CHAPTER FIVE

SUMMARY OF FINDINGS AND
RECOMMENDATIONS

1. INTRODUCTION

This investigation of the Classroom Climate in Secondary Schools has been undertaken with the following general and specific objectives.

Since Independence, there has been rapid growth in India in the field of education. The quantitative expansion can be judged on the basis of increased number of schools, colleges, universities and so on as well as the increased enrolment figures in these institutions. It cannot be said that the qualitative improvement in education has been keeping pace with quantitative expansion. In order to bring about better quality in education, it is essential to evaluate classrooms, the psychological climate that prevails there and make an objective assessment of what is happening inside the classroom. Thus the study of classroom climate in secondary
schools may yield basic data, for suggesting steps for qualitative improvement.

More specifically, the investigation is concerned with the problem of developing suitable methods for assessing the classroom climate and studying factors which influence the climate.

For the purpose of this investigation, the term "Classroom Climate" is defined to mean the general, academic and psychological atmosphere that prevails in the classroom as an outcome of the behaviours of the teacher and the pupils and their interactions.

2. THE PROCEDURE

A short summary of the procedure followed in the investigation is given below:

(i) The review of literature regarding research studies conducted in India and elsewhere was undertaken. This review brought out the fact that classroom climate is affected by a multitude of variables and hence it is highly desirable to use a multi-variate model for the investigation. A long list of variables pertinent to the study was also prepared.

(ii) The list of variables was then presented to a group of experts including educationists, heads of educational institutions and faculty members of the training colleges to elicit
their views regarding which of the variables are worth being included in the investigation. On the basis of the analysis of their responses, six primary variables were finally selected for the final stage of the investigation.

(iii) In order to study the attitude of teachers two scales were constructed (a) to measure the attitude of teachers towards pupils and (b) to measure the attitude of teachers towards the profession. In each case, fifty statements expressing favourable and unfavourable attitudes were first selected and subjected to item-analysis. The analysis was based on the responses made by a sample of 400 teachers drawn from 36 schools. Items showing high discriminating power and significant item-total correlation were selected for the final scale. The final attitude scales consist of 25 statements each.

(iv) Several systems/categories of observation of teacher behaviour were considered to study classroom interactions. It was found that Flanders Interaction Analysis Categories (FIAC) had received the attention of many Indian research workers, chiefly because of its compactness and comprehensive nature. However the system is concerned with the verbal behaviour of the teacher, to the exclusion of non-verbal behaviour. For the purpose of the present investigation, it was felt necessary to include a few more categories of behaviour which occur so often in the classrooms. They were: (a) Teacher demonstrations
(using aids, experiments etc.), (b) student demonstrations
(c) Teacher using the blackboard, (d) Student using the blackboard, (e) class works silently on a given assignment,
(f) Teacher gives individual guidance or attention to a needy student (g) mass response by all the students in the class.
Hence PIAC was enlarged to include these seven categories.
This modified system was validated by a pilot study during the
course of which eleven classes were observed.

(v) During this pilot study, two questionnaires were finalised
to gather relevant data from teachers and students. At
the final stage of this investigation, the questionnaires were
as follows:

(a) The questionnaire to the teachers contained four sections:

SECTION - A : Eliciting personal data regarding sex, age,
educational and professional qualifications
and so on.

SECTION - B : Eliciting teachers reactions to the lesson
regarding its objectives, content and so on.

SECTION - C : Eliciting general reactions about the lesson
as it was taught - post-lesson reactions.

SECTION - D : Containing the two attitude scales.

(b) The questionnaire to the students contained four sections:

SECTION - A : Eliciting personal, bio-data. (Q. 1 to 11)

SECTION - B : Wherin the students were asked to summarise
what they had learnt during the lesson.
SECTION - C: Eliciting data for socio-metric study (Q.13) and SECTION - D: Eliciting the general reactions of the students about the lesson.

(vi) The final study was based on the observation of a hundred classes. The sample was drawn from 32 schools, including equal number of men and women teachers, 45, 39 and 16 classes of Standards IX, X and XI respectively, and 20 from each of the subject disciplines viz. English, Tamil, Mathematics, Science and History/Geography. The 32 schools included 15 urban and 17 rural schools; 11 Government schools, 6 Municipal Schools and 15 Private Schools.

