COLLECTION OF DATA:

The data was collected in the form of:

i) Achievement scores

ii) Observation reports

The achievement scores were obtained on teacher made tests. At the end of each experimental condition put through during a teaching interval, a test was administered. The scores obtained in this test were allotted to the teacher concerned with the test. The scores allotted to the teacher for different classes were averaged and a Mean score for the teacher was fixed. All the teachers were treated similarly and a Mean score of all the teachers working in a system was worked out. This score represented the system for a particular experimental condition. The same technique was used for all other experimental conditions.

The observation reports were made under each experimental condition. During the observation reports particular attention was given to non-quantifiable details like the commitment to the job. The data collected with respect to the teacher effectiveness was analysed in the form of tables and is given in the chapter on "Analysis and Interpretation". The data collected in the form of observation reports is given below experiment-wise.
Total number of experiments conducted in a single academic session were thirteen. The experimentation went on for four years and hence the total number of experiments conducted were $13 \times 4 = 52$. At the end of each experiment, observations were recorded in the form of observation report. Below is reproduced the treatment description of different experiments and the related observation report.

**Experiment - 1**

1. **Treatment Description:**
   
   The WALDEN school was working under Theory-X design & CASET was working under Theory-Y design of administration.

   **Observation Report:**
   
   The teachers/students working under Theory-X were busy in working as directed. They followed instructions to the extent they felt it was necessary to avoid conflict with the administration. The jobs were taken as subsidiary to their real life interests. Teachers involvement with students was superficial and teaching work was of routine type trying to complete the syllabus as a formality. Announcement of a holiday was greeted with great enthusiasm. The late coming behaviour and absenteeism was very high. There was no readiness to take up additional assignments. Sitting late even for a staff meeting was looked upon with aversion. Receiving a child or a parent or doing an activity not assigned on schedule was dis-
liked. The school was out of mind even inside the school premises and within the school hours.

The teachers/students working under Theory-Y were involved with their jobs irrespective of whether the administration was watching them or not. They were getting feedback from their own performance and did not very much look outside for feedback to their activity. They took pleasure in working long hours. They would be in the school system earlier than the scheduled time and would like to stay on. They enjoyed the different kinds of interactions viz., teacher-teacher interaction, teacher-administration interaction, teacher-parent interactions. An off-day was not welcome to the teachers. The absentees were low. The involvement with the students was real. There was an earnest desire to grow and help children to grow.

Experiment - 2:

Treatment Description:

The WALDEN school was working under treatment $X_M$ & CASET school was working under treatment $Y_M$. The factor $M$ was introduced to both the systems. $M$ stood for manageability. $M$ actually stands for inverse uncertainty ($H$) and is used to represent system stability. The low values of $H$ represent high values of stability and is mathematically measured with the Shannon-Wiener formula $H = -\sum p_i \log p_i$. For the purpose of
this research \( \frac{1}{\sqrt{1}} \) was used to represent manageability and
was measured on two point scale of 0 & 1.0 indicates absence of
manageability and 1 indicates presence of manageability. The
teachers and students working under \( X \) gave greater output than
when they were working under pure \( X \) system of administration.
They took increased interest in work. Because of the jobs being
manageable, the attitude towards work was more positive than as
in the previous case. The amount of frustration as visible from
their behaviour was comparatively less. Even though the jobs
were manageable the enthusiasm to take more responsibility was
missing. The desire towards self-direction and self-control was
missing. The self-generation of activity was totally absent.
The sign of self-growth was not visible except in some few
cases who were inherently motivated no matter under what system
they were working.

The teachers and students working under the \( Y \) design of
administration were more enthusiastic about their work than they
were previously. Because of the introduction of \( \beta \) factor the
work became more interesting and the achievement motivation got
generated. The teachers & students achievement scores also got
significantly effected. The involvement of teachers & students
registered an upward rise and on their own both the students as
well as the teachers tried to accomplish more than what they had
done under the pure \( Y \) conditions. The late coming & absentee

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behaviour continued to remain unchanged. The various kinds of interactions were on the increase, probably because of the greater confidence gained by handling manageable jobs.

**Experiment - 3**

**Treatment Description:**

The WALDEN school was working under $X_{ME}$ design of administration & CASET was working under $Y_{ME}$ design. During experiment 3, the factor $E$ was introduced in both the systems. $E$ represented opportunity to exert. Under this treatment the teachers and students in the two systems were allowed and encouraged to take up challenges. In the $Y$ system the element of challenge was already present. In the $X$ system this element was totally absent. Under experiment 3, the challenge element was introduced in $X$ system and in system $Y$ it was further explicitly manipulated and encouraged.

