

C H A P T E R - I I I

METHODS AND PROCEDURES

3.0.0 INTRODUCTION

"Teaching, since it is a specially delegated function, is or should be a skilled occupation, if not a profession" (Yoakam & Simpson, 1949)."

"Teaching requires great skill and much knowledge (Clark & Starr, 1962)".

Being a skill 'teaching' has a mode of action. And since it involves different types of individual teachers, students and subjects matter, there will be a number of modes or methods of teaching. Each method has got its own merits and fields of operation. 'Lecture' as one of the major methods from ancient times, responded itself to the changing situations and still remained to be the main method of teaching. In spite of this fact it appears that many a 'lecture' fail to deliver the goods. It is so because the very nature of lecture method is such. Still an effort could be made profitably to streamline it by setting down certain 'factors' which go to make a lecture effective and also to arrive at certain dimensions i.e., ways of using a particular factor appropriately.

To achieve the objectives of identifying the factors and dimensions, the present research has been undertaken. A research design has been prepared. This chapter not only presents the research design but it^{also} presents the sample chosen, and the tool constructed for the purpose. It further explains the statistical methods used to

analyse the data and to arrive at a common set of factors and dimensions which go to make a lecture effective at college level teaching.

3.1.0 The Problem:

There are methods and methods and methods of teaching. From Monitorial to Montessori, from Didactic to Discussion, from Project to Prelection, from Play way to Problem solving, from Lecture to Laboratory instruction, from Socratic to Supervised study, there are scores and scores of methods, each claiming a prominent position in the fields of education and communication, and each promising to contribute in its own peculiar way to the dissemination of knowledge.

Of all the methods that are pursued, lecture seems to have immense popularity. Though it claims to have a hoary past it is said to have developed during the medieval centuries and assumed the present form of perfection during the period of renaissance. Even today it is next to none in its popularity eventhough the technological advancement has generated many a method. Its popularity is not confined to a few academic disciplines. It appears to be the most favourite form of communication in almost all disciplines including the ones which involve a lot of demonstration and practical work. Whenever such practical work is there, the lecture either precedes, or follows the actual work.

The modern era is marked by an exploding numbers of students all over the world. Democracy and the implied concept of equalization of educational opportunities are increasingly becoming popular which put the children in educational institutions in massive numbers. Earlier, education was the privilege of a favoured few. Now the under privileged and the deprived are striving to catch up

with the favoured few by exposing themselves to modern education. In such a situation of exploding numbers lecture method seems to be the only dependable method through which huge numbers can be educated with utmost economy of time and money. Other methods too do have their own advantages but they can serve only a limited clientele inspite of huge investments made. In developing countries where financial constraints are the usual features, the rest of the methods which are individual or small group oriented, become a luxury. Probably lecture could be the only dependable method in such a situation. Hence, the popularity of lecture as a method of teaching at various levels of education.

Though the lecture method is the most popular method no deliberate scientific attempts have so far been made to improve upon it. It is said that the value of formal lecture seems to depend more upon the special abilities and qualifications of the individual who develops and delivers it (Brown & Thoroton 1971). The ability to lecture well is a skill which few possess but which many can develop if proper attempts are made (Lancaster, 1974). But nothing serious has been done to analyse the lecture method and to find out which particular aspects or elements make a lecture more effective. The review of literature presented under chapter 2 reveals the dearth of well planned comprehensive and scientific research attempts made in this direction. In view of its immense popularity empirical research covering lecture method should have captured research attention but no worth-while work has been turned out so far and so there is a great need to undertake research covering this area.

One scientific way of attempting a research in this area is by approaching the users of this method at the

college level viz., the teachers, and asking them their opinions about an effective lecture, its constituents and ingredients. The clientele of the users of this method, that is, the students, too could be consulted as the effectiveness of any lecture could be gauged from the reception it gets by the target audience.

Regarding the possible constituents or ingredients of a lecture a variety of factors could be conceived. A factor can be defined as an activity or quality which an individual teacher must perform and/or possess in order to make his lecture purposeful to himself and useful to his students to achieve the desired results.

But there are a number of ways through which the activity (factor) can be performed. Such ways of performing activities are defined as dimensions.