The investigator observed the classes along with another trained observer, and recorded the teacher-behaviour using the modified form of PIAS. During the next period, the questionnaires to the students and the teachers were administered.

(vii) The responses made by the teacher and the students were suitably scored. The records of observations were also analysed to yield frequency counts. On the basis of these, six measures were obtained for each class, besides data on a number of secondary variables. The six primary measures were as follows:

\[\begin{align*}
V_1 & : \text{Attitude Score of the teacher towards the pupils.} \\
V_2 & : \text{Attitude score of the teacher towards the profession} \\
V_3 & : \text{Class Homogeneity Index} \\
V_4 & : \text{T/S ratio} \\
V_5 & : \text{D/I ratio} \\
V_6 & : \text{Teacher-Pupil agreement.}
\end{align*}\]
Two models for assessing the classroom climate viz. the Cross Product Model and the Additive Model, have been developed in this investigation. A short description of each model is given below:

(a) **The Cross Product Model (CPM):**

First the distributions of the raw measures on the six primary variables are studied and the means and the Standard Deviations are calculated.

Then, in order to reduce them to a comparable scale, suitable linear transformations are set to obtain transformed scores $V'_1, V'_2, \ldots, V'_6$.

The Classroom Climate Index (CCI) is defined by the formula

$$CCI = V'_1 \cdot V'_2 + V'_2 \cdot V'_3 + V'_3 \cdot V'_4 + V'_4 \cdot V'_5 + V'_5 \cdot V'_6 + V'_6 \cdot V'_1$$

(b) **The Additive Model (AM):**

In this model, the basic procedure has been reclassification and assignment of suitable weights. First the raw measures on each variable are arranged in the order of their magnitudes.

Then they are reclustered to form 9 classes, so that the number cases in the 9 classes are approximately 4%, 7%, 12%, 17%, 20%, 17%, 12%, 7% and 4%. Then these clusters are assigned weights ranging from 9 to 1, the favourable and receiving the higher weight. These are based on the concept of stanine scores.
For any class, the six primary measures can now be converted to corresponding weights. The Classroom Climate Index is defined by the formula

\[ \text{CCI (AM)} = W_1 + W_2 + W_3 + W_4 + W_5 + W_6, \]

where the W's are the stanine weights.

The Classroom Climate Indices were calculated for all the hundred classes by both the methods and suitable statistical analysis were carried out.

3. **A SUMMARY OF FINDINGS**

(i) The distribution of the classroom climate indices follow a normal distribution, in both the models. There is no skewness; the kurtosis is negligible.

The distribution in the cross product model has a mean of 98.00 and Standard Deviation of 27.11. The range is 168. The maximum and minimum possible indices are 0 and 294. The sample values range from 28 to 166.

The distribution in the additive model has a mean of 30.00 and a Standard Deviation of 6.59. The range is 34. The maximum and minimum possible indices are 6 and 54. The sample values range from 10 to 44.

The correlation between the indices obtained by the two methods was studied using the Pearson's Product moment method. The correlation co-efficient is 0.95. This is an indication of the high reliability of the measures.
(ii) The scores on the attitude towards the pupils \( V_1 \) show a mean = 98.54 and a Standard Deviation = 9.69.

The differences between the attitudes of men and women teachers, between teachers from urban and rural schools, between teachers teaching different subject disciplines are not statistically significant.

The distribution is near normal.

(iii) The measures on the attitude towards the profession \( V_2 \) show a mean = 96.09 and a Standard Deviation = 9.41.

Women teachers show a significantly better attitude towards the profession than men teachers.

The differences between the attitudes of teachers from urban and rural areas, or between teachers teaching different subject disciplines are not statistically significant.

(iv) The Homogeneity Index \( V_3 \) of the class was calculated on the basis of socio-metric information. It was based on the size of the class, the number of sub-groups and the size of the largest sub-group in that class.

The mean index is 15.40 and the Standard deviation is 10.72.

