8.1 INTRODUCTION

Quality is continuous improvement. The Plan > Do > Check > Act cycle is a fundamental component of pursuing quality in any organization. Education is goal-oriented. Accordingly, quality of education has been seen with reference to “conformance of educational output to planned goals, specifications & requirements” (Gilmore, 1974; Crosby, 1979); “defect avoidance in education process” (Crosby, 1979); “excellence in education” (Peters & Waterman, 1982); “value addition in education” (Feignnbaum, 1983); “meeting or exceeding customer’s expectations of education” (Parasuraman et al., 1985); and “fitness of educational outcome & experience for use” (Juran & Gryna, 1988).

Total quality management (TQM) is an organizational wide approach to quality with improvement undertaken on a continuous basis by everyone in the organization. It is quality centered, customer-focused, facts based, team-driven, seminars-management led process to achieve an organizations strategic imperative through continuous process improvement (Dale & Bunney, 2003). That is why TQM principles are also being referred to as total quality improvement, world class quality, continuous quality improvement, total service quality and total quality leadership.

The concept of management has entered classrooms in diverse schools across India as teachers grapple with the intricacies of TQM or total quality management. The elements of quality & accountability are the major driving forces in academic institutions and in this
respect, the TQM movement has exploded, capturing the attention of all educators (Ahmed, 2008). Brynnum (2006) considers TQM as an important management philosophy, which supports the organizations in their efforts to obtain “satisfied customers”.

Adoption of Deming’s (1986) fourteen principles as a working philosophy for the total quality improvement, TQM helps the schools (Schmoker & Wilson, 1993) to (i) redefine the role, purpose and responsibilities of schools, (ii) improve schools as a “way of life”, (iii) plan comprehensive leadership training for educators at all levels, (iv) create staff development that addresses the attitudes and beliefs of school staff, (v) use research and practice based information to guide both policy and practice, and (vi) design comprehensive child development initiatives that cut across a variety of agencies and institutions. According to Mukhopadhyay (2006) principles of TQM as enunciated by Deming (1986), Crosby (1979) and Juran (1988) indicate a marked shift in emphasis on quality management from product to people. The strongest emphasis is on human resource development and capacity building—not only technical but also managerial and participative capacity leading to empowerment.

Leadership has emerged in recent management discourse as a key characteristic of outstanding organizations including educational institutions (Peters & Waterman, 1982; Keller, 1983; Kotter, 1988; Blunt & Jones, 1992; Bennis, 1998; Ramsden, 1998). Leadership is second only to classroom instructions among all school related factors that contribute to what students learn at school and is important in improving schools (Leithwood, 2004). It is an organizational quality (Ogawa & Bossert, 1997); essentially a process of mutual stimulation which, by successful interplay of relevant individual differences, controls human energy in pursuit of a common cause (Ekong, 2003); a process whereby an individual directs, guides, influences or controls the thoughts, feelings or behaviors of other human beings (Inyang, 2008). Leadership is the office or position of a
leader with capacity to lead the act or an instance of leading. Leadership also implies that the leader serves as a channel for people to move forward to accomplish organizational goals (Merriam-Webster, 2008).

Leadership has also been defined as behaviour or activity. In this context, Hemphill and Coons (1957) defined leadership as the behaviour of an individual when he is directing the ability and readiness to inspire, guide or manage others. Shartle (1966) and his colleagues, conducted the leadership studies in Ohio and pointed out two criteria of leadership behaviour, of which one is called the ‘human relation’ and the other described as the ‘get out of the work dimension’. Hemphill and Halpin (1966) identified these two dimensions as initiating structure and consideration. It is assumed that the higher the meeting point of these two dimensions, the better is the leadership behaviour.

Educational structures are being challenged from all sides. So quality leaders in education, are sorely needed and that need will not disappear. TQM cannot be implemented without leadership. It is the foundation of TQM. The Principal/Head must be committed in leading his employees for the success of TQM in the institution. It is the responsibility of leadership to “paint a vivid picture” of what quality and continuous improvement look like, sound like and feel like. Hence an enquiry into the leadership behaviour of Principals / Heads of schools is of great significance to facilitate TQM processes in the school system.

Human resource development (HRD) is one of the most important and regular activities of the organization. No organization can realize its full potentials specifically economic potentials without fully harnessing its human resources. In fact, the quality of education system itself depends on human resource the teacher in particular alongwith other resources (Hallak, 1990). In any given society the
quality of education depends considerably on the number and the quality of its personnel (Alloy, 1990) including school administrators, teachers, students & stakeholders such as parents. HRD, refers not only to the general organizational climate of the school, but also includes organizations' cultural factors such as trust, autonomy, authenticity & collaboration and also the HRD mechanisms related to performance appraisal, training career development, job rotation, feedback & counseling of the institutional human resource.

The desire of all parents is to have qualitative and functional educational programs for their children from nursery school to the university level. This is in conformity with the general belief that a sound education is the only permanent legacy that parents can pass on to their children to ensure their future. However, nowadays educational system of many countries is turning out unemployable illiterates (Ojo, 2008).

In view of the strategic position of secondary education and diversified types of schools such as Govt., non-govt., model, non-model situated in unidentical & diverse geographical areas-urban, rural, tribal etc., there is need for the introduction of TQM that will involve all the stakeholders including the parents and community alongwith Principal, teachers and students. It must be emphasized that the success of education rests in no small measure on informed planning, efficient organization and dedicated leadership and a quality oriented human resource. Just as learning cannot take place in a classroom manned by ill-prepared and unskilled teacher, no educational system can rise above the quality of its teachers, leaders & administration. The diversified nature of our society demands a different, more creative solution to our basic education problem (Ojo, 2007). Within the education set up where the products are humans, producing a mass unemployable illiterates will take any country nowhere; therefore, the present practice of mass production of
graduates, good or bad has to be reviewed (Crosby, 1984) in favour of or in collaboration with quality.

A quality-rooted functional educational system is the cry of educationists the world over (Abugbe, 2002). This is because, educational advancement and innovations can only come forth from disciplined and committed minds, which operate within an enabling organizational culture, a culture pervaded by quality consciousness (Ojo, 2008). Therefore, there is an urgent need for an organizations’ wide approach and commitment to quality improvement.

TQM aims at continuous improvement in quality. It can succeed only if it has the support of its human resource. No system/strategy in an organization would ever succeed, unless people are passionate about it. TQM cannot work without it. It is a people-driven management system. It aims at continual increase in customer satisfaction by involving all employees. Hence human resource, theoretically also one of the most significant factors of TQM, needs to be examined for its relatedness with TQM through further research.

Thus, the present study has been designed firstly to determine the TQM status of Secondary and Senior-Secondary schools in U.T. Chandigarh, and secondly to investigate the variations in TQM with variations in leadership behavior and HRD.

8.2 STATEMENT OF THE PROBLEM

The present study is entitled as,

8.3 OBJECTIVES

The present study purports to achieve the following objectives:

1. To identify secondary and senior-secondary schools which are high and low on Total Quality Management and compare these on various parameters of TQM.

2. To compare the Total Quality Management status of schools across (a) Govt. and Non-Govt. schools, (b) model and non-model schools and (c) rural and urban schools of U.T., Chandigarh.

3. To study and compare the leadership behaviour of Principals / Heads of high and low total quality management schools across:
   (a) Govt. vs Non-Govt.,
   (b) Model vs Non-Model,
   (c) Rural vs Urban.

4. To study and compare the Human Resource Development of high and low total quality management schools across:
   (a) Govt. vs Non-Govt.,
   (b) Model vs Non-Model,
   (c) Rural vs Urban.

5. To make a SWOT analysis of schools in respect of input, process and product variables of TQM.

6. To compare the SWOT analysis of schools across:
   (a) Govt. vs Non-Govt.,
   (b) Model vs Non-Model,
   (c) Rural vs Urban.
7. To **identify** the areas of **strengths and weaknesses** of schools with high and low status on TQM for implementing TQM.

### 8.4 HYPOTHESES

Since Objective 01 is exploratory in nature, hence no hypothesis has been framed for this objective. Likewise objectives 05 to 07 are focus-oriented and descriptive in their fulfillment. As to the remaining objectives from serial no. 02 to 04, following null hypotheses have been formulated:

1. There is no significant difference in the **Total Quality Management (TQM)** of (a) Govt. and non-govt. schools, (b) Model and non model schools and (c) rural and urban schools of U.T., Chandigarh.

2. Variations in leadership behaviour of Principals are not significantly accounted for by levels of TQM.

3. There are no significant differences in the leadership behaviour of Principals of (a) Govt. vs non-govt. schools, (b) Model vs non-model schools and (c) rural vs urban schools.

4. No significant difference exists in the leadership behaviour of Principals/Heads of schools perceived as high and low on TQM across: (a) Govt. and non-govt., (b) Model and non-model and (c) rural and urban.

5. Schools perceived as high and low on Total Quality Management are not significantly different on Human Resource Development.

6. Human Resource Development is not significantly different in (a) Govt. vs non-govt. schools, (b) Model vs non-model schools, and (c) rural vs urban schools.
7. No significant difference exists in Human Resource Development in schools perceived as high and low on TQM across: (a) Govt. and non-govt., (b) Model and non-model, and (c) rural and urban.

