliability.

5.12.2. Sample for the Study

The population here refers to all the 3593 teachers working in primary schools in Thanjavur district of Tamilnadu. Stratified random sampling technique was adopted for the present study. The investigator collected data from the primary teachers in Thanjavur district of Tamilnadu. 619 primary teachers are the sample for this study.

5.12.3. Variables of the Study

The Teacher variables (gender, age, religion, marital status, experience, general educational qualification and professional qualification) and Institutional variables (locale of the school, medium of instruction and type of management) were also considered for the present study.

5.12.4. Data Collection and Scoring Procedure

After deciding upon the sample the investigator contacted the heads of the selected primary schools. With the permission of the heads of the primary schools, the investigator personally administered the questionnaires. In administrating the tools, a uniform procedure was adopted throughout the selected schools. First the tools were distributed to each primary teacher and the investigator give general instruction to be followed, then explained how the primary teachers have to fill up the details and also the method of answering. After completion of the testing the tools were collected back from each primary teacher.

Scoring of the response was done as per the scoring scheme of each tool. The scores were then tabulated for statistical analysis.

5.12.5. Statistical Techniques Used in the Study

The collected data are subjected to different statistical analysis**.** The statistics used for this study are as follows.

1. Product moment correlation was applied to verify the relationship between the attitude towards the Total Quality Management and Educational Technology among the primary teachers and
2. 't'-test was used to find out the significant difference between the sub-variables on Total Quality Management and Educational Technology.

5.13. FINDINGS OF THE STUDY

Considering the objectives and hypotheses, specific findings were enumerated form the results and interpretations of the present study.

1. The calculated 'r' value 0.422 is greater than the table values 0.115 at 0.01 level of significance. It is inferred that, there is a positive significant relationship between the mean attitude scores towards Total Quality Management and Educational Technology among the primary teachers of Thanjavur District.
2. The calculated 'r' value 0.357 is greater than the table value 0.256 at 0.01 level of significance. It is concluded that, there is a positive significant relationship between the mean attitude scores towards Total Quality Management and Educational Technology among the male teachers.
3. The calculated 'r' value 0.424 is greater than the table value 0.115 at 0.01 level of significance. Thus it is inferred that, there is a positive significant relationship between the Total Quality Management and Educational Technology mean attitude scores among the female teachers.
4. The obtained 'r' value 0.408 is greater than the table value 0.115 at. 0.01 level of significance. It implies that, there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the primary teachers of below 40 years of age.

5. The calculated 'r' value 0.479 is greater than the table value 0.256 at 0.01 level of significance. It is concluded that, there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the primary teachers of 40 years and above 40 years of age.
6. The obtained 'r' value 0.409 is greater than the table value 0.115 at 0.01 level of significance. It is concluded that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the Hindu teachers.
7. The calculated 'r' 0.457 is greater than the table value 0.256 at 0.01 level of significance. It implies that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the Non-Hindu teachers.
8. The obtained 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. Hence, it is concluded that, there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the married teachers.
9. The calculated 'r' value 0.375 is greater than the table value 0.270 at 0.01 level of significance. It implies that there is a significant relationship between the Total Quality Management and Educational Technology mean attitude scores among the unmarried teachers.
10. The calculated 'r' value is 0.433 is greater than the table value 0.115 at 0.01 level of significance. This implies that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the primary teachers with less than 20 years of experience.
11. The calculated 'r' value is 0.344 is greater than the table value 0.256 at 0.01 level of significance. It implies that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the teachers with 20 years and more than 20 years of experience.
12. The obtained 'r' value is 0.366 is greater than the table value 0.182 at 0.01 level of significance. Thus it is conclude that, there is a

significant relationship between the Total Quality Management and Educational Technology mean attitude scores among the graduate teachers.

13. The obtained 'r' value 0.482 is greater than the table value 0.182 at 0.01 level of significance. It is concluded that, there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among teachers who are higher secondary graduates.

14. The obtained 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. It is concluded that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the teachers with Diploma in Education.

15. The calculated 'r' value 0.414 is greater than the table value 0.256 at 0.01 level of significance. It is inferred that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the teachers with Degree in Education.

16. The calculated 'r' value 0.430 is greater than the table value 0.115 at 0.01 level of significance. Hence it is concluded that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the rural teachers.