The factor $E$ involved active responding in terms of problem solving, taking up initiative, getting involved etc.

**Observation Report:**

The teachers/students working under $X_{ME}$ showed better results as compared to their own performance under $X_{ME}$. The element of self motivation increased. The achievement motivation was clearly visible. There was a change in involvement. The achievement score registered a rise. The late coming & absentee behaviour remained unchanged. There was change in
attitude towards administration. The introduction of E′ factor made the teachers independent of administrators presence to some extent. The routine way of doing work continued with some change in it. The school still continued to be outside ones own interest.

The teachers/students working under Y'E design of administration showed a lot change as compared to their own previous performance. The conscious and explicit manipulation of E′ factor which was implicit in Y design made a lot difference.

Now the teachers/students sought for new challenges, began planning for new projects, spent a good amount of time discussing school affairs, new ways to solve old problems, getting students involved in a variety of ways etc. The CASET under Y'E was significantly better than WALDEN under X'ML. Simple observation was distinctly indicating this difference.

Experiment - 4

Treatment Description:

During experiment 4, the factor 'R' was introduced in both the systems. 'R' stood for immediate reward. As soon as the teachers/students made any effort in the desired direction they were rewarded. The reward was given in the form of appreciation, salary rise, certificates of merit, public announcement of good work done etc.
Observation Report:

The introduction of the R factor put the X-group of workers (teachers/students) really in a different state of performance. It was the introduction of the R factor that made \( M \) & \( E \) factors important. Now the teachers/students were anxious to achieve more. The R factor increased the motivation significantly. During experiment 4, the performance of the WALDEN system under \( X_{ME} \) was significantly better than its performance under \( X_{ME} \). The late coming and absentee behaviour registered a decline. The enthusiasm and teachers morale started showing upward trend. The comparative difference in teachers behaviour between WALDEN \( (X_{ME}) \) and CASET \( (Y_{ME}) \) started showing a decrease.

So far as CASET under Y system was concerned the introduction of the factor R (immediate reward) showed a significant effect on the teachers/students performance behaviour. The anxiety to be in the school increased both for teachers and students. On the introduction of R factor the \( M \) & \( E \) factor got prominence. The manageability and opportunity to exert became explicitly meaningful. The enthusiasm and the teacher/student morale improved significantly. The achievement score of student showed a marked rise. The absentee and late coming behaviour went further low. The teacher/student involvement touched new heights. The CASET school system working under \( Y_{ME} \) was both quantitatively as well as qualitatively superior to the same system working under \( Y_{ME} \).
Experiment - 5

Treatment Description:

During this experiment the factor 'A' was introduced in both the systems. 'A' stood for immediate awareness of one's performance. This was done by building performance rank charts which were continuously kept exposed to teachers/students. The Histograms and Bar diagrams were developed based on the performance of teacher/student. In both the systems these Charts and Diagrams were fixed on the walls of class rooms for motivating students and on the walls of the staff rooms for motivating the teachers. The purpose of doing this was to continuously make the teachers/students aware about their own performance. This awareness about one's performance was already implicitly present in the Y design of administration. During experiment 4 this factor was stressed explicitly & care was taken about its immediacy. The moment an act was done, the result was fed into the behaving individual immediately after the act was over.

Observation Report:

When the awareness of one's performance was immediately fed into the behaving individual, it had a great impact on the self-motivation of an individual. WALDEN systems working under X-MERA design of administration the teachers/student became at once goal oriented. The signs of self-generation, self-
direction, self-coordination, self-control of activities became visible. Through the Bar diagrams and Histograms the teacher/student self-compared themselves with their previous performance and intercompared themselves with the performance of others. This self-awareness and interactional awareness caused the performance score to go very high. The teacher/student were continuously watching their performance curves. The late coming and absentee behaviour got significantly reduced. The school started becoming a part of their real life activity. Staying in the school for longer hours no longer became an aversion. The work which was previously done as a routine matter started demanding more & more of teacher/student attention. The achievement score was very positively effected. Many parents felt uneasy about their children because the children were spending all the time in doing more and more work at home so that they could get more and more scores on the rank charts. The teachers carried the school to their homes and all the time school & children were being discussed.