8.5 DELIMITATIONS OF THE STUDY

The study is delimited to:

1. Secondary & Senior-Secondary schools of U.T., Chandigarh that too only affiliated to C.B.S.E & recognized by the Education Department;
2. Sample of teachers has been limited to only those who were teaching IX, X, XI & XII classes, were regular, had atleast three years stay in the school and atleast two years current continuous experience of working with the Principal.

8.6 OPERATIONAL DEFINITIONS

LEADERSHIP BEHAVIOUR: Leadership behaviour in the present study, has been operationally defined as viewed by Halpin (1966). It is the behaviour of an individual, who directs activities of group members towards goal attainment. It consist of two dimensions namely, initiating structure & consideration. In initiating structure, a leader defines his own role and is concerned with group goals, whereas in consideration, a leader is friendly and supportive.

HUMAN RESOURCE DEVELOPMENT: HRD in the present study has been operationally taken as the overall HRD climate in educational institutions and involves factors of responsibility, risk-taking behavior, top support, feed back, supportive HRD climate, openness vs communication, trust, team spirit, collaboration and reward among various personnels. The elements of HRD pertain to general climate which is similar to conventional organizational climate; OCTAPAC culture that stands for openness, confrontation, trust, autonomy, productivity, authenticity and collaboration; and HRD mechanisms which are performance appraisal, training,
organizational development, career development, political
development, job rotation, rewards, feedback and counseling (Nagpal, 1997).

TOTAL QUALITY MANAGEMENT: TQM is quality at every step, by
everybody and for everyone. It is a human oriented and human
intensive technique which transforms the institution into quality
institution. In the present study, it has been assessed through input,
process & product variables consisting of eleven areas that is four
input variables namely, leadership, teacher quality, student quality &
material resources, five process variables namely, linkage & interface,
co-curricular activities, teaching, office management & examination
and two product areas namely, inter-personal relation & satisfaction
as conceptualized by Mukhopadhyay (2006).

It may be mentioned here that one sub-variable of leadership
in TQM which is concerned with “one who is anchored into client
needs and expectations, can inspire quest for continuous
improvement of quality or incite the passion, and who can achieve
quality through involvement of all is eligible to lead a TQM institution
though similar in terminology” is conceptually not exactly identical
with main variable leadership behaviour in the present study as
operationally defined earlier.

8.7 METHOD AND PROCEDURE

8.7.1 DESIGN OF THE STUDY

The descriptive survey method has been employed in the
present study. Descriptive research seeks to find answers to questions
through the analysis of variable relationships. It is concerned with
conditions or relationships that exist, opinions that are held,
processes that are going on, effects that are evident, or trends that
are developing. Best & Kahn (1995) considered descriptive research
studies as non-experimental studies because they deal with the
relationship between non-manipulated variables in a natural, rather than artificial setting.

Keeping in view the nature of the problem, the focus of study & objectives to be achieved, the present study was accomplished in three phases. In the first phase, Total Quality Management (TQM) status of various schools was examined in order to identify high & low TQM schools. This was followed by comparison of various types of schools namely, Govt. vs non-govt., model/public vs non-model & rural vs urban schools on TQM. These comparisons were made on twelve sets of scores for the variables of TQM that is one set of total scores on TQM and eleven sets of scores on sub-areas of TQM namely, Principal as leader, teacher quality, linkage, student quality, co-curricular activities, teaching, office management, inter-personal relations, resources, examination and job satisfaction.

The second phase of the study dealt with the comparisons of high & low groups of schools on leadership behaviour & human resource development in respect of differences between Means across types of schools namely, between (i) Govt. & non-govt., (ii) model & non-model & (iii) rural vs urban schools. These differences were examined on (i) three variables of leadership behaviour namely, total score on leadership behavior, initiating structure and consideration (two sub-areas of LB) and also on (ii) each of the eleven sets of scores on HRD that is HRD totals and ten of its dimensions namely, risk-taking behavior, top support, feedback, supportive HRD climate, openness vs communication, trust, team spirit, collaboration and reward. Keeping in view the substantial number of groups to be compared and a large number of sub-variables on which differences were to be seen to have an analytic picture for each type of schools, a two way (2x2) Analysis of Variance (ANOVA), instead of t-ratios, was preferred by taking two levels of TQM in accordance with the criterion of 27% top & 27% bottom cases (Kelley, 1939) and two types of schools that is (i) Govt. vs non-Govt., (ii) model vs non-model and (iii)
rural vs urban schools & taken one at a time as independent variables and three sets of scores on LB & eleven sets of scores on HRD as dependent variables. ANOVA also gave the benefit of examining interactional effects of TQM and types of schools on leadership behaviour and HRD, although this was not kept as the major objective of the present study due to lack of empirical evidence on the cause-effect relationship of TQM with leadership behaviour & HRD.

Classification of schools in each of the three types that is (i) Govt. vs non-govt., (ii) model vs non-model & (iii) rural vs urban was done respectively on the basis of management of schools; purpose/quality consideration for which the schools have been set up; and the geographical location of the school. The analyses were done separately for each of the three classifications of schools by types (i, ii & iii above) because subjects in one category of types of schools (e.g., Govt. vs non-govt.) are not independent of the other classification. These three sets of analyses (2x2 ANOVA) were replicated for each of the three sets of scores on leadership behaviour and each of the eleven sets of scores on HRD. In this way, in all, 42 sets of ANOVA (3x3= 9 for LB & 3x11 = 33 for HRD) were worked out. Wherever F-ratios were found to be significant, t-test was employed to specifically locate the significant inter-group differences between group Means.

After having checked the position of high TQM & low TQM schools across various types of schools on LB & HRD in the second phase, the third phase of the study was kept as school-based and qualitative in nature. TQM is a never-ending journey of an institution towards a mission through attainment of goals wherein each institution proceeds at its own speed with its own strengths & weaknesses within its own environment. If the pace of TQM is to be facilitated, it is imperative to know institutional strengths & weaknesses, the understanding of which enables the individual institution to be aware as to its current standing that is the baseline & then proceed further by taking appropriate measures. Keeping this in
view, a **SWOT** analysis of each institution was done separately, to assess the **Strengths, Weaknesses, Opportunities & Threats** for each school. This was also followed by examination of strengths and weaknesses of vis-a-vis types of schools as also between high & low TQM schools.

### 8.7.2 THE SAMPLE

In the present study, two-staged **randomization technique** of **sampling** was used to select the appropriate sample. Accordingly, a list of all secondary and senior-secondary schools of U.T., Chandigarh, was obtained from the office of the District Education Officer, Chandigarh Administration. During the academic session 2003-2004, there were a total of 120 schools, affiliated to C.B.S.E. Delhi and recognized by education department. Out of these, 24 schools were randomly selected. Later on, for the purpose of analysis, these schools were categorized separately into Govt. (N=16) & non-Govt (N= 08); model/public (N=14) & non-model (N=10); and rural (N=04) & urban schools (N=20). Needless to say that type-wise sub-samples of schools are not independent of each other.

At the second stage of randomization, teachers were to be selected. Halpin (1959), in his study of leadership behaviour, indicated that five to seven descriptions yielded reasonably stable scores that could be used as indicators of leadership behaviour. Therefore, five teachers from among the total staff who were teaching classes IX – XII, had at least a stay of three years in the school & were serving on the regular basis with at least preceding two years continuous experience of working with the Principal, were randomly drawn from each school. Thus the final sample comprised of 120 teachers.
8.7.3 DESCRIPTION OF TOOLS

For the present study, tools used were as follows:

1. **Leadership Behaviour Description Questionnaire (LBDQ)** developed by Halpin (1966).
3. **Mukhopadhyay’s institutional profile questionnaire (MIPQ)**, designed by Mukhopadhyay (2000).

4. In addition to the above three tools, a locally developed (by the researcher) **Interview Schedule** was employed to collect the data from Principals & teachers from high TQM schools & low TQM schools. This was done to strengthen the outputs of SWOT analyses of high & low TQM schools.

8.7.4 STATISTICAL TECHNIQUES

In the present study descriptive as well as differential statistical techniques (supplemented by SWOT analysis) were employed for analyzing the collected data. Analyses of data were accomplished using SPSS (version 13), with the help of following techniques.

1. Descriptive statistics i.e., **Mean, median, standard deviation**, **skewness, kurtosis**, were used to examine the nature of distributions of scores on the variables/sub-variables involved in the present study.

2. The **t-ratio** technique was used to examine the significance of differences in the values of Means between schools of different categories such as Govt. vs non-govt., model/public vs non-model and rural vs urban & at different levels (high vs low) of TQM.

3. **Two way analysis of variance** (ANOVA) was employed to examine the difference between high & low TQM schools across types of schools on leadership behaviour of Principals/Heads.
and also on human resource development. Wherever F-values were found to be significant at atleast .05, the t-ratios were also applied to specifically locate the significant inter-group differences between Means on the leadership behaviour and human resource development.

(4) SWOT analyses as outlined by Mukhopadhyay (2006) were also conducted to supplement the quantitative analyses.

(5) Graphic presentations were done through bar graphs wherever these helped in the meaningful interpretation of results.

8.8 RESULTS

8.8.1 Identification of high TQM & low TQM schools

The spread of score on TQM is from zero to 20. For the top 27% TQM school the baseline i.e., the average score came to be 12.30; & lowest TQM schools had baseline as equal to 3.59. It may be noted that though in the top category within the schools of U.T. Chandigarh, these schools are placed just above the mid point that is 10.5 as per the range i.e., 0-20.