17. The calculated 'r' value 0.403 is greater than the table value 0.182 at 0.01 level of significance. This implies that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the urban teachers.

18. The calculated 'r' value 0.420 is greater than the table value 0.115 at 0.01 level of significance. It is concluded that there is a significant relationship between the Total Quality Management and Educational Technology mean attitude scores among the teachers of Tamil medium schools.

19. The obtained 'r' value 0.400 is less than the table value 0.515 at 0.05 level of significance. It is concluded that there is no significant relationship between the Total Quality Management and Educational

Technology mean attitude scores among the teachers of English medium schools.

20. The obtained 'r' value 0.307 is greater than the table value 0.115 at 0.01 level of significance. It is concluded that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the government school teachers.

21. The obtained 'r' value 0.498 is greater than the table value 0.182 at 0.01 level of significance. It implies that there is a significant positive relationship between the Total Quality Management and Educational Technology mean attitude scores among the aided school teachers.

22. The calculated 't' value 3.94 is greater than the table value 2.58 at 0.01 level of significance. Therefore it is concluded that there is a significant difference between the male and female teachers in their mean attitude scores towards Total Quality Management. The female teachers have more favourable attitude towards Total Quality Management (74.33) than the male teachers (70.19).

23. The obtained 't' value 1.256 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers below 40 years of age and 40 years and above 40 years of age in their mean attitude scores towards Total Quality Management. The teachers below 40 years of age and 40 years and above 40 years of age have equal level of attitude towards Total Quality Management.

24. The calculated 't' value 0.870 is less than the table value 1.96 at 0.05 level of significance. Thus it is concluded that there is no significant difference between the Hindu and Non-Hindu teachers in their attitude scores towards Total Quality Management. The teachers do not differ in their Total Quality Management attitude with respect to their religion.

25. The calculated 't' value 0.951 is less than the table value 1.96 at 0.05 level of significance. It implies that there is no significant difference between the married and unmarried teachers in their mean attitude scores towards Total Quality Management. The married and unmarried teachers have equal level of attitude towards Total Quality Management.

26. The calculated 't' value 1.918 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Total Quality Management. The teachers do not differ in their attitude towards Total Quality Management with respect to their experience.

27. The calculated 't' value 0.858 is less than the table value 1.96 at 0.05 level of significance. It is concluded that, there is no significant difference between the teachers who are graduates and higher secondary graduates in their mean attitude scores towards Total Quality Management. The teachers who are graduates and higher secondary graduates have equal level of attitude towards Total Quality Management.

28. The calculated 't' value 1.511 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Total Quality Management. The teachers with Diploma and Degree in Education have more or less equal level of attitude towards Total Quality Management.

29. The obtained 't' value 0.631 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the rural and urban teachers in their mean attitude scores towards Total Quality Management. The rural and urban teachers do not differ in their attitude towards Total Quality Management.

30. The calculated 't' value 1.833 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant between the teachers of Tamil and English medium schools in their mean attitude scores towards Total Quality Management. The teachers of both Tamil and English medium schools have more or less equal levels of attitude towards Total Quality Management (TQM).

31. The obtained 't' value 1.053 is less than the table value 1.96 at 0.05 level of significance. Hence it is concluded that there is no significant difference between the teachers of government and

aided schools in their mean attitude scores towards Total Quality Management. The teachers of government and aided schools have equal level of attitude towards Total Quality Management (TQM).

32. The calculated 't' value 3.086 is greater than the table value 2.58 at 0.01 level of significance. It implies that that there is a significant difference between the male and female teachers in their mean attitude scores towards Educational Technology. The Female teachers have more favourable attitude towards Educational Technology (60.01) than the male teachers (57.87).

33. The obtained 't' value 1.476 is less than the table value 1.96 at 0.05 level of significance. It is inferred that there is no significant difference between the primary teachers below 40 years and 40 years and above 40 years of age in their mean attitude scores towards Educational Technology. The teachers within 40 years of age and above 40 years of age have equal level of attitude towards Educational Technology (ET).

34. The obtained 't' value 0.579 is less than the table value 1.96 at 0.05 level of significance. Hence, it is concluded that there is no significant difference between the Hindu and Non-Hindu teachers in their mean attitude scores towards Educational Technology. The teachers do not differ in their Educational Technology attitude with respect to their religion.

