

CHAPTER II

REVIEW OF THE PREVIOUS RESEARCHES

II.1 INTRODUCTION

In the preceding chapter the significance of the problem is discussed. This chapter presents an overview of the relevant studies in abroad and India. It is done with a view to gain insight into the problem.

Better teaching is an essential condition for better learning, but, 'how to teach better' is a problem that has always challenged the thinking mind. Systematic studies on teaching, however, began to appear in the first and second quarters of the present century. Barr's study (1929) on characteristic difference in the performance of the good and the poor teachers may be considered as one of the initial milestones. But in the last two decades the number of studies on teaching has increased well enough to justify the publication of two 'Handbooks of Research on Teaching' (Gage, 1963; Travers, 1973) and numerous other reviews and reports of researches pouring in. (Morsh and Wilden, ¹⁹⁵⁴ Mitzel, 1960, Orleans and other, 1952, Fattu, 1962, Johnson, 1955).

The present investigation aims at studying questioning in particular. But questioning cannot be studied in isolation,

therefore, it has been studied in the context of teaching. So, the review of studies on teaching as well as the review of studies in questioning is presented here. For organizational purposes, the review of researches is categorised into two groups : (i) Trend of Research on Teaching, (ii) Trend of Research on Questioning. But, as questioning does not have much place in isolation, some of the studies may find relevance in both the groups. This classification here is only for convenience and for getting better understanding of the problem.

II.2 TREND OF RESEARCH ON TEACHING

In the beginning studies on teaching were largely influenced by the facts of 'learning'. Even teaching was considered to be a mirror image of learning. It was thought that if one knows about the aspects of learning one could develop a better way of teaching by adopting these aspects in the process of teaching. But in the contemporary researches on teaching, focus is gradually shifting towards studying it from its own independent standpoint. This has given rise to the trend of conceptualising teaching in terms of its components or teaching behaviours and the ultimate aim is to establish a theory or theories of teaching.

The research attempts to study teaching systematically in India were started a decade and half back. By now, considerable work has been done in this area and efforts are being made to

develop a theory of teaching. While reviewing the researches on teaching, the studies have been categorised under two different heads :

1. Studies conducted abroad, and
2. Studies conducted in India.

This categorisation is made for the sake of convenience and clarity. Review of the researches conducted abroad is presented in the beginning, because, the researches in this area first started abroad and then were followed in India. Therefore, the review of researches conducted abroad would provide a background for the Indian studies. This background would facilitate the understanding of Indian researches in a better way.

II.2.1 Studies conducted Abroad

The discussion of the researches on teaching will be clearer if the nature of the variables studied, and the approaches to methodology adopted are kept in view. With respect to variables, the studies on teaching fall into three major categories accordingly as they investigate (i) presage, (ii) process and (iii) product variables. Commonly studied presage variables are teacher's age, sex, experience, speech ability and so on. 'Process' variables include teacher asking questions, pupil responding, teacher giving feedback, etc. The outcomes as a result of the process constitute the 'product' variables such as pupils' attitudes, achievements, abilities etc. Thus, the studies on teaching are found to examine the

relationship between presage-process, presage-product and process-product variables. Process-product studies seem to be of crucial importance in view of their possibility to establish relationship between teaching behaviour and pupil outcome and there is a definite stress on such studies in order to locate teacher effectiveness. With regard to methodology adopted by the contemporary researches on teaching. Rosenshine and Furst (1973) have introduced the paradigm of 'descriptive-correlational-experimental loop' for the study of teaching which is parallel to the classification of such studies into descriptive, presage-process, and process-product studies.

With the above ideas in view one may perhaps explain the failure of the first major study, that of Barr and his associates (1967) at Wisconsin, to single out significant factors of teacher effectiveness. In these studies teacher effectiveness has been evaluated on the basis of the criteria like (i) efficiency rating of one sort or another, (ii) measured pupil gains. Different members of the Wisconsin group (Jayne, 1945, Schmid, 1950, Larnke, 1951, Frickson, 1954, Bar, 1961, and Peronto, 1967) used different techniques and criteria in their study. It can be seen that these studies have attempted to establish a direct relationship between the presage and product variables by-passing the process variables, which may be attributed to failure of obtaining any consistent and

significant results. However, the results of these studies have left for the succeeding researchers a clue to the importance of process variables in studying teacher effectiveness.