There are no significant differences between the classes handled by men or women teachers, between classes from urban and rural areas, or between classes from different subject disciplines.
(v) The T/S ratio ($V_4$) was calculated from the frequency of occurrence of teacher behaviour in the various categories of the observation system. A low T/S ratio is indicative of the fact that more student-activities are planned in the class. A high T/S ratio means that the teacher is dominating in the class.

The T/S ratio distribution is not normal. The mean is 3.45 and the Standard Deviation is 2.47. It ranges from 0.6 to 11.1.

It is found that women teachers are considerably better with a lower mean T/S ratio than men teachers. Men teachers are significantly more dominating in the class than women teachers.

The difference between teachers from urban and rural areas is not statistically significant.

The difference between teachers from different subject discipline is significant. It is found that the teachers of Mathematics are less dominating and they organise student work in the class. The teachers of English rank next. The difference between the mean ratio for other groups (Tamil, Science and History/Geography) are not much.

(vi) The D/I ratio ($V_5$) was calculated by comparing the teacher behaviour with direct and indirect influence. The mean for the distribution is 8.70 and the Standard Deviation is 7.01. The distribution is not normal.
The sex difference is again found to be significant. Men teachers are comparatively more direct in their influence than women teachers.

The differences between teachers from urban and rural areas, or teachers from different disciplines are not significant. (vii) The teacher-pupil agreement percentage highlights how far the teacher and the pupils think alike in matters that occur in the class. For this purpose, the responses made by the pupils to a set of questions were compared with the responses to the same questions by the teacher. A high percentage of agreement would mean a better understanding between the teacher and the pupils.

The distribution of these percentages ranges from 60% to 89%. The mean is 78.58% and the Standard Deviation is 5.48%.

Here again we find that women teachers are significantly better than men teachers. They show a more cordial understanding of the pupils' mind than men teachers.

The differences between teachers from urban and rural areas or teaching different subject disciplines are not significant. (viii) The inter-correlations between the six variables were also worked out to study their tendency to cluster. The
following inter-correlations were obtained:

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>-</td>
<td>0.56**</td>
<td>0.14</td>
<td>-0.05</td>
<td>-0.21*</td>
<td>0.43**</td>
</tr>
<tr>
<td>V2</td>
<td>0.56**</td>
<td>--</td>
<td>0.11</td>
<td>-0.08</td>
<td>-0.24*</td>
<td>0.45**</td>
</tr>
<tr>
<td>V3</td>
<td>0.14</td>
<td>0.11</td>
<td>--</td>
<td>0.03</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>V4</td>
<td>-0.05</td>
<td>-0.08</td>
<td>-0.03</td>
<td>--</td>
<td>0.32**</td>
<td>-0.18</td>
</tr>
<tr>
<td>V5</td>
<td>-0.21*</td>
<td>-0.24*</td>
<td>-0.08</td>
<td>0.32**</td>
<td>--</td>
<td>-0.19</td>
</tr>
<tr>
<td>V6</td>
<td>0.43**</td>
<td>0.45**</td>
<td>0.05</td>
<td>-0.18</td>
<td>-0.19</td>
<td>--</td>
</tr>
</tbody>
</table>

It is clearly seen that the variables $V_1$, $V_2$ and $V_6$ teacher attitudes and the teacher-pupil agreement tend to cluster together with significant positive correlation. They have some common factor among them. Similarly $V_4$ and $V_5$ T/S ratio and D/I ratio correlate positively. The D/I ratio also correlates significantly with $V_1$ and $V_2$ (i.e.,) the attitudes of the teacher. The class homogeneity index ($V_3$) does not correlate with the other variables indicating that it measures something which is not measured by the other variables.

These comments indicate the appropriateness of the six variable model for the study of the classroom climate. Of course, this is not the final proof of the model; but it is a good indication of the right direction of the investigation.
The classroom climate was studied twice—first by the indices derived from the Cross Product Model and then by the indices derived from the additive model. The results agree in all aspects. The several differential and correlational studies indicate the following:

The classroom climate in classes handled by women teachers is significantly better than the climate in classes handled by men teachers. The probable reason may be the better attitude of women teachers and their better relationship with the pupils.

There is no difference in the climate of classes from urban and rural areas.

The sample classes selected from Municipal Schools show a significantly better climate than classes selected from Government schools. The differences between classes comparing Government and Private schools or Municipal and Private schools are not significant.