35. The calculated 't' value 0.332 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the married and unmarried teachers in their mean attitude scores towards Educational Technology. The married and unmarried teachers have equal level of attitude towards Educational Technology.

36. The obtained 't' value 1.80 is less than the table value 1.96 at 0.05 level of significance. It is inferred that there is no significant difference between the teachers below 20 years and 20 years and more than 20 years of experience in their mean attitude scores towards Educational Technology. The teachers do not differ in their attitude towards Educational Technology with respect to their experience.

37. The calculated 't' value 0.123 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers who are graduates and

higher secondary graduates in their mean attitude scores towards Educational Technology. The teachers who are graduates and higher secondary graduates have equal level of attitude towards Educational Technology.

38. The obtained 't' value 1.203 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers with Diploma and Degree in Education in their mean attitude scores towards Educational Technology. The teachers with Diploma and Degree in education have more or less equal level of attitude towards Educational Technology.

39. The calculated 't' value 0.931 is less than the table value 1.96 at 0.05 level of significance. It is occluded that there is no significant difference between the rural and urban teachers in their mean attitude scores towards Educational Technology. The rural and urban teachers do not differ in their attitude towards Educational Technology.

40. The obtained 't' value 1.522 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers of Tamil and English medium schools in their mean attitude scores towards Educational Technology. The teachers of both Tamil and English medium schools have more or less equal level of attitude towards Educational Technology.

41. The calculated 't' value 0.510 is less than the table value 1.96 at 0.05 level of significance. It is concluded that there is no significant difference between the teachers of government and aided schools in their mean attitude scores towards Educational Technology ET. The teachers of government and aided schools have equal level of attitude towards Educational Technology.

5.14. DISCUSSION

The present study revealed the following facts:

Total Quality Management and Educational Technology were the major concerns in the present investigation. The primary teachers were divided into various sub samples such as gender, age, religion, marital status, experience, general educational qualification, professional

qualification, locale of the school, medium of instruction and type of management. Further, the sub samples were classified into pairs like male and female; below 40 years of age and 40 years and above 40 years of age; Hindu and Non-Hindu; married and unmarried; below 20 years of experience and 20 years and above 20 years of experience; graduates and higher secondary graduates, Diploma and Degree in Education; rural and urban; Tamil and English medium and government and aided schools.

It is known from the study that there is a significant correlation between the Total Quality Management and Educational Technology mean attitude scores, among the primary teachers in Thanjavur district of Tamil Nadu. The interesting point is that the Total Quality Management significantly influences Educational Technology among teachers.

From the study, it is found that there is significant difference between the male and female teachers in their mean attitude scores towards Total Quality Management and Educational Technology.

It is learnt from the present study that the female teachers' mean attitude scores on Total Quality Management and Educational Technology were higher than that of the male teachers. This may be perhaps the female teachers have a clear idea on Total Quality Management and Educational Technology and they might have practiced properly.

5.15. DELIMITATIONS OF THE STUDY

The present study has been limited to the following due to constraint of time and resources.

(*i*) Among the 30 districts in Tamil Nadu, this study is limited to only one district namely Thanjavur.

(*ii*) 619 primary teachers have been drawn as sample from the entire population of 3593 primary teachers in Thanjavur district

(*iii*) Certain specific types of variables were considered in this study.

5.16. EDUCATIONAL IMPLICATIONS

Total Quality Management is a process by which individuals, groups, organizations, institutions and societies develop abilities (individually or collectively) to perform function, solve problems and

achieve objectives. From the analysis, it has been found that there is a relationship between the attitude towards Total Quality Management and Educational Technology among the primary teachers. Hence, it is suggested that Total Quality Management should be incorporated in the primary schools by providing training in Total Quality Management practices so that the school can perform in an effective manner.

Educational Technology plays a dominant role for improving the quality of education. It deals with effective planning and utilization of available human and non-human resources and to maximize human learning among the students. It consists of all material, media and methodology which are used for optimization of learning. Therefore, it is suggested that government must take the initiative and ensure that the primary schools are equipped with all the essential educational technology facilities.

In-service training programmes need to be redesigned suitably to make teachers more aware and competent in practicing Total Quality Management and Educational Technology concepts in the working stations.