Representative analytical and descriptive studies were made by Ryans (1969), Smith and Meux (1962), Bellack et al. (1966), Hughes (1963), Perkins (1965), Waimon (1962) and Taba (1964). Ryans (1969) studied teacher behaviour in terms of components, patterns, variations and relationships and identified patterns of teacher behaviour which differentiated teachers with respect to some personality characteristics. Smith and Meux have analysed the oral discourses in seventeen high school classes in different school subjects, and have identified certain logical operations in teaching. However, a significant observation has been that teachers do not employ logical operations as appropriate in adequate measure. Bellack and others (1966) analysed the linguistic behaviour of fifteen high school classes. The amount of learning by the pupils was also measured. They identified a number of pedagogical moves and teaching cycles. But the more discussed topics were not found to produce more learning. Hughes (1963) categorised teaching acts into seven classes and observed thirty-five teachers for ninety minutes in each class. She asserted that teachers demonstrated different patterns in teaching and that responsiveness on the part of the teacher to children's remarks, questions, etc., would lead them to better involvement in content and stimulate use of higher mental processes.

Perkins (1964) attempted to measure student-behaviour, learning activity, teacher behaviour and teacher role variables which were presumed to be related to differential achievement. Large percentages of teachers were found to demonstrate listening-helping behaviour, while very few teachers were found to use pupils' answers or ideas, ask thinking questions, or to use praising. Waimon (1962) studied correlative teachers' responses in the class in nineteen lessons. He found that learner directed correlation mostly sought to change the learner's needs and goals or his learned ideas or skills. Taba's (1964) endeavour was to analyse and relate teaching strategies and thought processes. She observed that findings about general cognitive styles failed to shed light on the processes by which these styles are acquired. This is why she emphasised specific teacher behaviour that exerted influence on the thinking of students. The nature of classroom questioning, what the teacher gives to the students or takes from them, the timing of these acts in the total sequence which ideas are picked up for elaboration and which are passed over, points at which approval and disapproval are given, etc., are some of the crucial aspects of teaching behaviours which, Taba asserts, are possibly related to development of pupils' ability to think.

Studies have been undertaken to relate teacher characteristics as predictor variables to aspects of process taken as criterion variables. Some studies, again, have sought to relate descriptive

variables with the students' achievement or other outcomes. These two types of studies have adopted correlational approach in respect of methodology.

Furst (1967) involved fifteen teachers and 345 pupils for seven hours of interaction. Pre-test and post-test on knowledge were administered, with four days of instruction in between. Teachers of high achievement group tended to be more indirect, low achieving teachers were more direct, and teachers of average groups tended to minimise affective behaviour, concentrating on lecturing. Herman (1967) also had similar findings.

Gage (1963) suggested that investigators in the area of teaching and teacher behaviour should focus upon specific aspects of teacher's task rather than on all parts of teaching at a time. Explaining ability, feedback given by the teacher, pupil participation, may be some of these aspects which the researchers may do well to work upon. Accordingly Fortune, Gage and Shutes (1966) compared the explaining ability of forty student teachers across different topics with different groups of pupils and concluded that this ability is likely to change with different topics, but, remain relatively constant across different groups of pupils. Hiller, Fisher and Kaiss (1968) as well as Dell and Haller (1968) tried to find out the significant components of explaining ability of teachers. They found 'verbal fluency' and 'vagueness' to be reliably related to teachers' effectiveness across the lessons. After a thorough examination