The classroom climate of classes made entirely of girls is significantly better than the climate in classes made up of boys alone or mixed, co-educational classes. The probable reason may be the combined effect of the more docile, disciplined set of girl-students and the good attitude of women teachers.

The climate prevailing in classes from different subject disciplines do not show significant differences.
Similarly, the climate indices of classes handled by teachers with high or low academic achievement do not differ significantly.

The professional qualification, the age or the experience of the teacher seem to have no influence on the classroom climate.

The classroom climate indices correlate positively and significantly with school achievement of pupils. When classes ranking high and low on the climate, in each subject discipline, were compared, it was found that there were highly significant differences in the learning or immediate achievement by the students of the classes. This indicates that good classroom climate results in better learning by the pupils.

(x) A comparison of the teacher behaviour in the extreme classes (i.e.) classes high and low in climate indices indicate that

(a) Teacher spends less time in talking and more time in giving climate to student-work in classes with good climate. Lecturing or talking for long spells of time spoils the climate the class.

(b) Teachers in both the groups are most subject-conscious than student-conscious as revealed by the low percentage of occurrence in categories 1, 2 and 3.
Adequate opportunities are also not provided for initiating discussions or presentation as indicated by the low percentage in Category 9.

4. EDUCATIONAL IMPLICATIONS AND RECOMMENDATIONS

(i) One of the aims of this investigation has been to develop a reliable and practical method for assessing the classroom climate. Two models have been suggested and either of them can be used for assessing the climate. The high correlation between the results obtained by both the methods shows that the procedure yields reliable results.

(ii) The study has revealed that the climate in classes handled by women teachers is significantly better than the climate in classes handled by men teachers. Better attitude towards the teaching profession and the pupils contributes towards better classroom climate. It is therefore essential to study the factors which influence the attitudes and take steps to improve the attitude of teachers. This calls for a separate and intensive research as to what factors affect and change attitudes.

(iii) The teacher-pupil agreement between views regarding matters connected with the class is also related with attitudes. This is established by the positive correlations between attitudes and this variable (i.e) between $V_1$, $V_2$ and $V_6$. The analysis of the responses made by the teachers and the pupils...
in the respective classes reveal that there is scope for better understanding and cordial relationship between the teacher and the taught.

One of the factors affecting this variable is the class size. The smaller the class, the easier it will be for the teacher to understand the pupils. Hence, it is recommended that the class-size should be around 30 or 35. The climate in large classes is low.

Combined with this is another factor - the teacher dominance and personality. Even in some small classes, we find that there is lack of teacher-pupil relationship because the teacher personality is such. This is revealed in the study in such examples, where-in small classes, we find no child liking the subject or the teacher. Otherwise the class is good. Hence, it is also recommended that teachers should make conscious efforts to be pleasing in the class and win the confidence of the pupils.

(iv) The class homogeneity indices do not correlate with the other five variables, as revealed by the study of inter-correlations. This is indicative of the fact that the teacher is not as much interested in this socio-metric aspect as he is in academic matters. The educational implication is fundamental in character. Our system of education is such that even the 'best' teachers are more concerned with cognitive aspects which
emphasize factual learning and they are not very much aware of the sociological aspects or socio-metric structure of their classes.

How can this awareness to sociological aspects of the class be developed in teachers? How will it help the teacher, the pupils and the learning process? These are big and difficult questions to answer. Starting from the phase of setting acceptable goals to building up co-operative endeavour to solve problems - there is lot of scope for the teacher.

It can therefore be recommended that teacher consciousness may be developed in this area of sociological awareness. It may be useful if it is made a regular periodic feature of school routine to prepare sociograms for all the classes and study their impact. A course in "classroom sociology" can be developed if more intensive and practical researches are conducted and a theory developed.

(v) Perhaps the most important factor affecting the classroom climate is the teacher - behaviour. This study has established two facts: That teachers consume most of the class time and leave very little time for student activities (this is revealed by the T/S ratios) and that the teacher prefers to use methods of direct influence rather than indirect influence. (This is revealed by the D/I ratios).
There is considerable research evidence to prove that by constant feedback resulting from systematic observation of classroom teacher behaviour, the situation can be improved. The studies conducted at M.S. University, Baroda and else where are useful in this regard. In order to strengthen this programme two more things are necessary:

(a) The teacher education programme should incorporate this concept of systematic observation and methods of analysing teacher behaviour. This should also form an important part of the in-service education for teachers.

