CHAPTER 3
METHODS AND MATERIALS
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3.1 STATEMENT OF THE PROBLEM

Factors of content, context and person operate in a complex form and remain important in predicting academic satisfaction and performance of college students.

3.2 ASSUMPTIONS

1. The sources of academic satisfaction are multiple, interdependent and interactive. At a given point of time the sources of satisfaction, which are found functional, are more than one, inherent in the domains of content, context and person. Action in one domain may lead to reaction in others in varying proportions, capable of generating feelings of satisfaction/dissatisfaction of a varied order.

2. The sources in the content domain operate as intrinsically motivating to student's which may, in turn, drive them for better performance. These may be labelled as content factors. These are likely to induce in students' a sense of growth, a sense of learning, a sense of being recognized by teachers and students, and a sense of attainment. Students may find these help-
ful in developing their intellectual skills and continue education.

3. The sources in the context domain are extrinsically motivating, since these pervade the college environment. These may be labelled as context factors - the factors which if not met at a minimum level may also cause dissatisfaction and affect student performance negatively.

4. Both the content and context factors interact with each other at varied levels and may influence the student satisfaction and performance differentially. Content factors do not operate in a vacuum. The effectiveness of these shall depend upon the presence/absence of context factors, since the two are interdependent and complementary.

5. Students as individuals experience satisfaction to varying degrees due to the fact that they are born with different characteristics and socialized under different conditions. Differences may be crucial in terms of demographic characteristics, needs, goals, personality orientations, and achievement values.

6. Factors in the personal domain interact both with content and context factors separately and jointly and affect academic satisfaction and performance differentially.
3.3 GENERAL OBJECTIVE

To acquire an understanding into the nature and functioning of different factors in the content, context and personal domains that may be important determinants of academic satisfaction and performance.

3.4 SPECIFIC OBJECTIVES

The specific objectives of this research may be stated as follows:

1. To identify a set of factors effective in the content domain of academic satisfaction and discover the inter-relationships among these;
2. To identify a set of factors effective in the context domain of academic satisfaction and discover the inter-relationships among these;
3. To determine the factor content of variables in the personal domain—demographic variables, achievement values and personality orientations of college students;
4. To identify a set of factors effective in the personal domain and assess inter-relationships among these;
5. To determine factors underlying the phenomenon of overall satisfaction in academic setting;
6. To determine the direction and extent of relationship of each content, context and personal factor to academic satisfaction;

7. To determine the inter-relationships between factors of content, context and person with satisfaction and performance of students;

8. To determine the extent of variation among student groups by college type (good, average and poor) using scores on content, context, personal factors, satisfaction and performance;

9. To determine the extent of variation among student groups by curriculum (Arts and Science) using scores on content, context, personal factors, satisfaction and performance;

10. To determine the extent of homogeneity among student groups by sex (Boys and Girls) using scores on content, context, personal factors, satisfaction and performance.

11. To determine the direction and extent of relationship of academic satisfaction and performance;

12. To determine the predictability of content, context and personal factors in various combinations to academic satisfaction.
13. To determine the predictability of content, context and personal factors in various combinations to student performance.

3.5 HYPOTHESES TO BE TESTED

The following hypotheses were formulated for testing in the present research:

1. No significant relationship will exist among content factors themselves.

2. No significant relationship will exist among context factors themselves.

3. No significant relationship will exist between content and context factors.

4. Personal factors of achievement values, personality orientations and demographic characteristics will not correlate significantly with each other.

5. The factor of overall satisfaction will be only one.

6. Content factors will not predict academic satisfaction significantly.

7. Context factors will not predict academic satisfaction significantly.

8. The content and context factors together will not predict academic satisfaction significantly.
9. Personal factors in various combinations will not predict academic satisfaction significantly.

10. Personal and content factors together will not predict academic satisfaction significantly.

11. Personal and context factors together will not predict academic satisfaction significantly.

12. Content, context and personal factors together will not contribute to academic satisfaction significantly.

13. Content factors and performance together will not predict academic satisfaction significantly.

14. Context factors and performance together will not predict academic satisfaction significantly.

15. Factors of content, context and performance will not predict academic satisfaction significantly.

16. Personal factors and performance will not predict academic satisfaction significantly.

17. Factors of person, content and performance will not predict academic satisfaction significantly.

18. Factors of person, context and performance will not predict academic satisfaction significantly.

19. Factors of person, content, context and performance scores will not predict academic satisfaction significantly.
20. Factors of content, context and person will not predict student performance differentially.
21. Content factors and satisfaction together will not predict performance significantly.
22. Context factors and satisfaction together will not predict performance significantly.
23. Factors of content, context and satisfaction will not help in predicting performance significantly.
24. Factors of person and satisfaction together will not help predict performance significantly.
25. Factors of person, content and satisfaction together will not predict performance significantly.
26. Factors of person, context and satisfaction together will not predict performance significantly.
27. Factors of person, content, context and satisfaction together will not predict performance significantly.
28. Satisfaction and performance were independent of each other.
29. Student perceptions of content, context, personal factors, satisfaction and performance did not vary by college type (good, average, poor).
30. Student groups did not differ in perceptions of content, context, personal factors, satisfaction and performance by curriculum.
31. Sex differences will not lead to significant variations in the perception of content, context, personal factors, satisfaction and performance.