The factors and dimensions used in a lecture need not necessarily be identical in all the faculties as the nature of the subject matter may be conceived to merit different treatments, thus requiring different factors and dimensions.

In assessing an opinion of the teachers and students thus it was felt necessary to include in the sample of teachers and students from different faculties. In view of the limitations of the research only three faculties were considered, including arts, commerce and science.

In consultation with the sample drawn from a variety of tertiary institutions stretched over Andhra Pradesh, the factors and dimensions which make a lecture effective, were sought to be evolved. Thus the main objective of the research under report was to derive factors that make a lecture effective at college level.

3.2.0 The need and significance of the problem:

Lecture has been and still continues to be the main method of transmission of knowledge in all educational institutions i.e., college and university education.

While recruiting teachers to educational institutions their competence in the content area is taken into consideration. Nobody bothers about the incumbent's ability to communicate properly in the classroom by way of a lecture. The individual is thrown into the ring of the classroom without any orientation in the art of communication given to him. Very many newcomers fumble and blurt and are very often hounded out by the youngsters whom he/she is exposed to. The lecture halls are full of such secrets which the new teachers do not share with others. The first few years are necessarily a period of stress and strains, and trials and tribulations. The experience thus they undergo is agonizing. It is only a fortunate few who through trial-and error method build up some confidence and communicate in a satisfactory way in a lecture room. During these years the students do not get much benefit out of the teachers. And some teachers of course remain only at that unsatisfactory level of communication throughout their career as teachers.

A lot of public/private money is invested in enabling the prospective teachers developing competence in the subject areas. But no care is taken to see that he can effectively give a lecture in a classroom.

The individual is left to the mercy of the situation and the college teacher, particularly in India and also in so many other countries, is never exposed to any type of orientation.

The researches conducted in the methodology are normally confined to the kind of methods that are used in schools as the research and training in methodology is mainly confined to the school system. So no worthwhile research in the area of lecture method has been undertaken so far and this probably is a comprehensive research attempt made in the said area.

The findings of this research would help not only the personnel who are incharge of training teachers but to all teachers working in colleges who mostly use lecture as the prime method of communication; the findings of this research would certainly help the teachers in making them effective teachers only if they care to go through them (findings).

This would be a unique contribution in the field of methods of teaching.

3.3.0 Statement of the problem:

The investigation under report was undertaken with an objective to find out answers to the following research posers.

1. What are the factors that make a lecture effective in teaching arts subjects, according to the (1) teachers and (2) students of Arts faculty?
2. What are the factors that make a lecture effective in teaching commerce subjects, according to the (1) teachers and (2) students of Commerce faculty?
3. What are the factors that make a lecture effective in teaching science subjects, according to the (1) teachers and (2) students of Science faculty?

4. What are the dimensions of various factors that make a lecture effective in teaching arts subjects, according to the (1) teachers and (2) students of Arts faculty?
5. What are the dimensions of various factors that make a lecture effective in teaching commerce subjects, according to the (1) teachers and (2) students of Commerce faculty?
6. What are the dimensions of various factors that make a lecture effective in teaching science subjects, according to the (1) teachers and (2) students of Science faculty?
7. What are the common factors and the common dimensions of various factors that make a lecture effective in teachers and students of the arts, commerce and Science faculties.

3.4.0 Objectives of the study:

The objectives of the present research were to find out:

1. The factors that make a lecture effective in teaching arts subjects according to the (1) teachers and (2) students of Arts faculty;
2. The factors that make a lecture effective in teaching commerce subjects according to the (1) teachers and (2) students of Commerce faculty;
3. The factors that make a lecture effective in teaching science subjects according to the (1) teachers and (2) students of Science faculty;

4. The dimensions of various factors that make a lecture effective in teaching arts subjects according to the (1) teachers and (2) students of Arts faculty;
5. The dimensions of various factors that make a lecture effective in teaching commerce subjects according to the (1) teachers and (2) students of Commerce faculty;
6. The dimensions of various factors that make a lecture effective in teaching science subjects according to the (1) teachers and (2) students of Science faculty; and
7. The factors and dimensions of various factors in common that make a lecture effective in teaching arts, commerce and science subjects according to the (1) teachers and (2) students of Arts, Commerce and Science faculties.