of a large number of studies. Rosenshine (1966) concluded that gesture and movement, rule and example pattern, and explaining links are three significant variables of teaching which may differentiate between more effective and less effective teachers. Nuthall (1970) commented that these variables related to organisation of teacher communication, but sequence of ideas and their supporting details need further research. Hughes (1971) studied different aspects of pupil participation, e.g., degree and frequency, trying to relate them to pupil achievement. He found that the amount of pupil participation has no effect at all on the learning of the sample pupils of eleventh grade. Similarly Church (1971) could not get significant results for pupils' opportunity to answer with their achievement. He commented 'it may be possible that though questions are important in promoting pupil learning, the actual answer of those questions may not matter much.' Zahorik (1968) concentrated his attention on developing a system for analysing the nature and value of the teacher's reactions or 'feedback' following pupils' responses. It was found that the frequency of some kinds of feedback varied with the grade level, with the stage of development of the lesson, and with teachers' judgment of the correctness of the response. Church (1971) also studied feedback types such as, no comment, repetitions of all parts of pupils' answer, simple comments, complex comments and summary

comments. Analysing the effects of 'feedback as a whole' he found it to be related to pupil achievement.

From the foregoing discussion it is evident that process-product studies have come to the forefront of research on teaching. 'What kinds of classroom events are related to what kind of learning outcomes?' is the important question, as posed by Bellack and others (1966), which still remains to be answered by the researchers in the field. Earlier Gage (1963) pointed to the needs for research relating teacher characteristics to pupil growth. After an extensive survey of literature Gage identified five global characteristics as components of effective teaching. These are : warmth, cognitive organisation, orderliness, indirectness and problem-solving ability. Similarly, in their review of process-product studies, Rosenshine and Furst (1971) identified five process variables that received strong support in correlational studies relating them to pupil achievement. These variables are : clarity, variability, enthusiasm, task orientation and business like behaviour, and student opportunity to learn. It has been observed by the authors that all the relationships between theoretically or logically appealing process qualities and student achievement are not significant, and not even positive in all cases.

By and large the experimental studies on teaching and teacher behaviour have attempted to investigate (i) the effect of process differences or treatment variations on achievement

or other outcomes in pupils, and (ii) changes in teacher behaviour and teaching-learning process arising from training in interaction analysis, feedback and such other treatments on teachers and student teachers. Biddle (1967) after reviewing research on teacher effectiveness pleaded for agreement on 'educational effects' to be produced in pupils to determine components of teacher effectiveness. Turner (1971) thinks that if research on teaching is really to be of value it must ultimately be able to show the relationship between teacher education programmes and subsequent teacher performance. Rosenshine and Furst (1971) suggested : 'Experimental studies in teacher education to involve a number of steps. The first step is to determine whether teachers trained for specific performance criteria behave differently in their classroom from teachers who do not receive such training. But it is more important to determine whether the trained teachers engender greater cognitive or affective growth of their students compared to their controls.' These ideas have been put to research by many a researcher in the area, viz. by Miller (1966), Gunnison (1968), Carline (1969), Worthen (1968), Herman et al. (1969) and Dormins (1971), Miller (1966) experimented on differential effectiveness of 'responsive teaching' and 'directive teaching' with four lessons of four teachers. It was found that students in former group did not view the lessons more favourably and display no significantly higher

levels of thinking as compared to those in the latter group. However, studies by Snider (1966), Berkin (1967) and Messal (1967) did not confirm such result. Domino (1971) looked into the interaction between the students' achievement orientation and the teaching style they are exposed to. In the confirming style of teaching instructional material was presented solely through lectures, great emphasis was placed on factual knowledge, classroom attendance was required, and course content closely paralleled text-book assignments. In the independent style of teaching emphasis was given to ideas rather than facts and to active participation of the students in the learning process. Results indicated that there was no significant main effects of teaching style. In a six week instruction conducted with grade VIII pupils, Lashier (1965) found positive relationship between indirect verbal behaviour of student teachers, and achievement and constructive attitude of pupils. Flanders (1965, 1969, 1970) conducted a number of studies involving different grades and different subjects to find out the relationship between teacher influence and pupil achievement and attitudes. According to Flanders the conclusions can be summarised as follows : '... Six out of seven projects, it appears that when class-room interaction patterns indicate that pupils have opportunity to express their ideas, and when these ideas are incorporated into learning activities the pupils learn more and develop more positive attitudes towards