The testing of hypothesis was based on the results obtained in respect of total scores on the major variables of study, that is total quality management, leadership behaviour and human resource development.

II Types of Schools & TQM

(a) Govt. & non-govt. schools

Significant differences have been found between the Means of Govt. & non-govt. schools on two out of eleven areas of TQM namely, co-curricular activities (t= 2.671) and material resources (t= 2.919). Although non-significant differences between Means were observed on TQM (totals) as well as on the remaining sub-variables of TQM, the trend of values of Means depicted that on TQM totals and
on all the parameters of TQM barring the sub-variable of teachers’ quality, the TQM status of non-govt. schools is better than Govt. schools.

(b) Model & non-model schools

Significant differences were found between Mean scores of model & non-model schools on TQM totals \( (t= 1.996) \) as also on five out of eleven sub-variables of TQM i.e., Principal as leader \( (t= 2.151) \), linkage & interface \( (t= 2.4543) \), students’ quality \( (t= 2.075) \), office management \( (t= 3.541) \) and examinations \( (t= 3.106) \). The trend of values of Means on all sub-variables of TQM, were in favour of model schools.

(c) Rural & urban schools

(i) No significant differences were found between Mean scores of rural & urban schools on TQM (totals) and also on its sub-variables, barring job satisfaction on which significant difference existed \( (t= 2.173) \).

(ii) The trend of Means shows that on four out of eleven sub-variables namely, Principal as leader \( (M =10.95 \text{ vs } 10.30) \), linkage & interface \( (M =5.06 \text{ vs } 3.20) \), office management \( (M = 8.71 \text{ vs } 6.20) \), and material resources \( (M = 7.49 \text{ vs } 6.70) \) urban schools are higher than the rural schools, and on rest of seven sub-variables the picture is reversed. These variables are teacher quality \( (M= 10.60 > 8.51) \), student quality \( (M=7.55> 6.80) \), CCA \( (M=9.40 > 3.58) \), teaching \( (M=11.55> 8.84) \), interpersonal relations \( (M=9.90 > 7.93) \), examination \( (M=10.95 > 9.80) \), and satisfaction \( (M=10.05 > 7.19) \) the values of Mean of rural schools are higher than urban schools.

On the basis of these results the hypothesis no 1, “There is no significant difference in the Total Quality Management (TQM) of (a) Govt. and non-govt. schools, (b) model and non-model schools of U.T., Chandigarh, and (c) rural and urban schools of U.T., Chandigarh”, stands accepted for (1a) & (1c) i.e., Govt. vs non-
govt. & rural vs urban schools; but not accepted for (1b) that is model vs non-model schools.

8.8.2 TQM & Leadership Behaviour (Ignoring the types of schools)

Significance of differences between Means were worked out between the extreme groups of schools, that is high & low TQM schools (ignoring the types of schools) on total leadership behaviour and its two dimensions namely, initiating structure & consideration. The results show that:

(i) Significant differences emerged between high & low TQM schools on total leadership behaviour $(t= 6.084)$ as also on both of its sub-variables i.e., initiating structure $(t= 7.862)$ and consideration $(t= 3.557)$.

(ii) Principals in high TQM schools consistently achieved higher score on total leadership behaviour $(M= 90.34 > 72.57)$, initiating structure $(M=47.43 > 36.46)$ and consideration $(M= 42.91 > 36.11)$ than their counterparts in low TQM schools revealing thereby that Principals of high TQM schools are more institutional- oriented as well as relation-oriented as compared to those of low TQM schools.

On the strength of these results, hypothesis no. 2, “Variations in leadership behaviour of Principals are not significantly accounted for by levels of TQM” stands rejected.

8.8.2.1 Types of schools & Leadership Behaviour (Ignoring level of TQM)

(a) Govt. & non-govt. schools

No significant differences were found between Mean scores of Govt. and non-govt. schools on total leadership behaviour $(t= 1.216)$ of Principals, as also on its sub-variables namely, initiating structure $(t = 1.886)$ & consideration $(t = .336)$. Values of Means however were in favour of non-govt. schools.
(b) Model & non-model schools

There were non-significant differences between Mean scores of model and non-model schools on Heads' overall leadership behaviour (t = 1.429) initiating structure (t = 1.080) & consideration (t = 1.081). The trend of Means was in favour of model schools.

(c) Rural & urban schools

Rural and urban schools did not differ significantly on their Principals' overall leadership behaviour (t = .554) as well as on both its dimensions namely, initiating structure (t = .105) and consideration (t = .883). However values of Means on overall leadership behaviour (M = 78.60 < 81.31), initiating structure (M = 40.20 < 41.48) and consideration (M = 37.40 < 39.83) are more in case of urban schools than the rural schools.

Based on the above results, the hypothesis no. 3, “There are no significant differences in the leadership behaviour of Principals of (a) Govt. vs non-govt. schools, (b) Model vs non-model schools, and (c) rural vs urban schools” stands accepted.

8.8.2.2 TQM and Leadership Behaviour across types of schools

(a) TQM and Leadership Behaviour across Govt. vs non-govt. schools

High & low TQM levels across Govt. vs non-govt. schools accounts for non-significant F-values for total score (F = 3.368) on Principals' leadership behaviour, initiating structure (F = 2.563) as well as consideration (F = 2.592).

Further, comparison of values of Means was taken up for six inter-group differences namely, (i) High TQM Govt. vs High TQM Non-Govt. Schools; (ii) Low TQM Govt. vs Low TQM Non-Govt. Schools; (iii) High TQM Govt. vs Low TQM Govt. Schools; (iv) High TQM Non-Govt. vs Low TQM Non-Govt. Schools; (v) High TQM Govt. vs Low TQM Govt.
TQM Non -Govt. Schools; & (vi) Low TQM Govt. vs High TQM Non -Govt. Schools. The results show that:

(i) Principals of **high TQM Govt. schools** as compared to those of **high TQM non-govt. schools** exhibit better leadership behaviour (M= 95.00 > 84.13); are more task (M= 48.90 > 45.47) as well as relation (M= 46.10 > 38.67) oriented.

(ii) Principals of **low TQM non-govt. schools** as compared to Principals of **low TQM Govt. schools** are characterized by better leadership behaviour (M= 74.20 > 72.30) & more goal-oriented (M= 38.20 > 36.17). Whereas on consideration dimension of leadership behaviour, Principals of low TQM non-govt. schools (M= 36.00 < 36.13) achieve low score than their counterpart Principals of low TQM Govt. schools. Thus a mixed picture of differences between Govt. and non-govt. schools (both low on TQM) emerges on sub-variables of leadership behaviour, with Principals/Heads of low TQM Govt. schools being more relation-oriented and those of low TQM non-govt. schools being more task-oriented.

(iii) Principals of **high TQM Govt. schools**, as compared to their counterpart **low TQM Govt. schools**, consistently achieved more score on overall leadership behaviour (M= 95.00 > 72.30), initiating structure (M= 48.90 > 36.17) and consideration (M= 46.10 > 36.13). In other words, when level of TQM is high, Principals emerged with better leadership skills.

(iv) Principals of **high TQM non-govt. schools** are slightly better than those of **low TQM non-govt. schools** on overall leadership behaviour (M= 84.13 > 74.20), as also on initiating structure (M= 45.47 > 38.20) & consideration (M= 38.67 > 36.00). That is irrespective of the type of school, higher the TQM better are the leadership qualities of the Principal.

(v) Heads of **high TQM Govt. schools** as compared to **low TQM non-govt. schools** tend to be perceived not only as being more...
effective leaders (M= 95.00 > 74.20) but are also characterized with higher institutional-oriented (M= 48.90> 38.20) as well as relation-oriented (M= 46.10> 36.00).

(vi) Values of Means are in favour of high TQM non-govt. schools, when compared with low TQM Govt. schools, on overall leadership behaviour (M=84.13>72.30) and also on both of its dimensions namely, initiating structure (M= 45.47>36.17) & consideration (M= 38.67>36.13).

(b) TQM and Leadership Behaviour across model vs non-model schools

The TQM level across model vs non-model schools does not account for significant variations in the leadership behaviour (F = .134) as well as both of its dimensions namely, initiating structure (F = .159) and consideration (F = .723). The six inter-group comparison of values of Means to identify the trend of inter group differences due to TQM level across model vs non-model types of schools on leadership behaviour of Principals show that:

(i) Principals/Heads of high TQM model schools as compared to high TQM non-model schools are higher on overall leadership behaviour (M=91.04>84.90) as also on two of its sub-areas namely, task-orientation (M= 47.44 >43.90) as well as relation-orientation (M= 43.60>41).

(ii) When the level of TQM of both types of schools is low, the trend of Means is in favour non-model schools (than model schools) on Principals’ total leadership behaviour and initiating structure. On consideration dimension, the picture is reversed i.e., value of Mean for this dimension of leadership behaviour is more for Principals of low TQM model schools as compared to those of low TQM non-model schools.

(iii) Principals/Heads of high TQM model schools as compared to their counterparts of low TQM model schools tend to be
characterized by greater degree of both initiating structure and consideration, they are also more effective in overall leadership behaviour.