3.5.0 Limitations of the study:

In view of the temporal and financial constraints it was not possible to make the study a very broad based one. So, only a few districts in Andhra Pradesh were covered in drawing the sample for the research.

The districts that were covered were Ananthapur, Chittoor, Cuddapah, Kurnool, Nellore, Prakasam, Guntur, Krishna, East and West Godavari, Visakhapatnam, Vijayanagaram, Mahboobnagar, Warangal and Hyderabad.

The research again was confined to a few subjects including History, Economics, Political Science, Psychology, Sociology, Botany, Zoology, Physics, Chemistry and Commerce.

The subjects like mathematics and languages and other

less popular subjects like geography were not taken because of the said constraints.

The research had to depend only on one "schedule". No interviews wherein some indepth study could be made because of the limitation of time.

The study is essentially an exploratory poineering work and so it suffers from the limitations of all such poineering ventures.

3.6.0 Definitions of terms used:

Lecture: 'Lecture' for the purpose of the present study is defined as an instructional procedure by which a lecturer seeks to create interest, to influence, to stimulate, or mould opinion, to promote activity, to impart information, or to develop critical thinking. Illustrations like maps, charts or other visual aids may be employed to supplement the oral technique.

Factor: 'Factor' for the purpose of the present study is defined an activity or quality which an individual lecturer must perform and/or possess in order to make one's own lecture achieve the desired results.

Dimension: 'Dimension' for the purpose of the present study is defined as the way of using or performing a particular factor.

3.7.0 Design of the study:

A diagrammatic representation of the design of the study is given in the Figure 3.1. The factors, and in Figure 3.2 the Dimensions.