So far as CASET (Y) teachers/students were concerned new projects were designed, new plans were made and discussed, new execution procedures were being devised. CASET (Y) started working in a big way. The explicit manipulation of a factor, particularly its immediacy aspect, created a
significant change in teacher/student behaviour. Norbert
Wiener had already found that when awareness factor is inbuilt
in machines they behave like men in terms of becoming goal
oriented. The present experiment revealed that when awareness
is manipulated in human behaving individuals they become self-
generating, self-directing, self-regulating, self-coordinating &
self-controlling in their behaviour patterns. The element
of self-evolution was not in view. The enthusiasm and morale
was extraordinarily high both in teachers and students.

Experiment - 6
Treatment Description:

During this experiment the factor I was introduced. The
factor 'I' stood for "Interaction within & without". This
factor was introduced in both the groups through the medium of
co-operation and competitions. The two school set ups viz.
CASET (YMERAI) and WALDEN (XMERAI) were set under competition
class by class headed by individual teachers. The interaction
was of two kinds viz. co-operation within the system and com-
petition between the systems. Within the same set up the
different teachers were set into co-operation & competition
was encouraged between the two set ups as a whole. The two set
ups were set into competition with each other.

Observation Report:

This "within cooperation" and "between competition"
situations caused the total involvement of the systems. The competition created a situation of challenge which both the systems tried to meet. Besides the normal within doors competition, the two school systems were put under competition under the public eye. This was done by organizing science exhibitions and cultural fairs thrown open for public appreciation and critical review.

Observation Report:

Co-operation within and competition between the two school systems significantly changed the working set up of the teachers/students in both the systems. The Theory \( X_{MERA} \) (WALDEN) and Theory \( Y_{MERA} \) (CASET) systems seemed to be approaching each other. In fact the \( X_{MERA} \) system seemed very much akin to \( Y_{MERA} \) so far teachers/student behaviour was concerned. The only visible difference was with respect to different interactional relations which continued to be formal in \( X_{MERA} \) setting, particularly the administrator-teacher relationship and the teacher-student relationship. Because of the intense enthusiasm generated by competitive setting, the interactional relationships in \( X_{MERA} \) administration got less formalised than what they were to start with under pure \( X \) conditions. The involvement of teacher/student was at its best. The elements of self-generation, self-direction, self-regulation self-coordination, self-control of teaching-learning activity
were quite evident but the element of self-evolution of activity was not visible yet. This is where $X_{MERAI}$ was different from $Y_{MERAI}$. For $X_{MERAI}$ the performance was more or less robot like, trying to fulfil the programme according to the given instructions. The public appreciation of performance had put both the groups into an intense state of day & night involvement bordering on frustration. Frustration at points became so high that it was considered necessary to put a stop to competitive behaviour. The late coming and absentee behaviour touched its all time low in both the systems. The system $Y_{MERAI}$ besides being self-generating, self-directing, self-regulating, self-coordinating and self-controlling in its behaviour also showed the signs of self-evolutionary character. This was probably because the autonomy factor was inbuilt in $Y$ design of administration. Quality-wise $Y$ design continued to be superior to $X$ design.

During the whole process of experiment 6, judicious care was taken to properly administer rewards. Because of the very high involvement of teacher/student, error in reward administration was causing great disturbance in system behaviour. The two systems would sometimes try to tear each other aggressively.
Experiment - 7

Treatment Description:

During experiment 7 A' factor was introduced in both the systems. A' stood for autonomy. Under autonomy factor the workers in a system felt more secure, more stable & had greater freedom to perform. Stress was on self-initiative, self-direction and self-control. A' factor was already inbuilt in the Y design of work. During experiment 7 this factor was explicitly stressed. So far as the X system was concerned A' factor was missing and had to be elaborately introduced. During this period the kinds of activities encouraged were:

- project work, seminars, conferences, group discussions etc. etc.

The competitions were dropped.

Observation Report:

The introduction of A' factor totally changed the character of X design and X design no longer looked as X design. The major difference between X design and Y design was that of autonomy factor. Introduction of autonomy factor made the X system more democratic, more secure, more independent, more free. An atmosphere of fearlessness was generated. The workers felt like dignified human beings who mattered & no more were treated like cogs in a machine. The group X \text{MERAIA}' started moving towards self-evolutionary character of their behaviour besides being able to regulate, coordinate & control
their own activities. The quality of work started improving though there was a decrease in quantitative output. The robot like character started disappearing from X_MERAIA system. The X_MERAIA system started approaching more & more near Y_MERAIA, quality-wise. Under autonomy factor the performance in both the systems became innovative and creative. Teachers/students were full of new ideas. New strategies were devised, proper evaluation of these strategies was done, appropriate strategies were chosen to achieve new targets that they had fixed for themselves. The presence or absence of administration was immaterial. There was no need of policing even for the X group of workers. Inbuilt motivation was generated to self-actualise themselves & to discover the best in themselves. Working under autonomous conditions helped the workers to re-discover themselves, their potentialities and their limitations. Autonomy coupled with interaction kept them under a whip to move forward. It was evident that had the pressure of interaction not been there, the work would have been slow. The interaction in the form of neck break competition had been dropped, yet awareness about what was happening around, what kind of work was being done by others was constantly fed into the behaving individuals. Interaction factor was working through the medium of seminars, conferences, discussion groups etc. Autonomy factor made the workers independent and self evolving systems.
Experiment - 8

During experiment 8 the variable A' was dropped. The seminar programmes, project work, discussion groups etc. were dropped from the schedule. The workers in the X design were not allowed to do things as they thought best. The atmosphere of security and freedom was withdrawn. The within & without competitions were re-started. In the Y design set up, explicit stress on autonomy with its different dimensions were withdrawn. Autonomy was allowed to remain implicit as before. The programme of seminars, project work etc. was dropped in Y group also. The competitive set up was reinstalled.

Observation Report:

The drop of autonomy factor from the X group made them to feel timid again. The quality of work went down in both the groups. Because of competitions being explicitly reintroduced the quantity of work done increased. The neck break competitions started once again resulting into the same feelings of frustration and ill will against the people they were competing with. The job of administration became difficult to the extent frustration and tension was taking over the system. The self-actualisation desire that had appeared under autonomy conditions disappeared from both the groups. There was a marked set back to creative endeavour as shown during autonomy phase. The interest in work and enthusiasm continued because of the other factors operating.
Experiment - 9

During this experiment 'I' factor was dropped. Dropping of the I factor implied dropping of competitions within and outside the system. The amount of interaction that was generated because of the 'A' factor could not be absolutely dropped. Under 'A' factor introduction of rank sheets, bar diagrams, Histograms etc. was necessary. While dropping 'I' & continuing to retain 'A' factor, the interactional awareness continued to be present because of the performance charts and the workers continuous exposure to these charts.

Observation Report:

Dropping of the 'I' factor reduced the enthusiasm of the behaving individuals. The teacher morale and the student morale dropped down. The school environment did not remain that enthusiastic as it was during the 'I' factor at work. There was boredom visible. The achievement score also got adversely effected. The cohesion within the systems also got loosened & the intersystem rivalry got dropped.

Experiment - 10

Treatment Description:

During this experiment the awareness factor 'A' was dropped from both the systems. This implied that no rank sheets were to be maintained, no Histogram charts & Bar diagrams graphically representing the performance of teacher/
student were to be built up. The performance charts already fixed on the walls of the class rooms and the staff rooms were to be removed. The teachers/students were not immediately fed with the awareness of the result of their performance.

Observation Report:

The withdrawal of 'A' factor created a lot of adverse change in both the systems. Presence of 'A' factor besides developing inbuilt motivation had developed goal oriented and purposeful behaviour among the behaving individuals. 'A' factor contained in itself a number of subsidiary factors like identifying the goal, moving towards the goal, receiving the error signals & reorienting the goal directed movement till the goal was achieved. After dropping the 'A' factor all this kind of goal directed activity stopped. The teacher/student morale dropped further, though awareness factor was implicitly inbuilt in Y system, the explicit manipulation of it had enhanced the system efficiency. Dropping the explicit stress on 'A' factor created a visible difference in the Y system. The effect was much more adverse so far X system was concerned. Dropping of awareness factor made the human activity systems disorganised, uninvolved and purposeless. It was impossible to drop awareness totally. The only thing that could be done was to drop the explicit manipulation of awareness.
Experiment - 11

Treatment Description:

During this experiment the factor Reward 'R' was dropped. Dropping of reward implied withdrawal of appreciation, certificates of merit, salary raises for good work done, etc.

Observation Report:

The reward factor was very important for motivation. Dropping of reward mechanism badly damaged the performance of both the systems. With the dropping of Reward, M & E factors also became inoperative. M & E factors were becoming operative because of the reward that was in view. Howsoever, manageable job may be, whatever opportunity a worker be given, the worker did not seem to be concerned to do an act in the absence of reward. To the extent that reward could not be totally eliminated, the behaving individuals continued to perform. The explicit manipulation of reward was dropped. The teachers had to work in order to deserve salaries, students had to work to pass the tests. Thus salaries and test results served as rewards which could not be eliminated in a school setting. The achievement scores, percentage attendance, regularity, punctuality scores touched a very low mark in both the systems.