the teacher and the learning activities.' (Flanders, 1970, p.401). Experimenting with twenty girls and thirtyseven boys Schautz (1963) reported that indirect teacher influence produced learning increments in reall in both high and low ability groups. Soar (1966) obtained curvilinear relationship between teacher classroom behaviour and superior growth of pupils. Herman et al. (1969) matched ten teachers on the basis of teaching experience and direct-indirect ratio. Each group of teachers taught one unit in teacher-centred style. The result was inconsistent and inconclusive as it favoured teacher-centred instruction in one unit and pupil-centred instruction in the other. Honston and Pilliner (1974) experimenting on new and old style of teaching in physics reported that the 'open-ended style' of teaching was superior in achieving the more complex cognitive objectives and favourable attitudes.

Amidon and Powell (1966) conducted an experiment with four groups of fifteen student teachers in each group. The treatment given to each group was as follows : (i) Group first had interaction analysis and seminar and was supervised by a teacher trained in interaction analysis. (ii) Group second had interaction analysis and seminar and was supervised by a teacher not trained in interaction analysis. (iii) Group third had learning theory and seminar but was supervised by a teacher trained in interaction analysis. (iv) Group fourth had learning theory and was supervised by a teacher trained in learning theory. The findings

of the above experiment were as follows : (i) The student-teachers who knew interaction analysis talked less, were more indirect in behaviours, were more indirect in their interaction patterns and used more indirect influence, than those of other groups untrained in interaction analysis. (ii) The student-teachers whose supervisors learnt interaction analysis used less direct influence than other counter parts. Moskowitz (1967) on a similar design as Amidon and Powell (1966), studied attitudes of the supervising teachers. The co-operating teachers and the student-teachers received thirty hours and sixty hours training in interaction analysis respectively. The findings were as follows : (i) The trained co-operating teachers and trained student teachers used significantly more indirect teaching patterns than untrained teachers. (ii) The trained student teachers used significantly more indirect teaching patterns than their untrained co-operating teachers. (iii) There were no significant differences between the teaching patterns of untrained student-teachers and their trained co-operating teachers. (iv) The untrained student-teachers whose co-operating teachers were trained, were more indirect than the untrained student-teachers whose co-operating teachers also were untrained. (v) No significant differences were noted between the attitudes of the trained and untrained co-operating teachers towards their student-teachers. Zahn (1966) conducted a similar study about the change in the attitudes of student-teachers. He used

interaction analysis as means of supervision of student-teachers. He concluded that the method of instruction and supervision used by the supervisors affects the attitudes of student-teachers positively. Simon (1967) observed no significant differences in the group of student-teachers trained in interaction analysis, when they teach in their preferred classes. Kirk (1967) and Simon and others (1966) support the training in interaction analysis as means of developing indirect influence. They report that student-teachers trained in interaction analysis tend to be more accepting, more student initiated talk, less critical, less directive, and less silence and confusion than the student teachers trained in learning theory alone. Lohman, Ober and Hough (1967) conducted a control group experiment on 30 student-teachers each. The experimental group was trained in interaction analysis prior to student-teaching and the control group was not given such a training. They found that the student-teachers of the experimental group used more indirect and less direct teacher behaviours than the control group teachers in student-teaching and continued the same behaviour even 4 to 12 months after their training. Hough and Ober (1967) conducted an experiment of two years' duration, having five different treatments involving various combinations of methods of teaching, human relations, skills and the analysis of classroom behaviours were planned, on course revision and