Fig. 3.1 DIAGRAMMATIC REPRESENTATION OF THE RESEARCH DESIGN - FACTORS

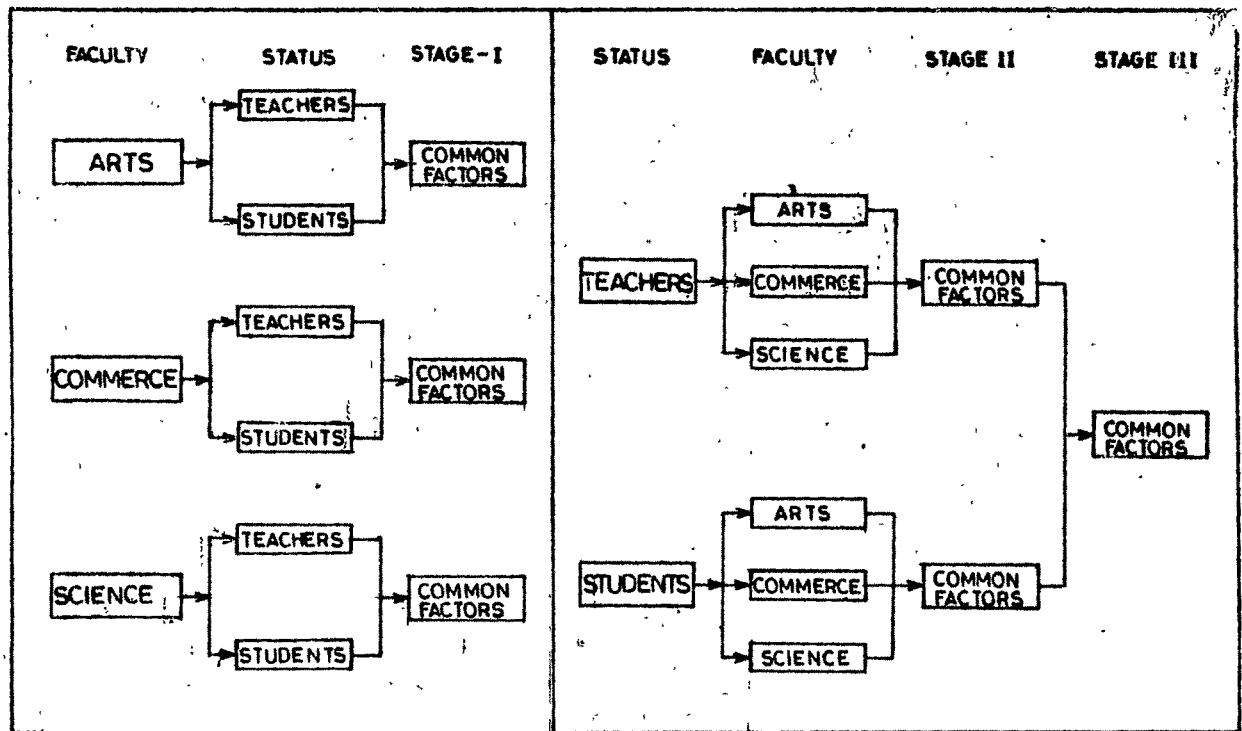
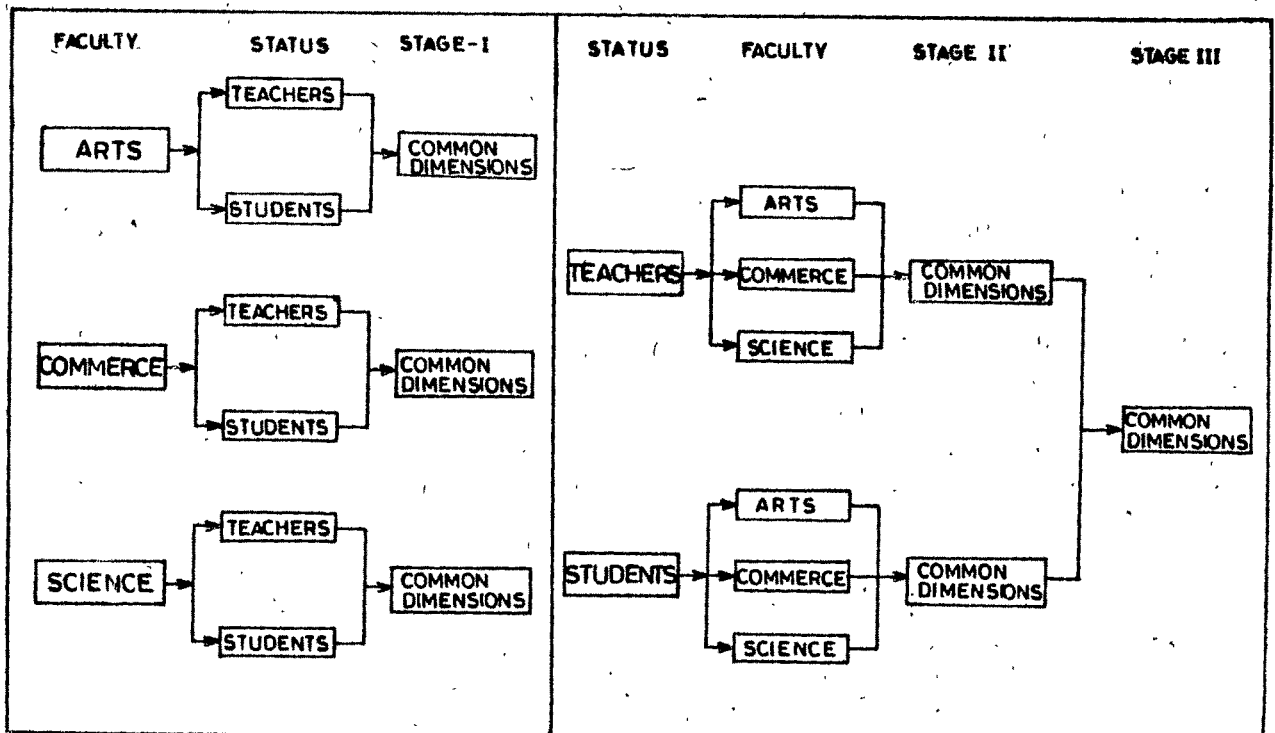


Fig. 3.2 DIAGRAMMATIC REPRESENTATION OF THE RESEARCH DESIGN - DIMENSIONS



The research under report studied the teachers and students, both male and female, from three faculties of Arts, Commerce and General Science.

The common factors which were regarded as components of effective lecture by teachers and students of arts faculty, commerce faculty and science faculty, were sought to be identified separately at the stage I level. At the stage II, the common factors for teachers were sought to be arrived at by taking into consideration the factors preferred by teachers of arts, commerce and science faculties. And the common factors for students by taking into consideration the factor preferred by the students of the arts, commerce and science faculties.