(iv) The values of Means on overall leadership behaviour \((M=84.90>72.86)\) and its both dimensions namely initiating structure \((M= 43.90>37.53)\) & consideration \((M= 41>35.33)\), are in favour of high TQM non-model schools when compared with low TQM non-model schools i.e., Principals of high TQM non-model schools are more effective than their counterparts of low TQM non-model schools.

(v) Differences between high TQM model schools and low TQM non-model schools on Means on the Heads' overall leadership behaviour \((M= 91.04>72.86)\) and also on initiating structure \((M= 47.44>37.53)\) and consideration \((M= 43.60>35.33)\) are in favour of high TQM model schools.

(vi) Comparisons of values of Means on overall leadership behaviour and also on initiating structure and consideration are in favour of high TQM non-model schools when compared with low TQM model schools, indicating thereby that Principals of high TQM non-model schools are more effective than their counterparts of low TQM model schools.

(c) TQM and Leadership Behaviour across rural vs urban schools

The obtained F-values on total leadership behaviour \((F = 1.635)\) as well as both dimensions namely initiating structure \((F = .912)\) and consideration \((F = 1.568)\) show non-significant variations on account of TQM across types (rural vs urban) of school. In other words the level of TQM across rural/urban types of school does not lead to significant variation in the leadership behaviour. Further, Mean differences across: (i) High TQM Rural vs high TQM Urban Schools; (ii) Low TQM Rural vs Low TQM Urban Schools; (iii) High TQM Rural vs Low TQM Rural Schools; (iv) High TQM Urban vs Low TQM Urban

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Schools; (v) High TQM Rural vs Low TQM Urban Schools; & (vi) Low TQM Rural vs high TQM Urban Schools reveal a trend wherein:

(i) Principals/Heads in rural schools (high on TQM) have an edge over their counterparts of urban schools (high on TQM) on overall leadership behaviour (M= 93.70>89.00) as well as in goal-performance (M= 48.50>47.00) & relation-orientation (M= 45.20 > 42) implying thereby that even when the school is situated in rural area, but is high on TQM, Principals provide better visible supportive management practice and are more commitment oriented than of those schools situated in urban areas.

(ii) When low TQM rural & low TQM urban schools are compared, the values of Means are in favour of urban schools on their Principals’ overall leadership behaviour as well as on both the dimensions namely, initiating structure & consideration.

(iii) The trend of values of Means is in favour of high TQM rural school, when compared with their counterparts rural schools but low on TQM which indicates that Principals/Heads as leaders are more effective in high TQM schools as compared to low TQM schools when the geographical location of the schools is same.

(iv) Principals of high TQM urban schools as compared to the same type of school (i.e., urban) but with low TQM are more effective in leading their school, are more initiative taking in various aspects including the risk taking areas and at the same time are more considerate in human relations.

(v) The values of Means for the total score (M= 93.70 vs 73.2667) initiating structure (M=48.50>36.73) & consideration (M= 45.20>36.53) of leadership behaviour of Principals of high TQM rural and low TQM urban schools show that high TQM rural schools have Principals/Heads, who are more effective leaders than their counterparts of low TQM urban schools.
(vi) The trend of values of Means on overall leadership behaviour as also on initiating structure & consideration is in favour of **high TQM urban schools**, when compared with their counterparts **low TQM rural** schools which again indicates that Principals/Heads as leaders are more effective in high TQM schools as compared to low TQM schools, whatever be the geographical location of the schools.

On the basis of these results therefore, the hypothesis no 4, "**no significant difference exists in the leadership behaviour of Principals/Heads of schools perceived as high and low on TQM across: (a) Govt. and non-govt., (b) Model and non-model and (c) rural and urban,**" stands accepted.

### 8.8.3 TQM & Human Resource Development (ignoring the types of schools)

The results of t-test for the significance of differences between Means of high TQM & low TQM schools on HRD totals & its sub-variables namely, responsibilities, risk-taking behavior, top support, feed back, supportive HRD climate, openness vs communication, trust, team spirit, collaboration & reward show that:

(i) **There are significant differences** between **high & low TQM** schools (ignoring the type of school) on total HRD (t=4.485), the value of Mean being higher for high TQM schools (M=151.8) than the low TQM schools (M=122.6).

(ii) **Significant t-ratios** have also been found on all the sub-variables (except trust & team spirit) of HRD namely, responsibilities (t=2.453), risk-taking behaviour (t=2.914), top support (t=5.790), feedback (t=3.457), supportive HRD climate (t=5.457), openness vs communication (t=3.201), collaboration (t=4.345) & reward (t=2.588). The trend of values of Means on all sub-variables of HRD namely, responsibilities, risk-taking behaviour, top support, feedback,
supportive HRD climate, openness vs communication, trust, team spirit, collaboration & reward is in favour of high TQM schools.

On the strength of above results, hypothesis no. 5, **"Schools perceived as high and low on Total Quality Management are not significantly different on Human Resource Development"** stands rejected.

### 8.8.3.1 Types of schools & HRD (Ignoring levels of TQM)

**a) Govt. vs non-govt. schools**

(i) The *t*-ratios for the differences due to the types of schools that is between Govt. & non-govt. schools were non-significant for overall HRD (*t* = 1.742) and also for *nine out of ten* dimensions namely, responsibilities (*t* = 1.706), risk-taking behaviour (*t* = 1.729), top support (*t* = 1.329), feedback (*t* = 1.765), supportive HRD climate (*t* = 1.193), openness vs communication (*t* = 1.346), trust (*t* = .861), collaboration (*t* = 1.565) and reward (*t* = 1.499).

(ii) The trend of differences between values of Means between Govt. (*M* = 130.3) & non-Govt. (*M* = 152.05) schools on HRD indicates that non-Govt. schools outperform Govt. schools on *total scores on HRD*, as also on its *nine* out of ten sub-variables namely, responsibilities (*M* = 22.10<26.25), risk-taking behaviour (*M* = 6.86<7.80), top support (*M* = 26.70<30.30), feedback (*M* = 12.72<15.45), supportive HRD climate (*M* = 23.34<26.55), openness vs communication (*M* = 16.84<19.65), collaboration (*M* = 4.20<13.26) and reward (*M* = 2.66<3.65). On a single sub-variable of trust (*M* = 2.54<2.25) value of Mean of Govt. schools is more than that of non-govt. schools.

(iii) On a single sub-variable of team spirit, *t*-ratio (3.262) was found to be significant, with values of Means in favour of non-govt. schools (*M*=4.20) as compared to Govt. schools (*M*=3.28).
(b) Model vs non-model schools

(i) Differences between two types of schools (model vs non-model schools) were found to be significant \( t=2.828 \) on total HRD. The Mean difference between model schools \( M=125.2889 \) & non-model \( M=107.6400 \) schools is in favour of the former.

(ii) Significant \( t \)-ratios also emerged on six out of ten dimensions of HRD namely, responsibilities \( t=2.674 \), risk-taking behaviour \( t=2.170 \), top support \( t=3.215 \), supportive HRD climate \( t=3.251 \), collaboration \( t=2.891 \) and reward \( t=3.115 \). The differences in the values of Means on these variables show that model schools are better than non-model schools on all these six variables namely, responsibilities \( M=18.7333>15.76 \), risk-taking behaviour \( M=7.5333>6.44 \), top support \( M=29.4667>25.00 \), supportive HRD climate \( M=25.80>21.48 \), collaboration \( M=15.0889>12.48 \) and reward \( M=3.2444>2.40 \).

(iii) On the remaining four variables of HRD namely, feedback \( M=14.0222>M=12.5600 \), openness vs communication \( M=24.22>M=21.60 \), trust \( M=2.7556>M=2.4000 \) & team spirit \( M=3.80>3.24 \), although \( t \)-values are not significant, values of Means are in favour of model schools.

(c) Rural vs urban schools

(i) Non-significant differences existed between rural & urban schools between the Means on HRD (total) as well as on all variables of HRD except reward on which significant difference \( t=2.107 \) was found.

(ii) Mean values are in favour of urban schools on total scores \( M=121.1636>M=111.000 \) as well as on all dimensions of HRD namely, responsibilities \( M=23.6909>M=21.800 \), risk-taking behaviour \( M=7.2727>M=6.6667 \), top support \( M=28.3091> \)
M = 26.2667), feed back (M = 13.6727 > M = 12.8667), supportive HRD climate (M = 24.80 > M = 22.2667), openness vs communication (M = 18.000 > M = 16.4667), trust (M = 2.7091 > M = 2.3333), team spirit (M = 3.7273 > M = 3.1333), collaboration (M = 14.4727 > M = 13.000) and reward (M = 3.0909 > M = 2.4000).

In the light of these results, the null hypothesis no. 6, "Human Resource Development is not significantly different in (a) Govt. vs non-govt. schools, (b) Model vs non-model schools, and (c) rural vs urban schools" stands accepted for (a) Govt. vs non-govt. schools; rejected for (b) model vs non-model schools; and also accepted for (c) rural vs urban schools.

8.8.3.2 TQM and HRD across Types of Schools

(a) TQM and HRD across Govt. vs non-govt. schools

The differences in human resource development & TQM across Govt. vs non-govt. types of school account for significant F-values on HRD total as well as eight out of ten areas namely, responsibilities (F = 6.645), risk-taking behaviour (F = 11.170), top support (F = 10.697), feed back (F = 4.929), supportive HRD climate (F = 15.173), openness vs communication (F = 5.497), collaboration (F = 8.330) & reward (F = 11.248).