The present study concludes that there is a significant difference between female and male teachers regarding their attitude towards Total Quality Management and Educational Technology. The mean attitude scores of female teachers on Total Quality Management and Educational Technology were higher than that of their counterparts. So the male teachers should be given in-service training on Total Quality Management and Educational Technology.

5.17. RECOMMENDATIONS

The following recommendations were made based on the findings of the present study.

(*i*) There is a positive significant relationship between the mean attitude scores towards Total Quality Management and Educational Technology among the primary teachers of Thanjavur district in Tamil Nadu. It should be maintained and measures have to be taken to improve it further.

(*ii*) It was found that the female teachers have more favourable attitude towards Total Quality Management than the male teachers. Special training courses can be conducted based on the features of Total

Quality Management for the male teachers, so that their attitude towards Total Quality Management can be improved. These types of programmes can be added in the in-service training programmes.

(*iii*) It has been found that the female teachers have more favourable attitude towards Educational Technology than their counterparts. Measures have to be taken to improve the attitude of male teachers, so that they should contribute equally as female teachers for the success of teaching and learning process.

(*iv*) Female primary teachers seem to have higher attitude towards TQM and ET when compared with male primary teachers. Male primary teachers should be motivated to have more attitudes towards TQM and ET through conferences, seminars and informal chats.

(*v*) Female primary teachers' attitude towards TQM and ET seem to be higher than their male counterparts. This may be due to the committed nature of female teachers who prefer TQM and ET for their teaching very much. Male primary teachers also should be encouraged to devote themselves committed to TQM and ET for their teaching profession.

(*vi*) Institutions where the primary teachers work should realize their part in the joint venture to allow teachers avail the research projects in TQM, advance training in ET, visits to advance institutions which contribute to the high attitude towards TQM and ET among the primary teachers.

5.18. SUGGESTIONS FOR FURTHER STUDY

In the light of the present research and its results, it is suggested to undertake the following studies.

(*i*) This study can be carried out with different samples in different area.

(*ii*) Similar studies can be conducted with other levels of teachers like high school, higher secondary and tertiary level.

(*iii*) Studies can be done to find out whether there is any relationship between Total Quality Management and other areas in the field of education.

(*iv*) This type of research can be conducted by considering the other variables of teachers.

5.19. CONCLUSION

On the basis of results and discussions of this research, it may be concluded that there is a significant relationship between the Total Quality Management and Educational Technology mean attitude scores of primary teachers in Thanjavur district of Tamilnadu.

In order to improve the quality in education, policy makers should focus more attention on Total Quality Management components and Educational Technology right from primary education.

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ABBREVIATIONS

ABT	-	Activity Based Teaching
AECT	-	Association of Educational Communication and Technology
ANOVA	-	Analysis of Variance
B.Ed	-	Bachelor of Education
BE	-	Bachelor of Engineering
BE	-	Bachelor of Engineering
BIS	-	Bureau of Indian Standards
BRC	-	Block Resource Centre
CAI	-	Computer Assisted Instruction
CAL	-	Computer Assisted Learning
CQI	-	Continuous Quality Improvement
DEP	-	Distance Education Programme
DIET	-	District Institute of Education and Training
DPEP	-	District Primary Education Programme
DPO	-	Demonstration followed by Practice followed by Observation
DRU	-	District Resource Unit
DST	-	Department of Science and Technology
DTE	-	Diploma in Teacher Education
DTEE	-	Department of Teacher Education and Extension
DTERT	-	Directorate of Educational Research and Training

DTERT	-	Directorate of Teacher Education, Research and Training
EFA	-	Education for All
ELT	-	English Language Teaching
ET	-	Educational Technology
ETV	-	Educational Television
EVS	-	Environmental Studies
GCERT	-	Gujarat Council of Educational Research and Training
GOI	-	Government of India
ICT	-	Information and Communication Technology
IGNOU	-	Indira Gandhi National Open University
IIEP	-	International Institute of Educational Planning
IIT	-	Indian Institute of Technology
ISO	-	International Standard Organisation
M.Ed	-	Master of Education
M.Phil	-	Master of Philosophy
MHRD	-	Ministry of Human Resource and Development
MLL	-	Minimum Level of Learning
MTA	-	Mother - Teachers Association
NAAC	-	National Assessment and Accreditation Council
NCERT	-	National Council of Educational Research and Training
NIEPA	-	National Institute of Educational Planning and Administration
NPE	-	National Policy on Education
OB	-	Operation Blackboard
ODP	-	Observe Demonstrate Practice
OHP	-	Over Head Projector
PALS	-	Peer Assisted Learning Strategy
PMOST	-	Programme of Mass Orientation of School Teacher
PTA	-	Parent Teacher Association
RIE	-	Regional Institute of Education
SCERT	-	State Council of Educational Research and Training