Finally the common denominators of both the lists of common factors of teachers and students were designed to be worked out at stage III.

This set of common factors could be considered as the most accepted set of factors of effective lecture in teaching arts, commerce and science subjects.

It was assumed that the subjects they handle influence their opinion which conditions their responses. And hence, faculty was taken as teacher variable for the study.

The second group consisted of the students of final years class of first degree. They being relatively matured individuals in terms of their age, it was also assumed that they possess mental maturity so as to discriminate an effective lecture from an ineffective one and discern the factors and dimensions of an effective lecture. For the students, the faculty was taken as variables of the study.

A reference was made to the experts in the field at the pilot study stage to finalise the possible factors and dimensions of an effective lecture.

The sample for the final study was chosen from the degree college student-teacher population.

Under caption 3.8.2.1 pilot study is dealt with.

3.8.0 Method, procedure and sample:

The method employed, the procedure followed and the sample selected and tools used to realise the objectives of the study are presented under the following captions.

3.8.1 Method:

The present study made use of the Survey method of research.

3.8.2 Procedure:

The study sought to formulate the set of factors and dimensions which ~~to~~ make the lecture effective at college level teaching. This objective was sought to be realised by eliciting responses from both teachers and students, who are the two major partners of teaching-learning situation.

3.8.2.1 Pilot study:

A preliminary study of the literature, both conceptual and research, has helped the investigator to identify the factors, and the dimensions.

The pilot study was designed with the objectives
(1) to ascertain the consensus of senior teachers and methodology experts regarding the adequacy of the factors tentatively listed by the investigator and to (2)^{to} find out the

adequacy of the dimensions, through which those factors are sought to be realized.

The tentative lists of factors and the dimensions were referred to senior teacher of various faculties, and methodology experts of the M.S. University, Baroda. They were requested to advise on the adequacy or otherwise of the factors and dimensions listed.

On the basis of their suggestion the final lists of factors and dimensions were finalized. The finalized list of factors were put in the tool (1). 'Factor categorization schedule and the finalized list of dimensions were put in the tool (2) 'Dimensions categorization schedule'.

3.8.3 Sample:

As the design of the research presented in Fig. 2.1 shows the population of the study consisted of the academics working in first degree colleges of arts, commerce and science and the students studying therein. In view of the limitations of time and in view of the requirements of a survey research it was thought appropriate to select a sample of 800 consisting of both the teachers and students. Expecting two-thirds returns of the questionnaires 1200 questionnaires were distributed among the sample. And the following are the returns.

Table 3.1 Sample: Faculty and Teacher-student-wise

Faculty	Teachers	Students	Total
Arts	135	143	278
Commerce	61	135	196
Science	171	164	335
Total	367	442	809
Percentage	45.36	54.63	100

As is evident from the Table 3.1 out of a total of 809 questionnaires received back over 45.36 per cent and 54.63 per cent ^{teachers and} students responded.

The sex-wise split-up of the respondents is given in the Table 3.2

Table 3.2 Sample: Teachers and Students, Faculty and sex-wise

Faculty	Male	Female	Total
Arts	221	57	278
Commerce	164	32	196
Science	247	88	335
Total	632	177	809
Percentage	78.12	21.88	100

As the Table 3.2 shows that the sample consisted of 632 male and 177 ~~male~~ female subjects which is roughly in the ratio of 78 and 22 per cent, a ratio which generally reflects the male female ratio of academic community involved in the tertiary section of education.

The male, female ratio of the student-teacher sample is given in the Table 3.3

Table 3.3 Sample: Teachers & Students, Sex and Faculty-wise

Faculty	Teachers			Students		
	Male	Female	Total	Male	Female	Total
Arts	114	21	135	107	36	143
Commerce	56	5	61	108	27	135
Science	129	42	171	118	46	164
Total	299	68	367	333	109	442
Percentage	81.47	18.53	100	75.34	24.66	100

The male female ratio of the teacher is roughly 81 to 19 and that of students is 75 to 25. These ratios generally reflect the male female ratio of college population in Andhra Pradesh.

3.8.4 The tools:

A study of the research design given in Figure 3.1 shows that there was scope for the construction of two tools, to formulate the set of factors and the second tool, to formulate the set of dimensions.