In order to identify the significant inter-group difference between Means on HRD due to TQM level across type of school, t-test was taken up for six-intergroup differences namely, (i) High TQM Govt. vs High TQM non-Govt. schools; (ii) Low TQM Govt. vs Low TQM non-Govt. schools; (iii) High TQM Govt. vs Low TQM Govt. schools; (iv) High TQM non-Govt. vs Low TQM non-Govt. schools, (v) High TQM Govt. vs Low TQM non-Govt. schools; and (vi) High TQM non-Govt. vs Low TQM Govt. Schools. Wherever the differences did not
reach at least .05 level of significance, the trends of Means have been reported to indicate the direction of differences.

(i) Significant differences were found in the overall human resource development \((t = 3.066)\) between high TQM Govt. and their counterparts high TQM non-govt. schools. The \(t\)-ratios were also found to be significant on nine out of ten sub-variables of HRD that is, responsibilities \((R; 2.913)\), risk taking behaviour \((RTB; 2.432)\), top support \((TS; 2.781)\), feedback \((FB; 2.625)\), supportive HRD climate \((SHC; 3.175)\), openness vs communication \((OC; 2.619)\), team spirit \((T-3; 2.749)\), collaboration \((C-1; 2.718)\) and reward \((R-1; 4.142)\). Further, the comparison of values of Means reveal that high TQM non-Govt. schools outperform their counterparts high TQM Govt. schools on total HRD \((M = 168.2000 > 139.5000)\) as well as on nine sub-variables namely, responsibilities, risk taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, team spirit, collaboration and reward.

Only on one sub-variable of trust \((T-2)\) on which Govt. schools scored higher than non-Govt. schools but the \(t\)-value \((.037)\) was non-significant.

(ii) In contradiction to the picture obtained for high TQM Govt. vs high TQM non-Govt. schools as presented above, comparison of low TQM Govt. and low TQM non-Govt. schools resulted into non significant differences between these two types of schools (both the types being low on TQM) on the HRD total scores.

Significant differences existed only on three sub variables namely, risk taking behaviour \((2.499)\), top support \((2.041)\) and supportive HRD climate \((2.518)\), in favour of low TQM Govt. schools.

(iii) On the overall HRD, non-significant difference was found between high TQM Govt. & low TQM Govt. schools.
Comparisons of values of Means show that high TQM Govt. schools (M=139.5) outdo low TQM Govt. schools (125.5) on HRD.

As to the analytical picture of sub-variables of HRD, **significant** differences existed between high & low TQM Govt. schools only on **two** out of ten sub variables of HRD namely, top support (t= 2.954) and supportive HRD climate(t=2.717). These differences were in favour of high TQM Govt. schools.

(iv) The Mean difference on the overall HRD of **high and low TQM non-Govt.** schools, is **significant** (t=6.738) at .01 level, indicating thereby that high TQM non-Govt. schools (M=168.20) outperform low TQM non-Govt. schools (M = 105.20) on HRD. In other words, when TQM is high, HRD in the private educational institution is also high.

The Mean differences between **high TQM & low TQM non-Govt. schools** resulted into **significant t-ratios** (.01 level) on **eight** out of the ten **sub- variables** of HRD namely, responsibilities (t= 3.867), risk taking behaviour (t= 5.883), top support (t= 8.951), feedback (t= 5.483), supportive HRD climate (t= 6.620), openness vs communication (t= 5.147), collaboration (t= 6.032) and reward (t= 4.487). Comparison of values of Means show that **high TQM non-Govt. schools outdo low TQM non-Govt. schools** on these sub variables namely, responsibilities (M= 28.46 > 19.60), risk taking behavior (M= 8.80 > 4.80), top support (M= 33.60 > 20.40), feedback (M=16.93 > 11.00), supportive HRD climate (M=29.93 >16.40), openness vs communication (M=21.46 >14.20), collaboration (M= 17.80 > 10.40) and reward (M= 4.13 > 2.20).

(v) Coming to differences between **high TQM Govt. schools and low TQM non-govt.** schools, significant t-ratio (t= 2.363) on overall HRD was found. Values of Means are greater for **high**
As to the parameters of HRD, the values of Means for the high TQM Govt. schools are higher than the low TQM non-Govt. schools on nine out of ten sub variables of HRD, namely, responsibilities (R; $M = 22.4000 > 19.6000$), risk taking behaviour (RTB; $M = 7.1000 > 4.8000$), top support (TS; $M = 29.5000 > 20.4000$), feedback (FB; $M = 13.5500 > 11.0000$), supportive HRD climate (SHC; $M = 25.4500 > 16.4000$), openness vs communication (OC; $M = 17.7500 > 14.2000$), trust (T-2; $M = 2.6842 > 2.4000$), collaboration (C-1; $M = 14.75 > 10.40$) and reward (R-1; $M = 2.65 > 2.20$), whereas on team spirit (T-3) value of Mean of low TQM non-Govt. schools is more than value of Mean of high TQM Govt. schools ($M = 3.6 < 3.8$). Out of these differences, the values of t-ratios for four sub variables risk taking behaviour (RTB; 2.079), top support (TS; 3.694), supportive HRD climate (SHC; 4.851) and collaboration (C-1; 2.472) were found to be significant, while on the remaining sub variables that is, responsibilities (R; .892), feedback (FB; 1.207), openness vs communication (OC; 1.470), trust (T-2; .446), team spirit (T-3; .494), and reward (R-1; .857), t-values were not significant.

(vi) The values of Means on the total score on HRD ($M = 168.2000 > 125.5000$) indicate that, as opposite to the trend of results presented in respect of high TQM Govt. vs low TQM non-Govt. schools, HRD is significantly ($t = 5.940$) better in high TQM non-Govt. schools as compared to low TQM Govt. schools.

Comparisons of Means reveal that HRD is higher in high TQM non-Govt. schools than low TQM Govt. schools on all ten sub variables of HRD, which are responsibilities (R; $M = 28.4667 > 21.9000$), risk taking behaviour (RTB; $M = 8.8000 > 6.7333$), top support (TS; $M = 33.6000 > 25.1667$), feedback (FB; $M = 16.9333 > 12.1667$), supportive HRD climate (SHC; $M = 29.9333 > 21.9333$), openness vs communication (OC; $M = 21.4667 > 16.3000$), trust (T-2; .446), team spirit (T-3; .494), and reward (R-1; .857), t-values were not significant.
2; M = 2.7500 > 2.5333), team spirit  (T-3; M = 4.3333 > 3.2000),
collaboration (C-1; M = 17.80 > 12.90) and reward  (R-1; M = 4.13 >
2.67). The **t-ratios** were found to be **significant** on **nine** out of ten
**sub variables** mentioned above, only **on one variable i.e., trust** (T-
2; -.569),  **t-value was non-significant**.

(b) **TQM and HRD across model vs non-model schools**

Mean differences on the TQM between model vs non-model types
of school **neither account for significant F-ratios on HRD total** (F=
.033) nor on any of its ten dimensions namely, responsibilities  (F=
1.166), risk-taking behaviour (F= 1.493), top support (F= .001), feed
back (F= .142), supportive HRD climate (F= .267), openness vs
communication (F= .605), trust (F= .709), team spirit (F= .929),
collaboration  (F= 1.459) and reward (F= 1.196).

Comparison of values of Means was done just to **identify the trend** of inter group differences between high & low TQM across
model vs non-model types of schools on HRD for: **(i)** High TQM
Model/public vs High TQM non-model schools;  **(ii)** Low TQM
Model/public vs Low TQM non-model schools;  **(iii)** High TQM
Model/public vs Low TQM model schools,  **(iv)** High TQM non-Model
vs Low TQM non-model schools;  **(v)** High TQM Model/public vs Low
TQM non-model schools; and  **(vi)** High TQM non-model vs Low TQM
Model/public schools.

The results are as under:

(i) **Values of Means are higher for high TQM model schools as compared to high TQM non-model schools** on HRD totals (M=
160.28 > M= 144.4) & on all its sub-variables (except trust)
namely, responsibility (M=27.12 > M= 22.9),  risk taking
behaviour (M= 8.40 > 6.90), top support (M= 32.32 > 29.1), feed
back (M= 16.12 > M= 15.4), supportive HRD climate (M= 28.84
> M= 26.1), openness vs communication (M = 20.32 > M= 19.7),
team spirit ($M = 3.92 > M = 3.9$), collaboration ($M = 17.12 > 14.60$) and reward ($M = 3.36 > 3.00$).

(ii) The differences between the values of mean on the total score ($M = 128.5000 > 114.7333$) indicate that human resource development is greater in model schools/public schools with low on TQM as compared to non-model schools perceived as low on TQM.

Low TQM model schools consist of better HRD as compared to low TQM non-model schools on all sub-variables of HRD namely, responsibilities ($M = 22.1500$ vs $20.8000$), risk taking behaviour ($M = 6.6500$ vs $6.2000$), top support ($M = 25.9000$ vs $22.6000$), feedback ($M = 12.0500$ vs $11.9333$), supportive HRD climate ($M = 22.8000$ vs $18.9333$), openness vs communication ($M = 16.9000$ vs $14.8000$), trust ($M = 2.7000$ vs $2.2667$), team spirit ($M = 3.5000$ vs $3.000$), collaboration ($M = 12.85$ vs $12.13$) and reward ($M = 3.00$ vs $2.07$).