evaluation. Subjects to whom, the treatment in interaction analysis were given were found to use, significantly more verbal behaviours related to higher achievement and more positive student attitudes towards their teachers and school. Hanny (1967) reported that pre-service teachers who were highly dogmatic as measured by Dogmatic Scale and who received 'less desirable' scores on the Teaching Reaction Test can be taught interaction analysis, and that they were able to use this system to control their behaviour, and used desirable behaviours that affect class-room climate. Davidson (1968) in an experiment provided feedback based on interaction analysis to a group of teachers. He found that the treatment enabled the teachers to modify their influence in the class-room such that children's critical thinking developed and a corresponding fall in non-productive thinking was observed. Wood and Others (1969) reported that using 'Reciprocal Category System of Interaction Analysis' and 'Micro-simulated teaching experiences' be the most effective organizational pattern of the methods and student teaching block. Wright, Nuthall and Lawrance (1970) in a study on shaping class-room verbal behaviour of teachers, reported that when the student teachers were provided opportunity to observe lessons, to learn interaction analysis, and received feedback through micro-teaching, they understood and used the teaching strategies better. Holcomb (1971) improved attitudes of the student-teachers through Kinescopic observation

of their teaching behaviours and providing feedback on the same.

Major Observations

The major observations from the above studies are as follows :

- i) In the earlier stages, the research studies attempted to establish a direct relationship between the presage and product variables by passing the process variables, which may be attributed to failure of obtaining any consistent and significant results. (Jayne, 1945; Schmid, 1950; Lamke, 1951; Frickson, 1954; and Bar, 1961).
- ii) There appears to be an absence of an adequate conceptual frame work. (Ryans, 1960; Smith, 1962; Ryans, 1963; Biddle, 1964; Soar, 1964; Biddle, 1967; Gage, 1967; and Turner, 1971).
- iii) Still there is lack of objective and reliable tools through which teacher behaviour could be assessed. (Ackerman, 1954; Howsam ,1960; Biddle, 1964 ; Soar,1964).
- iv) The studies have direct bearing to the classroom teaching and try to simplify the complexity of the problem. Today one could feel more optimistic to develop an adequate conceptual framework and the theory of teaching.
- v) Researchers have studied teacher behaviour in the classroom situation and tried to identify the components which facilitates the effectiveness of the teacher and which hinders the effectiveness of the teacher. But, efforts have not been made to study in depth the specific components.
- vi) From the review it is evident that process-product studies have come into focus of research. But, what classroom events are related to what kinds of learning outcomes is yet to be studied. It could be done only when each component is studied in depth and the events which precede and succeed it are researched into.

II.2.2 Studies Conducted in India

In this country educational research is still in its infancy stage. Considering this stage, it appears that research on classroom teaching has acquired a significant place. Buch (1979) rightly states that :

'Any improvement in education should essentially reflect changes in the process of teaching. The bulk of institutionalised education is carried out in the form of classroom teaching. Therefore, research in the area of teaching and teaching behaviour as exhibited in the classroom has received considerable attention. Studies on this theme, by and large, seem to reveal a definite trend.'

The studies in this area conducted so far are discussed below :

Looking into the research studies in the area of teaching and teacher behaviour from the point of view of the methodology employed, it was found that a large majority of them were descriptive. The 1970's have been a shift in the trend when experimental studies have started figuring. The studies by Roy (1970), Jangira (1972), Pangotra (1972), Sharma (1972), Lulla (1974), Singh (1974), Padma (1976), Roy (1976), Roka (1976) and Vasistha (1976) have employed experimental designs.

Mitra (1970) has broadly classified the research trend on teaching into two classes : (i) Criterion approach, and (ii) Interaction approach. Criterion approach is concerned with the criteria of teacher competence which are then sought to be

predicted by a set of variables involving teacher personality and its antecedent and environmental or situational factors. Teaching enters into this model only as a secondary variable and in a global manner, chained to the antecedent variables of personality and situation on the one hand, and to the consequences of teaching, leading to some measurable degree of effectiveness as defined by a set of criteria, on the other. Interaction approach : 'The second approach considers teaching process more directly, but considers it as classroom social interaction. The teacher in a class does something and the pupils do some other things. The focus is on an accurate description of this sequence of class-room events of teacher pupil interactional behaviour. Here the emphasis is on what actually goes on in the class-room. The consequences of teaching which inevitably figure prominently in the criterion approach are not of great or primary concern.'