Experiment - 12

Treatment Description:

During this experiment explicit manipulation of 'E'
factor was dropped. 'E' factor stood for opportunity to exert. This was realised by putting teachers/students on their own resources and allowing them to work out on their own the solutions to the problems they faced. 'E' factor was dropped by discouraging problem solving behaviour and stopping work on mini projects etc.

**Observation Reports:**

The dropping of 'E' factor was already meaningless after dropping the 'R' factor. Because of no explicit rewards in view the teachers/students did not like to exert. The condition of teachers/students was like that of those children who are shifted from poor toys to good toys and then brought back to poor toys. After having enjoyed the pleasure of playing with good toys, the children feel frustrated to be brought back to the old poor toys which they once enjoyed. The same was the case with teachers/students in both system X & Y. After having gone through different phases of excitement under R, A, I, A' factors, they did not enjoy the dull & drowsy state of affairs where they found no special reason for putting themselves to work.

**Experiment - 13**

During this experiment the factor M was dropped and the system X reduced to its pure form X. So far as the system Y was concerned it was already having implicitly inbuilt in it many of the factors M, E, R, A, I, A'. Explicit manipulation of
these factors and then dropping them was damaging the Y design and depriving it of its original state. Thus at the end when factor was dropped, the Y design no longer remained pure Y but got very badly deformed. 'M' factor was dropped by pressurising teachers and students to get more and more work accomplished. The working hours were increased, the number of teaching periods were increased. Additional assignments other than teaching were introduced for teachers and students without regard for their capacities and capabilities.

Observation Report

The dropping of 'M' factor made both the systems further uninvolved. The achievement motivation, which had appeared on its introduction, disappeared. Because of absence of reward, the presence of 'M' factor had become almost meaningless. So far as some inherently motivated people were concerned, for them dropping of 'M' mattered much. Absence of 'M' caused aversion for work and negative feelings towards everything that was connected with work in the work place & the administration machinery etc. The absentee and late coming behaviour was on the increase. The achievement scores fell down to the lowest. Teacher/student involvement was almost nil.

Experiment - 14

Treatment Description:

With this experiment started the next phase of
experimentation strategy over the next academic year. During this period the treatments X & Y were reversed. Previously CASLT was working under Y design of administration & WALDEN was working under Theory-X design of administration. During the second year of experimentation WALDEN was put under Y design of administration & CASET was put under X design of administration. This involved making WALDEN teachers more responsible, they became a part of the policy making machinery. They were treated as dignified, very important, resourceful individuals who had to be consulted at every step of planning, execution, evaluation & remedial treatment. They were the persons who would fix targets, plan achievement of these targets & execute the whole process. They were to exercise self-direction, and self-control in the achievement of the school targets that they had fixed themselves. The case for CASET teachers was otherwise. They had while working under Y design period got into the habit of being the part & parcel of policy making and decision making machinery. Now during the second year of experimentation they had to be treated as cogs in a machine & were to work under external direction and control.

Observation Report:

For WALDEN teachers/students shift from X design to Y design was very welcome and refreshing, but for CASET teachers/students the shift from Y design to X design was most unwelcome
and stinging. The CASET system could not adjust to this change and remained agitated for a while. The WALDEN system on the other hand remained excited and enthusiastic about the next change. During this experiment WALDEN under Y design showed upward trend towards positive behaviour & the CASET under X showed downward trend. The absentee and late coming behaviour of teachers/students in the WALDEN school under Y decreased & the case was reverse for CASET under X system. The same was the case with all other behaviour elements.

Experiments 15,16,17,18,19,20,21,22,23,24,25 & 26 were a repetition of what had been done during the first year with almost the same results. The experiments were repeated during 3rd and 4th year also alternating X & Y in CASET & WALDEN systems. Y design of administration always gave better results than the X design of administration. As the different variables E,R,A,I,A went on cumulatively getting introduced to X design, performance of people working under X design started becoming almost identical to the performance of people working under Y design.

At the end of each phase of experimentation, teacher made tests were administered and Mean scores were found. The data thus collected was analysed and interpreted and has been put separately under the Chapter on "Analysis & Interpretation".