(iii) In the identification of trend of mean differences, HRD was found higher in high TQM model schools ($M = 160.28$) as compared to low TQM model schools ($M = 128.50$). It means higher the level of TQM in model schools, higher is the HRD.

As to the analytical picture of various parameters of HRD, the comparison of the values of Means shows that high TQM model/public schools are higher than low TQM model/public schools on all ten sub-variables of HRD namely, responsibilities ($M = 27.12 > 22.15$), risk taking behaviour ($M = 8.40 > 6.65$), top support ($M = 32.32 > 25.90$), feedback ($M = 16.12 > 12.05$), supportive HRD climate ($M = 28.84 > 22.80$), openness vs communication ($M = 20.32 > 16.90$), trust ($M = 2.76 > 2.70$), team spirit ($M = 3.92 > 3.50$), collaboration ($M = 17.12 > 12.85$), and reward ($M = 3.36 > 3.00$).

(iv) With regard to the total scores on HRD, it is revealed that, as was the case of high TQM model vs low TQM model schools,
HRD which is inclusive of general climate, OCTAPAC culture and HRD mechanism is higher in high TQM non-model schools as compared to low TQM non-model schools.

The trend of values of Means on all dimensions of HRD namely, responsibilities (M= 22.9 > 20.8), risk taking behaviour (M= 6.9 > 6.2), top support (M=29.10 > 22.60), feedback (M=15.40 > 11.93), supportive HRD climate (M=26.10 > 18.93), openness vs communication (M=19.70 > 14.80), trust (M = 2.8 > 2.2667), team spirit (M = 3.9 > 3.0), collaboration (M = 14.6 > 12.13) and reward (M=3.00 > 2.07) is in favour of High TQM non-model schools as compared to low TQM non-model schools.

(v) Values of Means on the overall HRD (M = 160.280 > 114.7333) show that human resource development is more in model schools with high on TQM as compared to non-model schools with low on TQM.

Values of Means on all sub-variables of HRD for model schools (high on TQM) namely, responsibilities (M = 27.12 vs 20.80 ), risk taking behaviour (M= 8.40 vs 6.20), top support (M = 32.32 vs 22.60) , feedback ( M = 16.12 vs 11.93), supportive HRD climate (M= 28.84 vs 18.93), openness vs communication (M= 20.32 vs 14.80), trust (M =2.76 vs 2.26), team spirit (M =3.92 vs 3.00), collaboration (M= 17.12 vs 12.13) and reward (M = 3.36 vs 2.07), are greater than those obtained for respective variables for HRD for non-model schools (low on TQM).

(vi) The comparison of values of Means on the total score (M = 144.4000 > 128.5000) indicate that HRD is more effective in non-model schools with high TQM as compared to model schools with low TQM.

Values of Means for non-model schools with high TQM are greater than those obtained for respective variables on HRD for model schools with low TQM on nine out of ten sub-variables of
HRD namely, responsibilities (M = 22.90 vs 22.15), risk taking behaviour (M= 6.90 vs 6.65), top support (M = 29.10 vs 25.90), feed back (M = 15.40 vs 12.05), supportive HRD climate (M= 26.10 vs 22.80), openness vs communication (M= 19.70 vs 16.90), trust (2.80 vs 2.60), team spirit (M =3.92 vs 3.50), and collaboration (M= 14.60 vs 14.00). On the variable of reward (R-1;M = 3.00 vs 3.00), there is no difference between low TQM model/public schools and high TQM non-model schools.

(c) TQM and HRD across rural vs urban schools

The obtained F-values on total HRD (F = 1.318) as well as on all dimensions, namely, responsibilities (F= .081), risk-taking behaviour (F= 1.340), top support (F= .015), feed back (F= .546), supportive HRD climate (F= 1.078), openness vs communication (F= .484), trust (F= .823), team spirit (F= 1.960), collaboration (F= .521) and reward (F= 1.790) show non-significant variations on account of TQM across rural vs urban types of schools. In other words, level of TQM across rural versus urban types of school does not lead to significant variation in human resource development.

The trend of inter-group differences on HRD across: (i) High TQM rural vs high TQM urban schools; (ii) Low TQM rural vs Low TQM urban schools; (iii) High TQM rural vs Low TQM rural schools; (iv) High TQM urban vs Low TQM urban schools; (v) High TQM rural vs Low TQM urban schools; and (vi) high TQM urban vs Low TQM rural schools show that:

(i) On the overall HRD, high TQM urban schools (M = 157.60) have an edge over high TQM rural schools (M = 137.30). That is HRD is more favourable in urban schools as compared to rural schools when both the types are high on TQM.

As to the analytical picture of various parameters of HRD, the comparison of the values of Means shows that high TQM urban
schools are higher than high TQM rural schools on all the ten sub-variables of HRD namely, responsibilities (M = 25.88 > 22.80), risk taking behaviour (M = 8.240 > 6.80), top support (M = 32.32 > 28.60), feed back (M = 15.60 > 13.50), supportive HRD climate (M = 28.20 > 25.30), openness vs communication (M = 20.20 > 17.20), trust (M = 2.8 > 2.6), team spirit (M = 4.04 > 3.60), collaboration (M = 16.88 > 14.00) and reward (M = 3.44 > 2.90).

(ii) At the low TQM level also, overall HRD climate is more favorable in urban schools with low TQM as compared to rural schools with low TQM. The Mean differences on the sub-variables of HRD also show that low TQM urban schools outdo low TQM rural schools on all the ten sub-variables namely, responsibilities (M = 21.8667 > 19.80), risk taking behavior (M = 6.4667 > 6.400), top support (M = 24.9667 > 21.60), feed back (M = 12.0667 > 11.600), supportive HRD climate (M = 21.9667 > 16.20), openness vs communication (M = 16.1667 > 15.00), trust (M = 2.6333 > 1.800), team spirit (M = 3.4667 > 2.2000), collaboration (M = 12.80 > 11.00) and reward (M = 2.80 > 1.40).

(iii) In the comparison of high TQM rural schools (M = 137.30) with low TQM rural schools (M = 107.00) the value of Mean on the overall HRD is higher for high TQM schools than the low TQM schools when both the categories are situated in rural area. In respect of sub-areas of HRD, the value of Means for the high TQM rural schools is more than low TQM rural schools on all ten sub-variables of HRD, namely, responsibilities (M = 22.80 > 19.80), risk-taking behaviour (M = 6.80 > 6.40), top support (M = 28.60 > 21.60), feedback (M = 13.50 > 11.60), supportive HRD climate (M = 25.30 > 16.20), openness vs. communication (M = 17.20 > 15.00), Trust (M = 2.60 > 1.80), team spirit (M = 3.60 > 2.20), collaboration (M = 14.00 > 11.00), and reward (M = 2.90 > 1.40).
Similar to the trend of Mean differences in preceding case of high vs low TQM rural schools, the values of Means on the total score (M=157.60 > 125.20) indicate that high TQM urban schools outperform low TQM urban schools on HRD.

The comparisons of the values of Means on various parameters of HRD also show that high TQM urban schools are higher than low TQM urban schools on all ten sub variables of HRD namely, responsibilities (M=25.88>21.8667), risk-taking behaviour (M=8.24>6.4667), top support (M=32.32>24.9667), feedback (M=15.60>12.0667), supportive HRD climate (M=28.20>21.9667), openness vs communication (M=20.20>16.1667), trust (2.80>2.6333), team spirit (M=4.04>3.4667), collaboration (M=16.88>12.80), and reward (M=3.44>2.80).

As to the comparison of the values of Means of high TQM rural schools with the low TQM urban schools the former category of schools is stronger on HRD totals (M= 137.3>125.2) as also on nine out of ten parameters of HRD i.e., responsibilities (M=22.80 > 21.8667), risk-taking behaviour (M= 6.80 > 6.4667), top support (M= 28.6 > 24.96), feedback (M= 13.5 > 12.0667), supportive HRD climate (M= 25.3 > 21.96), openness (M= 17.2 > 16.1667), team spirit (M= 3.60 > 3.4667), collaboration (M= 14 > 12.80) & reward (M= 2.90 > 2.80).

Urban schools with high TQM are better than rural schools with low TQM on overall HRD (M = 157.67 >107.00) and on all ten sub-variables of HRD namely responsibility (M = 25.88 > 19.80 ), risk-taking behaviour (M= 8.24 > 6.40), top support ( M = 32.32 > 21.60 ), feedback (M = 15.6 > 11.60), supportive HRD Climate (M = 28.27 >16.2), openness vs communication (M = 20.27 > 15.0), trust (M= 2.8 > 1.8), team spirit (M = 4.04 > 2.20),
collaboration (M = 16.88 > 11.00) and reward (M = 3.44 > 1.40).

On the basis of these results therefore, the null hypothesis no 7, “No significant difference exists in Human Resource Development in schools perceived as high and low on TQM across: (a) Govt. and non-govt., (b) Model and non-model, and (c) rural and urban” may be rejected for (a) Govt. & non-govt. schools, but stands accepted for (b) model & non-model schools and (c) rural & urban schools.