For the purpose of the present investigation the research studies have been discussed keeping in mind the nature of variables. With respect to variables, studies in teaching and teacher behaviour fall into three major categories accordingly as they investigate in India too : (i) presage, (ii) process and (iii) product variables. The studies in the light of these variables have been presented here in order to provide greater clarity.

Presage studies have mainly dealt with the presage variables. The studies by Adaval (1952) and Kaul (1972) fall under this category. Adaval (1952) aimed at finding out the specific qualities needed to make the teacher successful in the profession and the motives of persons to take up teaching as their profession. The study revealed that intelligence was an important factor in determining one's aptitude for teaching. The chief motives for undertaking the profession were revealed to be love for public service and love for children. Kaul (1972) studied the differentiating personality traits and values of 124 'popular' teachers and 100 'not popular' teachers. The popular teachers distinguished themselves as more outgoing, intelligent, emotionally more stable, sober, conscientious, venturesome, tough minded, shrewd, placid, controlled, and relaxed. They were significantly high on theoretical, social, political and religious values and were significantly low on economic and aesthetic values.

The studies of Roy (1970), Mehta (1972), Pangotra (1972), Singh L.P. (1974), and Vasishtha (1976) have concentrated on process variables. All the studies except that of Mehta (1972) attempted to modify the teacher behaviour in the pre-determined direction. In this attempt, Roy (1970), Pangotra (1972) and Vasishtha (1976) have used the Flanders Interaction Analysis Category System (FIACS) as the research tool. The

results of these three studies indicated that it was possible to change the teacher behaviour by using the FIACS. Singh L.P. (1974) has gone a step further by not only using FIACS but also trying to compare its efficacy with the microteaching technique. He found that microteaching technique was more effective in changing the teacher behaviour than FIACS, when the criterion was indirect teacher behaviour. Mehta (1972) factor-analysed the teaching ability of 489 pupil teachers of Maharashtra. The investigator established that there was a general ability called 'Teaching Ability' found as a factor highly loaded with achievement variables of training.

There are a number of studies which have attempted to establish a link between the presage and process variables. Dosajh (1956) attempted to show that imagination and maturity were indicative of success in the teaching profession. The investigator found that the contingency coefficients of correlation between levels of imagination and maturity on the Horn - Hellersberg Test and levels of skills in teaching were found to be 0.71 and 0.80. Suraj Balram (1965) studied 400 graduate level teacher training students of Punjab with a purpose to find out the relationship existing among teacher trainees' intellectual efficiency (IE), self acceptance (SA), and teaching skill (TS). The study showed that the coefficient of correlation was significant between IE and TS with respect

to predictive value. Deva (1966) tried to find out the status of intelligence, social adjustment, personality adjustment, socio-economic status, and academic achievement as the predictors of teaching ability, which were measured on a rating scale developed for the purpose. The data coefficients for the different predictors were found to be 0.0855 (intelligence not significant), 0.3627 (social adjustment) and 0.1500 (academic achievement). Singh (1970) aimed at locating certain intellectual and non-intellectual variables related to the teaching skill of the postgraduate teacher trainees of the Punjab. The predictors of performance, extraversion, intelligence, and early academic achievement. Debnath (1971) in his study on 226 headmasters and staff members of 22 training colleges of West Bengal tried to find out some determinants of teaching efficiency. The coefficients of correlation between the teaching efficiency and age, experience, academic achievement, and training were found to be 0.21, 0.24, 0.19, and 0.31, respectively. Somantary (1971) while attempting to find the nature of relationship among teacher attitudes, teacher adjustment, and teaching efficiency on a sample of 320 graduate teachers of the secondary schools of Orissa found that (i) the Pearson's r of 0.49 between teacher attitude and teacher adjustment was significant, and (ii) teacher attitude and teacher adjustment were related positively to teaching

efficiency. Quraishi (1972) studied the relationship between four dimensions of teacher behaviours, viz. proportion of indirect behaviour to direct behaviour - I/D ratio, proportion of motivating behaviour to controlling behaviour - i/d ratio, proportion of teacher behaviour to students behaviour - T/S ratio, and teacher behaviour of accepting students' ideas and student initiation, with certain personality traits and attitudes of teachers. The study was conducted on 200 secondary school teachers. He found that personality of the teacher did not relate to his/her teacher behaviour in the class.