In the teaching learning situation, hitherto, the teacher was generally the ultimate authority. What he taught was the subject matter, and in what way he did teach was the method of teaching. He never involved the student in the process. So it was a one way traffic approach. But slowly this trend is changing. 'His' activities are being researched into and 'his' behaviour in the classroom situation is being structured. Some of the efforts in this direction were, Flander's Interaction Analysis, pupil's evaluation of their teachers, and teacher accounting. However, in our country these efforts seem to be mostly restricted at the experimental level to the secondary school level teachers. The teaching community at the college level generally seems to be, still, averse to the idea of research into their classroom behaviour. They seem to be strongly opposed to any programme of pedagogical orientation.

The objective of the present study-to formulate the set of factors and dimensions of effective lecture-could be achieved in more than one way. It could be by observing 'lectures' as they are delivered in a classroom situation/or by making use of interaction analysis on the lines of Flanders. Yet another way could be by using students' evaluation of

lectures and eliciting their concept of effective lecture. But, both the ways, generally seem to evoke negative response from the college teachers. The other way of realising the objectives of the study could be through a questionnaire type of tool, (Whites, 1974), wherein the responses are controlled in the sense that they are prescribed with a scope for the individual variation. Consequently on the basis of review of the literature thirty six factors were included in tool one, and the teacher and student, the two main figures in a teaching-learning situation, were asked to give their judgement on each of the factors. Under caption 3.8.4.1 construction of the tool is dealt with.

The research envisaged formulating not only the factors involved in the process of a lecture, but even the way of using the factors. The way of using the factor was designated as a dimension and hence, the investigation included not only the formulation of the factors that make a lecture effective, but even the dimensions of the factors.

A separate tool to study the dimensions of the factors was designed to be prepared. The same tool is discussed under the caption 3.8.4.2

The list of factors and the list of dimensions were not considered final. An opportunity was provided to the subjects to add or delete factors to those already given in the lists.

3.8.4.1 Construction of the tool:1

Factor Catagorization Schedule:

The objective of the present study was to identify a set of factors which can make a lecture affective.

A preliminary review of the related literature helped in constructing a tentative list of 'factors'. This tentative

list of factors was referred to as many as thirty methodology experts, and senior and experienced teachers of Arts, Commerce and Science faculties of the M.S. University of Baroda. They were asked to study the lists and suggest modifications-in view of the requirements of methodology, subject matter, and, practicability in the Indian situational context.

The experts and senior teachers, while generally approving the approach of the study and also the list of factors provided, suggested the following additions.

The factors suggested in addition to the already provided tentative list were: Setting up demonstration experiments; preparation of instructional aids and preparation of handouts.

The final list of factors contained thirty six factors. They are presented in Appendix-A.

The subjects of the study were to provide their personal data, consisting of their sex, years of experience and the faculty they belonged to, in the tool-1. With regard to their mode of response, they were to study each factor and judge whether that particular factor was the most important, less important or unimportant, from the point of view of making the lecture effective in their own subject area.

The same tool was employed for both students and teachers. The students were to judge from the point of view of an effective lecture which could maximise their learning. And the teachers had to judge the factors from the point of view of giving an effective lecture.

The respondents were to put a cross mark (x) on the number 1, 2 or 3, denoting 'most important', 'less important' and 'unimportant', respectively for each of the thirty six factors.

3.8.4.2 Construction of the Tool:2

Dimension Categorization Schedule

The second objective of the present study was to formulate the set of dimensions which make a lecture effective. Hence, the dimension categorization tool was constructed.

The process of construction of tool 2, was just similar to that of the construction of tool 1, dealt under caption 3.8.4.1

Each of the thirty six factors provided with atleast three to seven different ways of using the same. These ways were called dimensions.

The Dimensions suggested by experts in addition to the already provided tentative list were; aiming at developing a sense of enquiry, announcing title of the present lecture topic, emphasizing scientific rationale, involved in each of the concepts of the topic, relating derivations with students' laboratory observations, repeating certain points not very well taken by students, presenting mathematical derivations, quoting seemingly paradoxical situations, designed to increase students' vocabulary level, maintaining clarity and ease in communication and witty repartee.