8.9 OVERALL CONCLUSIONS

8.9.1 TQM & Types of Schools

1. Total quality management (TQM) in Govt. schools is not significantly different from non-govt. schools.

   Only on two out of eleven sub-variables of TQM namely, co-curricular activities & material resources, non-govt. schools are significantly higher than the Govt. schools. Non-govt. schools also tend to be slightly better than Govt. schools on all variables of TQM except one single variable of teacher quality on which Govt. schools are higher.

2. Significant difference exists between model and non-model schools on overall TQM as also on five out of eleven sub-variables of TQM namely, Principal as leaders, linkage & interface, students’ quality, office management & examinations. Model schools outperform non-model schools on all areas of TQM namely, input, process & product variables.

3. There are no significant differences between rural and urban schools on TQM (totals) as well as on all its sub-variables (barring job satisfaction) namely, Principal as leaders, teachers’ quality, students’ quality, material resources, linkage & interface, co-curricular activities, teaching, office management, examinations & inter-personal
relations. Rural schools are slightly higher on TQM than urban schools on TQM totals and its seven measures namely, teachers' quality, students' quality, co-curricular activities, teaching, interpersonal relations, examinations & job satisfaction, whereas TQM is as somewhat better in urban schools as compared to rural schools in respect of four sub-variables namely, Principal as leader, linkage & interface, office management & material resources.

8.9.2 TQM & Leadership Behaviour (Ignoring Types of Schools)

1. Principals as leaders of high TQM schools irrespective of the type of school are more effective as compared to those in low TQM schools.

2. Being high in leadership behaviour of initiating structure as well as consideration, they tend to achieve high subordinate performance and satisfaction more frequently than those who are rated low on initiating structure as well as consideration.

8.9.2.1 Types of Schools & Leadership Behaviour (ignoring level of TQM)

1. Ignoring level of TQM, differences between the Principals of Govt. & non-govt. schools are non-significant on overall leadership behaviour as well as on its parameters of initiating structure & consideration. Values of Means tend to be higher for leadership behaviour of Principals of non-govt. schools as compared to those of the Govt. schools on total scores, as well as on its both dimensions.

2. Principals of model schools do not differ significantly from Principals of non-model schools on their leadership behaviour. The trend of values of Means on overall leadership behaviour as well as on initiating structure & consideration is in favour of leadership behaviour of Principals of model schools.
3. **Non-significant differences** were also found between the **rural & urban** schools (ignoring level of TQM) on overall leadership behaviour of Principals as well as on both its dimensions namely, initiating structure & consideration. Values of Means were greater for urban schools as compared to rural schools on the total score of leadership behaviour of Heads as also on initiating structure & consideration dimensions.

**8.9.2.2 TQM and Leadership Behaviour across types of schools**

1. The differences due to level of TQM across **Govt. vs non-govt.** types of schools are **non-significant** on the overall leadership behaviour and its sub-areas of initiating structure & consideration.

   The trend of Mean differences shows that irrespective of the type of the school, whether Govt. or non-govt., **high TQM is associated with effective leadership.** That is When the TQM of the school is at different levels (i.e., high vs low level) the leadership behaviour of Heads of **high TQM** schools is more effective within the same type of schools (Govt. vs Govt. & non-govt. vs non-govt.) as also when compared with the other type of schools, that is Govt. vs non-govt.

2. Leadership behaviour of Principals of high & low TQM across **model vs non-model** types of schools do not account for **significant** variations in total score on the leadership behaviour as well as on two sets of scores on both of its dimensions, namely initiating structure & consideration.

   Heads of schools which are slightly high on TQM, whatever their type of school be- model or non-model, exhibit better leadership behaviour and vice-versa, as compared to those in model or non-model schools with low TQM.
3. There are **non-significant differences** on overall leadership behaviour of Principals as also on both its dimensions namely, initiating structure & consideration, on account of high & low TQM across types (rural vs urban) of schools.

**Principals/Heads as leaders in high TQM schools** have an edge over those in the low TQM schools on their overall leadership behaviour as well as on both of its dimensions namely, initiating structure & consideration, **whatever be the geographical location** of the schools, urban or rural.

**8.9.3 TQM & Human Resource Development** (Ignoring Types of schools)

1. **Significant differences** exist between **high TQM & low TQM schools** on overall HRD as also on **eight out of ten** sub-variables of HRD namely, responsibilities, risk-taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, collaboration & reward.

2. The values of Means show that human resource is more developed in **high TQM schools** as compared to **low TQM schools**.

**8.9.3.1 Types of Schools & HRD** (Ignoring level of TQM)

1. **Non-significant differences** exist between **Govt. & non-govt.** types of schools on overall HRD and also on nine out of its ten dimensions namely, responsibilities, risk-taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, trust, collaboration & reward. The trend of values of Means is in favour of **non-govt. schools**.

2. **Model schools are significantly better than non-model schools** on overall HRD, as also on six out of ten dimensions namely, responsibility, risk-taking behaviour, top support, supportive HRD climate, collaboration & reward.
3. **Rural vs urban** types of schools do not differ significantly on overall HRD as also on nine out of ten sub-variables of HRD namely, responsibilities, risk-taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, trust, team spirit and collaboration.

**Urban schools have a tendency to be better than rural schools on total HRD and its ten sub-variables.** On the sub-variable of reward, significant differences between these two types of school are in favour of urban schools.

### 8.9.3.2 TQM and HRD across types of schools

1. (i) The differences in the HRD on account of levels of TQM in interaction with **Govt. vs non-govt.** types of schools account for **significant differences** in HRD total as well as eight out of ten areas namely, responsibilities, risk-taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, collaboration & reward.

(ii) When the TQM level of Govt. & non-govt. schools is **same as high but the types of schools are different**, the overall HRD in **non-govt. schools** is **significantly better** than those of Govt. schools.

(iii) In the intra-comparison within the Govt. and within the non-govt. schools, **differences are in favour of high TQM schools, whether these are Govt. or non-govt.**

2. (i) **Levels of TQM across model vs non-model types of schools neither contribute to significant differences** in HRD total nor in any of its ten dimensions namely, responsibilities, risk-taking behaviour, top support, feedback, supportive HRD climate, openness vs communication, trust, team spirit, collaboration & reward.
(ii) As to the trend of values of Means **best type of schools in HRD are the model type of school with high TQM** followed by high TQM non-model schools and low TQM model schools in descending order, the lowest being the non-model schools with low TQM.

3.(i) **The level of TQM across rural vs urban** types of schools **does not lead to significant** variation in human resource development.

(ii) **The trend of values of Means shows that urban schools with high TQM can be placed at the top in HRD** followed by high TQM rural schools and low TQM urban schools in descending order. Low TQM rural schools are at the lowest end on HRD. That is level of TQM interacts, although non-significantly, with geographical area to have a limited degree of impact on the human resource development.

**8.9.4 SWOT Analysis of Schools**

In the SWOT analysis of schools, it was found that:

1. **All Govt. schools** whatever their location (rural or urban), or the type (model or non-model) **are strong** in **Principal as leader, teachers’ quality** (input variables); **teaching & examinations** (process variables); **and inter-personal relations** (product variables) as far as the TQM is concerned.

   In **non-govt. schools** (irrespective of the type i.e., model or non-model) Principal as leader & material resources (input variables); and co-curricular activities & examinations (process variables) are the **strong areas** while **students’ quality, linkage & interface, office management & job satisfaction** are the **common weak areas**.

2. **On comparing Govt. & non-govt. schools,** it was found that percentage of non-govt. schools which are strong, is more than...
Govt. schools on three out of four input variables namely, Principal as leader (87.50%>68.75%), students’ quality (50%>25%) & material resources (75%>31.25%); all the five process variables namely, linkage & interface (25%>12.5%), co-curricular activities (62.5>43.75%), teaching (75%>50%), office management (50%>43.75%) & examinations (75%>62.5%); and one product variable namely inter-personal relations (62.5>43.75%). On the remaining two variables namely, teachers’ quality & job satisfaction, performance of both schools i.e., Govt. & non-govt. is same.

3. Majority of model schools (Govt.) are strong on variable of office management, but weak on variables of co-curricular activities & job satisfaction of teachers. The picture is different in non-model (Govt.) schools which are generally weak on variable of office management, but strong on variables of co-curricular activities & job satisfaction of teachers.

4. A greater percentage of model schools than that of non-model schools is strong on five out of eleven sub-variables of TQM namely, students’ quality (42.85% >30%), linkage & interface (21.42%>0%), office management (64.28%>20%), examinations (71.42%>60%) and inter-personal relations (57.14%>40%).

On the other side, a greater percentage of non-model schools is stronger than model schools on four areas namely, Principal as leader (80%>78.57%), material resources (50%>42.85%), teaching (70%>50%) & job satisfaction (40%>35.71%).

5. Percentage of model schools is same as non-model schools in respect of being strong on the input variable of teachers’ quality and a process variable of co-curricular activities.

6. Percentage of urban schools is greater than that of rural schools on three sub-variables of TQM namely, students’ quality
(55%>50%), linkage & interface (20%>0%) and office management (50%>25%); whereas a greater percentage of rural schools than urban schools are strong on four sub-variables of TQM namely, co-curricular activities (75%>45%), teaching (100%>50%), examinations (75%>65%) & job satisfaction (75%>30%).