(b) Permanent agencies for constant feedback is still a problem. As yet, there is no agency or person who will observe and provide the feedback to the teachers. In experimental studies, the situations are usually under control, and agencies for observing, coding, processing and giving the feedback to the teachers are set up. When the idea is transferred to field situations, everybody accepts and welcomes the idea but none is ready to work and provide the continuous feedback.

Hence it is recommended that a suitable, convenient method of systematic observation of classes and providing continuous feedback to teachers be developed. This may be a good project of national importance.
(vi) According to the model presented in this investigation, the classroom climate index will be high in such classes where (i) the teacher has favourable attitude towards the pupil and towards the Profession, (ii) the class is homogeneous, (iii) the teacher behaviour in the classroom is less domineering and more indirect and (iv) Teacher-pupil agreement is high. These four are fairly independent. Hence, there is scope for administrators to exercise certain choices so that they could try to maintain better (or at least acceptable) climate in the classroom. The administrators should study the first three factors and classify (a) the teachers who have favourable, neutral and not so favourable attitudes, (b) the classes by their homogeniety indices and (c) the teachers by their teaching behaviour. On the basis of these data, classes could be assigned so that teachers with good teaching ability and favourable attitude go to weaker classes. By the continued effort of the teacher there is a chance for the climate in such classes to improve.

At present, the impressions gathered from examination results and other sources play a part in deciding such matters. If one desires to follow, this investigation opens a new way of looking at and solving the problem.

(vii) The profiles and the circles graphs will be useful displays for the teacher and other professional people to see and interpret the classroom climate. For example, looking at the circle graph for Class No.81, we can immediately say that
the climate of the class can be improved in 3 ways (i) try to build up inter-pupil relationships so that the class becomes more homogeneous, (ii) Adjust the teaching behaviour so that there is more student-participation, leading to better T/S ratio and (iii) The teacher should try to be less dominant and direct and plan for more indirect influences so that there is better D/I ratio. Then the classroom climate will become better. Such guidance is possible and methods for bringing about such changes should be worked out.

(viii) Teachers can modify their classroom behaviour to create better climate in the classroom. The feedback suggested earlier will be useful. A comparative study of the behaviour of teachers in classes ranking high and low on the climate indices suggests the following directions of change.

(a) Teachers should make an attempt to reduce the duration of their talk. A good teacher should be able to get more work from the students and also provide opportunities for the student-participation in class. In this connection it is worth considering organisation of group work, study circles and so on.

(b) Teachers should also attempt to reduce the over emphasis they lay on textual matter. The objectives of the lesson should be restated in terms of student-development. This would result in behaviour of teachers in categories 1, 2, 3 and 9 which, in turn, will contribute towards building up the climate.
(ix). This investigation shows that the professional qualification and experience has no influence on the classroom climate. This is really a sad situation. It is therefore suggested that the teacher-educators should take more of this situation and plan to revitalise the training programme. At present, the curriculum does not stress the modification of teacher behaviour or development of classroom climate as much as they deserve.

5. SUGGESTIONS FOR FURTHER STUDY

This investigation has opened new areas for further research. Some of the directions for such studies are presented below:

The sample used in this study is representative and therefore the conclusions are all valid. The study should be continued further to include a large number of classes, selected from schools scattered over a wider region so that the distribution of the measures of the six primary variables could be standardised.

Another direction of further research will be to probe into factors which affect the attitude development, especially in men-teachers. In this study, as well in an earlier study by the author (his M.Ed. dissertation), it is found that the women teachers show better attitude towards the teaching profession
than men teachers. Hence there is an urgent need to probe
deeper to find out why men teachers have poor attitude.

The procedure for assessing the classroom climate as
described and followed in this investigation takes roughly two
full periods of 45 minutes each, followed by the time required
for processing. No attempt was made to reduce this time factor
because, the reliability was considered more important. What can
we do to reduce this time factor and assess the classroom climate
quickly? This needs further investigation.

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