SETRAD	-	Society for Educational Technology Research and Development
SMART	-	PT-State wide Massive and Rigorous Training for Primary Teachers
SMC	-	School Management Committee
SOPT	-	Special Orientation Programme for Primary Teachers
SPC	-	Statistical Process Control
SSA	-	Sarva Shiksha Abhiyan
STV	-	School Television
SWOT	-	Strengths, Weaknesses, Opportunities, Threats
TATET	-	Teachers' Attitude Towards Educational Technology
TATTQM	-	Teachers' Attitude Towards Total Quality Management
TLM	-	Teaching Learning Material
TQC	-	Total Quality Control
TQM	-	Total Quality Management
TSG	-	Technical Support Group
TTM	-	Traditional Teaching Method
TV	-	Television
UEE	-	Universalisation of Elementary Education
UGC	-	University Grants Commission
UK	-	United Kingdom
UNESCO	-	United Nations Educational, Scientific and Cultural Organisation
UPBET	-	Utter Pradesh Basic Education Programme
UPE	-	Universalisation of Primary Education
USA	-	United States of America
VAI	-	Video Assisted Instruction
VEC	-	Village Education Committee
ZP	-	Zilla Parishad

APPENDICES

1. PERSONAL INFORMATIONS

Please fill the following items using tick mark (✓) wherever necessary.

Name of the Teacher	:	
Name of the school	:	
Gender	:	Male/Female
Age	:	Below 40 years of age /40 years and above 40 years of age
Religion	:	Hindu / Non-Hindu
Marital Status	:	Married / Unmarried
Experience	:	Below 20 years / 20 years and above 20 years
General Educational Qualification	:	Graduate / Higher secondary graduate
Professional Qualification	:	Diploma in Teacher Education / Degree in Teacher Education
Locale of the School	:	Rural / Urban
Medium of Instruction	:	Tamil / English
Type of Management	:	Government / Aided

2. TEACHERS' ATTITUDE TOWARDS TOTAL QUALITY MANAGEMENT (TATTQM)

(Developed by M. Selvam, Dr. S. Vincent De Paul and Dr. T.K. Swatantra Devi)

Sl. No	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
1.	Parents give suggestions for school activities.					
2.	The teaching is not focused on the needs and expectations of the students.					
3.	The school does not provide physical facilities for effective teaching.					
4.	The head teacher does not develop leadership quality among teachers.					
5.	The school provides financial support for effective teaching - learning process.					
6.	The head teacher generates facilities in order to achieve educational excellence.					
7.	Parents reinforce the school activities by providing support materials.					
8.	Appropriate teaching methods are not used for effective teaching and learning.					

Sl. No	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
9.	Action Research solves the classroom problems.					
10.	Parents do not contact teachers then and there about the progress of the child.					
11.	Students' academic doubts are not clear then and there.					
12.	The library of the school has professional journals.					
13.	Parents recognize teachers who actively involve in the school.					
14.	Students are not able to understand the concepts clearly through my teaching.					
15.	Monitoring of classroom activities does not exist in the school system.					
16.	The head teacher appreciates the teachers for their good work.					
17.	The head teacher commits him/her self to his/her school system.					
18.	Parents regularly attend the parent teacher meeting.					

Sl. No	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Disagree
19.	The teaching is not reaching its targets.					
20.	The head teacher does not strive hard for removing the defects in the school.					

Instruction

Answer all the items. For every statement five possible answers are given: 'Strongly Agree'; 'Agree'; 'Undecided'; 'Disagree' and 'Strongly Disagree'. Read every item and choose one possible answer by putting tick mark (✓).