On the remaining three input variables namely, Principal as leader, teachers' quality & material resources, and a product variable namely, inter-personal relations percentage of schools showing strength is same for urban as well as rural schools are equally strong. That is, common areas of strengths of urban as well as rural schools are Principal as leader, teachers' quality, material resources and inter-personal relations.

7. As to the individual schools, school no. 22 can be put as the topmost that is with greatest no. of strong areas but with minimum no. of weak & threat areas, and school no. 21 as the weakest with minimum no. of strong areas & maximum no. of weak & threat areas.

8. The SWOT analyses of top and bottom schools on TQM show that majority of high TQM school are weak in linkages whereas all the low TQM schools are weak in all areas of TQM.

The researcher wishes to submit that these results and conclusions be taken within the constraints of the present study.

8.10 EDUCATIONAL IMPLICATIONS OF THE STUDY

The results of the present investigation have clearly highlighted the inter-relatedness of leadership behavior of Principals and institutional human resource development with Total Quality Management (TQM) of the secondary & sr./sec. schools. TQM today is
recognized as a general management tool applicable in service, public sector and teaching organizations (Ahmed & Maddox, 1995). The results of the present study have implications for sec./sr. sec. schools in evidencing that, as a tool, TQM can be effectively & successfully used by secondary & sr./sec. schools to meet their quality goals. Increasing parents requirements & expectations coupled with rising levels of aspirations & competition pose challenges to school authorities i.e., Principal, staff and management to accomplish organizations’ mission. TQM can assist school management to take initiatives in prioritizing the quality areas & through improved TQM processes, provide high quality education. It can also help determine as to which areas are most critical to be immediately dealt with effectively & efficiently and which areas can offer opportunities to be encashed upon to fulfill organizational goals.

Coming to the specific areas, results of the present study suggest that feedback of evaluation/examination is crucial in improving quality processes in total quality management have implications as also for teachers in improving the teaching-learning processes. The purpose of an examination is to discover whether students have assimilated the expected measure of knowledge and skills as per the prescribed curriculum and whether they have reached an adequate level of attainment in line with the educational goals. It not only gives feedback to school and teachers but also helps in improving quality of education by determining what goes on in the class room, what the teacher teaches, how students learn, how much teachers have developed the ability of understanding & critical thinking in students and how much deep approach the students have adopted in learning. Examinations supported teaching-learning process and the data related to examinations reveal strengths & weaknesses of the performance of teachers and students, not only in teaching-learning process but also in indicating various
alternatives for right evaluation procedures by examination bodies.

In a project report by NIEPA (2005) the author considered teaching-learning process and examination process as the important indicators for the quality of education. The solution to the quality challenge can be achieved to a great extent by helping teachers recognize the worth of what they do and by inspiring & cultivating work value through comprehensive evaluation related feedback. The findings of the present investigation demonstrated that recognition & rewards play an important role in inspiring people for pursuit of quality and vice-versa.

Quality cannot be just one item of the institution where other things lag. Results of the present study show that a school with excellent academic results but low participation in co-curricular & other similar non-cognitive activities, is likely to fall down to low rank on TQM. A school cannot be considered a quality institution from the angle of TQM if it does not endeavour towards total qualitative development of students in all the cognitive, affective & conative areas; of teachers in enhancing their knowledge, skills & career; of administration in democratising the processes; and of the total institution in building up relationship with parents, community and even with concerns of national and international levels. All this has to be done on continuous basis. For the institutions, TQM means enhancing basic services to an acceptable level, then creating a niche. Even the high academic qualification of teachers is not a guarantee of effective teaching-learning process, was revealed by the present study i.e., the simple qualification of teachers until and unless translated into effective teaching may not have much relevance with quality. As pointed out by YingGuo (2010) for effective teaching, it is not only knowledge and skills of teachers but along with it, there has to be self-efficacy and capacity to provide social and emotional anchor (support)
Quality improvement is a never-ending quest (Ishikawa, 1985). It requires continuous improvement (Feigenbaum, 1983). As quality means meeting and exceeding customers' expectations and management means developing and maintaining the organizational capacity to constantly improve quality (Cohen & Eimicke, 1994), it is the leadership of the organization on whom rests the crucial role to improve the quality of the institution by way of development and implementation of institutional strategic plans. This is likely to strengthen not only the probability of the incorporation of quality into the accomplishment of an organizations' day-to-day operations but also into the long & short-term goals (Dobbs, 1994). The findings of the study can be of immense use in this regard in such a way so as to maximize the leaders' insight & capacity to enliven the TQM processes in school; so that the quality remains not only a vision, it could be taken up as a mission, is thought about, talked about & acted upon.

The major onus of attaining educational goals falls on the schools which consider human resources as most important & valuable and view it as vehicles for imparting quality in rightful way. In the views of Hersey & Blanchard (1988) management is the process of working with & through individuals and groups to accomplish organizational goals. Thus a leader must be concerned about goals as well as with human relationships. Alagheband (2000) states that management is the appropriate environment establishment and preservation of people who work effectively to accomplish the organizational goals. On one hand, teachers work in the schools and play formal roles in relation to their functions and implementation of educational goals. On the other hand, they are educated persons with various needs and expectations. The Principals/Heads as leaders can help the institution in attainment of educational objectives as well as
individual goals of the personnel with appropriate decisions. It is hoped that this would improve quality of teachers as well as schools' HRD climate and finally students' academic achievements.

Two types of factors namely, both "system level" and "institutional level" influence change in the organizations. At the system level, planning, incentives, professional support, authority etc., and at the institutional level, leadership, staff, resources, communication & linkages, nature of innovation, accountability etc., affect the change in the institution. To bring change in both of these levels i.e., the institutional level & the system level, Heads of the institute have a key position. They have to adopt several strategies and take decisions to implement any new ideas or to bring change in the organization (Mukhopadhyay, 2002). Institutional self assessment is necessary to develop the baseline so that one can examine whether, over a period, an institution is moving forward or remaining unchanged. TQM can serve not only as an effective tool for the institutional assessment and diagnosis, it can also help the institution in determining its pace within the framework of its strengths, weaknesses, opportunities & threats in its continuous journey towards quality.

The findings of the present study indicated that irrespective of the type of the school, Principals/Heads as leaders are more effective in high TQM schools as compared to low TQM schools, whatever be the geographical location of the school. Likewise, it was found that HRD is higher in high TQM institutions, irrespective of the type & geographical area. It will therefore be in the fitness of things that as and when a teacher is appointed as Head of school or Principal, he/she should be helped in undergoing training/orientation for the development of leadership skills as well as good human relations, which ultimately it is expected, shall help in raising the level of TQM in schools through creation of a favourable HRD of general climate, OCTAPAC culture and HRD mechanisms.
One of the key factors responsible for success of schools in all the countries is the healthy organizational climate (Farahbaksh, 2003). There are numerous HRD factors that affect the success of a school in providing quality education & raising level of TQM. Some of them are extensive support by parents & community, strong system of communication within & outside the school, appropriate socio-psychological atmosphere for work, supportive environment for the staff, practice or existence of problem-solving process, interactions, trust and respect among teachers etc. so the study holds the significance for taking care of these aspects in enhancing human resource development & thereby improving overall TQM level of the institution.

Quality of education may not easily be measured by quantifiable tools, successful schools may use the qualitative means such as SWOT analysis (Rampa, 2005). By utilizing the results of SWOT analysis, all those concerned with the school can look into: how far school has been able to cope with changes that came up over the years in school education?. Thus they can determine the baseline and then go ahead in raising TQM status of school. Results of SWOT analysis of schools in the present study, can be of immense use for administrators in bringing quality in schools, by way of insight into the major strengths & weaknesses across various types of schools i.e., Govt. vs non-govt., model vs non-model, and rural vs urban as also of individual school. The education department can assess its role in management of quality in school education specially of U.T., Chandigarh.

Strengths need to be maintained and sustained to ensure continuous improvement while areas of improvement i.e., weaknesses need to be addressed immediately to convert these into strengths. The present study, through identification of schools at different levels of TQM showed that even high TQM schools could not achieve maximum score on any area of TQM. Some of the strategies which may add to
the value culture and ultimately improve these schools have been identified by **SWOT analyses** to enable schools to understand & determine from which baseline to proceed, what qualities to sustain, what areas to strengthen, what opportunities to encash and what threats to avoid.

8.11 SUGGESTIONS FOR FURTHER RESEARCH

1. Present study was confined only to schools of U.T., Chandigarh. Replicative studies can be taken up in other parts of the country.

2. Present study was limited to secondary & sr./secondary classes. Further investigation can be conducted at other educational ladders that is at primary, middle and higher education.

3. In the present study comparisons were made between Govt./non-govt.; model/non-model; and urban/rural schools as perceived by teachers (irrespective of the gender). Comparisons may also be made by incorporating other demographic variables such as gender differences, tenure of teaching experience, various age groups & different educational qualification.

4. In this study leadership behaviour of Principals on initiating structure and consideration dimensions was examined in relation to total quality management. The concept of situational leadership may be included for further research.

5. Present study like many of the previous studies is descriptive in nature. Experimental studies if taken in this field will be of great help in establishing cause-effect relationship of TQM with the variables taken in the present study as also with other variables.