The final list of dimensions are provided in Appendix-B.

The mode of recording response was similar to that of the mode of recording response discussed under caption 3.8.4.1

3.9.0 Analysis of the data and statistical techniques used

For the purpose of analysing the data obtained percentages of preferences were worked out for each of the 'factor' and 'dimension' group-wise. The procedure of including a particular 'factor' and 'dimension' is explained under the following captions.

3.9.1 Criterion for considering a 'Factor' preferred:

The criterion for the inclusion of a particular factor into the preferred list of factors of a group was that the particular factor needed to be judged as the most important factor by more than fifty per cent of the total respondents of that particular group e.g., the teachers of arts, students of arts, etc. In this group whichever factor was judged as the most important factor for an effective lecture by more than fifty per cent teachers was considered to be a preferred factor for that group.

At stage-I of the research design (Fig.3.1) the factors preferred by teachers and students of arts faculty were considered as common factors at stage I and are presented under the caption 4.3.1. In the same way the common factors for commerce and science faculties were arrived at and are put under the caption 4.3.2 and 4.3.3.

At the stage II of the research design the common factors that were obtained for the teachers of Arts, Commerce and Science faculties are kept under the caption 4.3.4. Likewise the common factors for the students of Arts, Commerce, and Science faculties are identified and put under caption 4.3.5.

At stage III of the research design the common factors obtained under the captions 4.3.4 and 4.3.5 were clubbed

together and considered. The common factors that accrued in both were identified and are put under the caption 4.3.6. Thus the common factors listed under 4.3.6 are the most acceptable factors of the entire teachers' and students sample-the factors that were accepted to be the most important factors that can make a lecture effective at the college level teaching.

The factors which got the highest percentage of preference of the teachers and the students' (separately) point of view were considered and put under the caption 4.4.1 and 4.4.2.

3.9.2 Criterion for considering a 'Dimension' preferred:

Under the caption 3.8.4.1 the various 'factors' of a lecture like Achieving relevance of introduction to the topic of the lecture, Describing subject matter in detail, Evaluating concepts of the subject matter etc., have been identified. But each factor could be dealt in different ways in the classroom, e.g., the factor of Achieving relevance of introduction to the topic of the lecture could be initiated in the following ways: by means of providing a brief revision of the last lecture topic, or by means of providing a gist of the present topic, or by means of announcing the title of the present lecture topic. All these possible ways of presenting the factor of, Achieving relevance to the introduction to the topic of the lecture have been defined as dimensions of that factor. Thus there is a possibility of all the thirty six factors identified having different dimensions preferred. The factors have been elaborated under the caption 3.8.4.1. The dimensions of various factors presented under the caption 3.8.4.2.

The criterion for the inclusion of a particular dimension in the preferred list of dimensions of a group was that the

particular dimension needed to be judged as the most important dimension by more than fifty per cent of the total respondents of that group.

There was a possibility of more than one dimension being selected for a particular factor. In such case the dimension which got the maximum percentage of response was considered to be the highly preferred dimension, followed by the other dimensions which got more than fifty per cent response.

At stage I of the research design (Fig. 3.2), the dimensions preferred by teachers of arts faculty, were considered. Common dimensions for Arts faculty at stage I are derived and put under the caption 4.3.7. In the same way the common dimensions for commerce and science faculties are arrived at and put under the caption 4.3.8 and 4.3.9.

At the stage II of the research design the common dimensions that were obtained for the teachers of Arts, Commerce and Science faculties are kept under the caption 4.3.10. Likewise the common dimensions for the students of Arts, Commerce and Science faculties were identified and are put under captions 4.3.11.

At the stage III of the research design the common dimension obtained under the captions 4.3.10 and 4.3.11 are clubbed together and considered. The common dimensions both were identified and are put under the caption 4.3.12. Thus the common dimensions listed under 4.3.12 are the most acceptable dimensions of the entire teachers, and students, sample the dimensions that were accepted to be the most important dimensions that can make a lecture effective at the college level teaching.

3.9.3 Statistical technique employed:

Since the nature of the study was exploratory, simple percentages were worked out for each of the factors and the dimensions, group and faculty wise. Analyses based on the percentage of preference of each factor and dimension were made.