3. TEACHERS' ATTITUDE TOWARDS EDUCATIONAL TECHNOLOGY (TATET)

(Developed by M. Selvam, Dr. S. Vincent De Paul and Dr. T.K. Swatantra Devi)

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Agree
1.	I apply current knowledge on Educational Technology for improving my classroom teaching.					
2.	I have interest in finding out defective designs of Educational Technology and seeking alternatives.					
3.	I do not utilize or fully make use of my talents on Educational Technology to move onwards my teaching.					

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Agree
4.	Educational Technology does not rectify the problems of teaching.					
5.	Educational Technology does not satisfy the students.					
6.	Educational Technology advocates practical ideas about classroom teaching.					
7.	Educational Technology promotes continuous improvement in education.					
8.	Educational Technology does not solve the problems of learning.					
9.	Educational Technology is a time consuming process in the classroom practice.					
10.	Educational Technology provides opportunities for effective learning.					
11.	Educational Technology integrates teachers with their work.					
12.	Educational Technology does not favour to check the frustration of students.					

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly Agree
13.	Educational Technology brings desirable learning outcomes among students.					
14.	Educational Technology increase satisfaction among teachers.					
15.	Educational Technology does not improve all aspects of communication skills among teachers.					

Instruction

Answer all the items. For every statement five possible answers are given: 'Strongly Agree'; 'Agree'; 'Undecided'; 'Disagree' and 'Strongly Disagree'. Read every item and choose one possible answer by putting tick mark (✓).

♦ ♦ ♦

Educational Technology and Total Quality Management

Dr M. Selvam

Dr M. Selvam, Ph.D., in Education is presently serving as Principal, DIET, Uthamacholapuram, Salem, Tamilnadu. He discharges the duties as Faculty member for Tamil Nadu School Leadership Academy, Kothagiri, The Nilgiris. He performed as author, academic in-charge and content supervisor for Tamilnadu Textbook Corporation's books named Practicum-D.T.Ed.,(2003), Science Textbook-8th standard and Science Textbook-10th Standard (2019). He has completed 13 Action Researches, 3 Research Projects and 1 Case study in Education and Educational Management. He has worked as State expert for training on Total Quality Management in Education. He has acted as Key Resource Person for 5 in-service teacher education programmes and as resource person for 13 in-service programmes in Tamil Nadu and also in Union Territories such as Pondicherry and Andaman &Nicobar Islands. He authored 15 teacher training modules.

He has published 60 academic papers and research articles in International, National and State Level Journals and Magazines. He has presented papers in over 20 Conferences, Seminars and Workshops. He has worked as author, associate author and associate editor for 4 Seminar Compendiums. He has produced 10 intervention booklets for Action Researches. He voluntarily contributed the series of articles in the magazine named 'Dear Students'.

He has introduced new ideas in education such as 'Sema-Stubbic Tutoring System', 'Tempus Teacher', 'Material-Learner-Facilitator Approach' and 'Systems Mapping Philosophy'. He has completed 5 voluntary education projects named 'Literacy Project for Mobile Population', Lesson Dictionary Project, 'Physical Development for Primary Students, Reading Skill development and Pallikkoru Panaimaram Project. He has assisted in NCF-2005 as Sub-Committee member for Primary Education in State Level. He has scripted more than 40 programmes in AIR, Trichirappalli, Pozhil FM, Thuduppatty and KVK Radio, Namakkal.

He has played a vital role in Educational Videos for imparting important contributions to the broadcast named 'Scientific Temper' and 'ALM for the Elementary Teacher Education' in EMRC, Anna University, Chennai and ETV Studio, DTERT, Chennai respectively. He has involved in developing a syllabus 'Teacher-Learner in Society-for D.El.Ed., (2014).

He has edited a monograph on "Science Resources" (2002) and the ' Need-Based Local-Specific Functional Literacy Project's book (2003). He has willingly done research on "Learning Climate in NCLP's Centers" (2017). He has freely guided qualitative research on the Multiphase impact of in-service training in 'Algebra' for Upper Primary Mathematics teachers(2017).

He has been conferred “Paryavaran Dronacharya Award” with Silver Medal (1997) by ICWES; “Dr Salim Ali Memorial Feather Conservation Award” (1998) by GESCSSA; “ BOLT Award”(2004) by Air India, The Hindu and Dinamalar; “Excellence Award with Cash Prize (2004) by DTERT, Chennai and Vocational Excellence Award(2019) by Rotary Club of Salem Galaxy for his outstanding contribution in the Teaching and Administration Field.

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