3.6 SAMPLE

The sample was selected in two stages.

3.6.1 STAGE I

UNIVERSE OF POPULATION: SELECTION OF COLLEGES

At this stage secondary source materials were utilized.

Bombay University was selected as the universe for the present study. In the first instance data was collected from the University Grants Commission on type of colleges, size (in terms of their enrolment), student population, university examination results, etc. Bombay University had 119 colleges. These colleges were classified by curriculum into following categories:

1. Colleges providing instruction in Arts, Science and Commerce;
2. Colleges providing instruction in Commerce and Arts;
3. Colleges providing instruction in Commerce and Economics;
4. Colleges providing instruction in Arts and Science; and
5. Law, B.Ed., etc.

Colleges having different courses are known to differ in terms of student quality, male-female ratio and college environment (Astin, 1963; Nicholas, 1964). Also, the college characteristics like student ratio, library books, method of teaching tend to affect the performance of students differentially. There was a strong need to adopt appropriate procedures of controlling and reducing variability in the design caused by differences in college characteristics. A careful scrutiny of the data on all colleges and its comparison in terms of similarities and differences was, therefore, imperative prior to selection of colleges.

SIMILARITIES IN COLLEGE CHARACTERISTICS

1. SEX

Except a few, all colleges were co-educational.

2. MANAGEMENT

All colleges were controlled by the State Government.

3. STUDENTS IN SHIFTS

Most of the colleges had two shifts operative morning and day. In Arts courses most employed students joined the morning shift, whereas unemployed students joined the day shift.
DIFFERENCES IN COLLEGE CHARACTERISTICS

1. LOCATION

Some colleges were located in the city (within the university campus) and some outside the city (outside the campus). Colleges could, therefore, be grouped in terms of city and suburban colleges.

City colleges had mainly students from public schools and higher socio-economic status, whereas suburban colleges had students from middle/lower socio-economic group and from vernacular schools. Students in later type were relatively more caste conscious, conservative and had inadequate interpersonal interaction with each other.

2. ENROLMENT

Colleges differed in terms of number of students enrolled. Some colleges were quite large. Also the sex ratio varied.

3. ENVIRONMENT

Colleges differed in terms of the facilities like building, extra curricular activities, quality of teachers and students in terms of their intellectual competence.

4. ACADEMIC RESULTS

Some colleges showed consistently good results, some fell in average category, whereas some others in below
average categories, on the basis of university examination results. Results on academic achievement were obtained from the office records. This information was further validated by asking teachers and students of respective colleges to rate the college as good, average and poor in terms of student performance and reputation.

The emerging three categories were:

Type A - included colleges showing results above 65%
Type B - included colleges showing results between 55% - 65%
Type C - included colleges whose results were below 55%.

Of the three types of colleges some were located in the city and some in suburban areas. It was decided, therefore, to select within each type one college from city and another from suburban area. The selected colleges had the following characteristics:

### SUMMARY OF THE SAMPLE

<table>
<thead>
<tr>
<th>Name of College</th>
<th>Type of College</th>
<th>Location</th>
<th>Total Enrolment</th>
<th>Arts</th>
<th>Science</th>
<th>Number of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruia</td>
<td>A</td>
<td>Suburban</td>
<td>3055</td>
<td>655</td>
<td>877</td>
<td>83</td>
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<tr>
<td>Wilson</td>
<td>B</td>
<td>City</td>
<td>1582</td>
<td>619</td>
<td>884</td>
<td>69</td>
</tr>
<tr>
<td>Ruparel</td>
<td>B</td>
<td>Suburban</td>
<td>2522</td>
<td>844</td>
<td>935</td>
<td>67</td>
</tr>
<tr>
<td>Bhavan's</td>
<td>C</td>
<td>City</td>
<td>3135</td>
<td>940</td>
<td>982</td>
<td>67</td>
</tr>
<tr>
<td>Khalsa</td>
<td>C</td>
<td>Suburban</td>
<td>2875</td>
<td>727</td>
<td>613</td>
<td>96</td>
</tr>
</tbody>
</table>
3.6.2 STAGE II

SELECTION OF STUDENTS

Bombay University had three years undergraduate courses. The sample strata for the present study, therefore, consisted of students of first, second and final year of Arts and Science courses. From each selected college 200 students, (100 from Arts and 100 from Science courses) were selected at random making the total sample N = 1200. In terms of curriculum these represented 600 Arts and 600 Science students. By sex there were 600 boys and 600 girls.

3.7 VARIABLES

(a) MATCHING VARIABLES
   1. Sex
   2. Curriculum
   3. Type of Colleges

(b) INDEPENDENT VARIABLES

1. Content of Education

   It referred to the factors implicit in the function and goals of the educational organization—factors which contributed to satisfaction only and might motivate students for better performance. These included personal growth, achievement, recognition, intellectual satisfaction, personal interest and education itself.
2. Context of Education

It referred to factors in the environment of an educational institution. These were often called maintenance factors and contributed more to dissatisfaction. These included - college climate, college policies and practices, interpersonal relationship between teachers and students, status and job opportunities.

3. Personal Factors

Under this were included personal variables of -

1. Demographic characteristics of students,
2. Achievement values,
3. Personality orientation.

1. Demographic Characteristics

This included data on educational status of both the parents, their occupational status and income.

2. Achievement Values

Achievement value referred to a strong desire of the person to compete successfully with a standard of excellence or expressed interest in undertaking difficult and challenging tasks and a strong sense of optimism. Students high on achievement values might show greater satisfaction from content factors and may perform better than students scoring low on achievement values.

3. Personality Orientation

Each individual acquired a personality of his own depending on his potential traits and socialization experience. Those who are outgoing, tend to manipulate others for their own purposes successfully, might derive increased satisfaction.
(c) DEPENDENT VARIABLES

1. Academic Satisfaction

Academic satisfaction was operationalized as the student's sense of contentment from the education.

2. College Performance

College performance was defined in terms of students' academic achievement in annual university examinations.

3.8 TOOLS USED IN THE STUDY

3.8.1 DEMOGRAPHIC CHARACTERISTICS SCALE

Information on educational status of both the parents, their occupational status and income was obtained, and scored using appropriate code categories (Appendix 2 B).

3.8.2 STUDENT'S SATISFACTION SCALE

Student satisfaction scale was used as a measure of academic satisfaction. This scale was developed anew. The detailed description of its development and standardization had been given in the next chapter.

3.8.3 SENTENCE COMPLETION TEST (SCT)

The achievement values were measured using Sentence Completion Test. The Sentence Completion Test was developed by Mukherjee (1964). It had 50 fixed choice triads and the respondent was required to check the item of triad which is closest to his own opinion, belief or values and to cross out another item which is least descriptive of him. Only one of the three items in each triad is keyed
as relevant to the dimension of achievement value. The two non-keyed items within each triad had been so chosen as to have an independent rating of social desirability more or less equal to that of keyed item.

The Kuder-Richardson reliability estimate for SCT had been reported by Mukherjee to be 0.718 for a sample of 246 students studying at Indiana University. Mukherjee and Sinha (1967) reported a test-retest reliability of 0.71 for a sample of 100 Indian male graduates to whom the SCT was administered after a month and a half. Studies have also demonstrated the concurrent and construct validity of the SCT as a measure of achievement value (Mukherjee, 1964, 1965, 1968a, 1968b). Scores on the SCT had been found to be independent of subjects tendency to agree (Mukherjee, 1969) and verbal fluency (Mukherjee, 1969).

The scoring was done as suggested in the SCT manual. High scores on SCT were interpreted as a keen desire to compete successfully with a standard of excellence or expressed interest in undertaking difficult and challenging tasks and a strong sense of optimism. The following factors were reported as emerging from the factor-analysis of scores (Mukherjee, 1965b):

Factor I  - Identification with successful authority
Factor II  - Ego Ideals
Factor III - Perseverance
Factor IV  - Aspirations
Factor V - Sense of devotion to work
Factor VI(a) - Conscious fear of failure
VI(b) - Maintenance of self-respect
Factor VII(a) - Satisfaction in difficult tasks
VII(b) - Determination vs Fantasy.

A copy of the questionnaire is included in Appendix 1.A.

3.8.4 MACHIAVELLIAN SCALE V

Personality orientation was measured using Machiavellian Scale V. Machiavellianism and its measurement draw heavily upon the writings of Niccolo Machiavelli, an advisor to the power hungry Florentine prince of the sixteenth century. Christie and Geis (1970) used these characteristics, and developed a scale of personality orientations known as Machiavellian scale. Christie and Geis (1976) later standardized the scale for college students using 1196 undergraduates. In Indian setting Singhal (1978) used Machiavellian scale V on college graduates and reported it as a valid measure of personality orientations (reliability on tryout was of the order of 0.50).

Machiavellian Scale V consisted of 20 items, each item having three alternatives. The respondent was required to choose one of the three which was most characteristic of himself and one which was least characteristic of others. No response was marked for the third item.
The 20 items were responded on a 7-point scale: strongly agree, somewhat agree, slightly agree, no opinion, slightly disagree, somewhat disagree, strongly disagree. If the items were worded in the Machiavellian direction, the scale values varied from 1 for strong disagreement to 7 for strong agreement. If these were worded in the opposite direction, the scoring was reversed.

A maximum possible score of 160 was possible based on strong agreement with the 10 items worded in Machiavellian direction and strong disagreement with the 10 reversed items. The minimum possible score was 40.

Scores higher than 100 indicated tendency to indiscriminate agreement, while scores lower than 100 indicated a tendency to disagree.

A high score on Machiavellian scale was interpreted as characterising individuals who were more manipulative, could persuade others, had lack of concern with conventional morality, lacked affection in interpersonal relationship, had low ideological commitment. The High's tendency to act by what they knew made them effective in exploiting whatever resources the situation provided. They were intrinsically motivated by situation. The low Machs were more personal. Their open orientation made them less effective as strategists in the course of interaction and more sensitive in others. A copy of the
questionnaire is included in Appendix 1 B. Christie and Geis reported following factors of Machiavellian Scale V.

Factor 1 - Morality
Factor 2 - Affirmative-Negativism
Factor 3 - Duplicity
Factor 4 - Distrust in people

3.9 RESEARCH DESIGN

The present study used an ex-post factor group design (Stanley and Campbell, 1963; Kerlinger, 1969). In ex-post factor research as it did not provide for direct control of independent variables either because a manifestation of these had already occurred or because these were inherently non-manipulative, the investigator started with the observation of dependent variable (academic satisfaction and performance) and only retrospectively studied independent variables of content, context and personal characteristics for their possible effect on the dependent variables. The main as well as interaction effects of variations by sex, nature of curriculum and type of college were observed both on independent and dependent variables, since these were taken as matching variables.

Three main sources of variance were college type called treatment (A), Curriculum called level (B), and sex called unit (C). In addition, four types of inter-
action effects were treated: treatments x level; treatments x units; levels x units; and treatment x level x unit. The sample tested in the framework of given research design may be represented as in Figure 2.

FIGURE 2: DESIGN OF THE STUDY

<table>
<thead>
<tr>
<th>Treatments</th>
<th>College Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A_1$</td>
<td>$A_2$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level</th>
<th>Units</th>
<th>Sex</th>
<th>Curriculum</th>
<th>Sex</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
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<td>C1</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>0.2</td>
<td>C2</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>0.1</td>
<td>C3</td>
<td>100</td>
<td>100</td>
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<tr>
<td>0.2</td>
<td>C2</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>300</td>
</tr>
</tbody>
</table>

$\sum n = 1$

400 400 400 1200

3.10 PROCEDURE

After pre-testing of scales, data was collected from the selected six colleges. All questionnaires and schedules were administered in English. The investigator worked in a face to face situation with the subjects and
helped overcome any difficulty encountered in comprehending. Permission for interviewing students had to be taken separately from each college authority. Authorities in all the colleges had kindly agreed to allow students for participating in the study during college hours.

Students were tested in small groups of 10 - 15 at a time, in two sessions of approximately one hour each. They were assured of the confidentiality of responses. The total data was collected personally by the investigator. The average testing time was 2 hours, though some students took two and a half hour. The three questionnaires were given in a random order to different groups. A brief interview was also conducted with students using two open ended questions - what they liked best? and, what they liked least? in college education. Students participated in the process of data collection quite happily.

3.11 STATISTICAL ANALYSIS

Data had been analyzed using the multivariate methods of analysis, because this analysis can detect difference of any sort and provide a logical basis for
interpreting the individual differences. The following multivariate methods of analysis were used.

3.11.1 FACTOR ANALYSIS

Factor-analysis was known as a powerful method of statistical analysis that aimed at explaining relationship among numerous variables in terms of relatively few underlying factor variates. The data on student satisfaction scale, demographic characteristics, achievement values and personality orientations had been factor analysed using the principal component method of analysis. Factor-extraction was stopped when eigen value touched the value of 1. The factor matrix was rotated using varimax criterion (Kaiser, 1958).

3.11.2 ANALYSIS OF VariANCE

The study employed 3 x 2 x 2 factorial design. This meant three-types of colleges will be treated at two levels of sex and curriculum each.

3.11.3 STEP-WISE REGRESSION ANALYSIS

The step-wise regression analysis (Bock, 1975) focused on picking up the best set of predictors variables in determining the statistical significance of their prediction of the criterion. Using academic satis-
faction and performance as two criteria, step-wise analysis was applied to content, context and personal variables data.