Santhanum (1972) studied relationship between the teacher's age, recency of training, experience, sex, marital status and the subject taught by the teacher with the indirect behaviour of the teacher in the classroom. The study was conducted on 174 secondary school teachers of Gujarat and FIACS was used for measuring the indirectness. The investigator concluded that age, recency of training and experience did not relate to indirectness of the teachers in the class, whereas sex and marital status did affect some aspects of indirectness. Also subject taught affected indirectness of the teacher in the class. Gurbaksh Lal (1974) studied the effects of creative thinking and vocational anxiety on the success in teaching of 300 teacher trainees from the colleges of Punjab. He found that (i) high vocational anxiety was universally related to teaching success, but high general anxiety was not associated with

teaching success, and (ii) interaction effect of vocational anxiety and creative thinking on teaching success was significant. Nair (1974) aimed at finding out the impact of certain sociological factors like family background, caste, religion, and sex on the teaching ability of teachers. The study which was conducted on 200 secondary school teachers from the educational district of Trichur (Kerala) revealed that age had a positive relationship with teaching ability, whereas teacher's parental socio-economic conditions had a negative influence on teaching ability. Sex, locality of the school, caste and religion were found to be not affecting the teaching ability. Singh S.K. (1974) aiming at determining the relationship between observed behaviours and measures of teacher's attitude of 500 B.Ed. students of training colleges of Meerut University found that there was a significant relationship between attitude towards teaching and the various components of classroom verbal interaction as measured through FIACS. Mehta (1976) conducted a study on thirty six male and 114 female teachers of Gujarati medium secondary schools of Greater Bombay. It was found that there was no relationship between the age of the teachers and their communication pattern in classroom, and similar result was found between the sex of the teachers and the measures of teacher communication pattern. Significant negative relationship between the sex of the teachers and TRR (Teacher Response Ratio)^{was found}. Significant relationship

was observed between the qualifications of teachers and TQR (Teacher Question Ratio). No relationship was found between the recency of training and teaching experience with the teachers' classroom communication pattern.

There are certain studies which aim at finding out the links between process and product variables. Studies by Government College of Education, Jabalpur (1971), Jangira (1972), Sharma (1972), Lulla (1974), Patel (1974), Padma (1976), Roka (1976), Raijiwala (1976), Pavanasam (1977), Desai (1977), and Pillay (1978) have attempted to find out the effect of the process treatments on the product variables. The study conducted by Government College of Education, Jabalpur (1971) aimed at finding out the developed attitude of the pupils towards teachers who used indirect influence in the class and those who used direct influence. It revealed that there was a trend, though not significant, among pupils to like teachers who used indirect influence and dislike those who used direct influence. Jangira (1972) studied the relationship between the classroom behaviour training, imparted to the student teachers and the performance of pupils under their charge on adjustment to home, school, teacher, and peers, their dependency level, and classroom trust behaviour. It was found that pupils, taught by teachers who were trained to be indirect, scored higher on adjustment to school, adjustment to teacher, general adjustment, dependency, and classroom trust than pupils taught by teachers who were

trained by conventional methods. Patel (1974) investigated into the effectiveness of the influence of teachers' classroom behaviour on pupils' personal anxiety, motivation and classroom organization, attitude towards reward and punishment, attitude towards teacher, attitude towards school, and the classroom climate and the development of independent behaviour on the part of pupils. The study which was conducted on 100 teachers of primary schools run by the Ahmedabad Municipal Corporation revealed that direct teacher behaviour had favourable effect on motivation and classroom organization, and attitude towards teacher. The three studies discussed above have investigated into the affective domain of the product variables.

Other studies in this group happen to be experimental ones, have investigated into the cognitive dimensions of product variables. Lulla (1974) involved the teachers and students of municipal corporation schools of Baroda city to find out the effects of teachers' classroom influence upon the pupils' achievement. The study revealed that the pupils taught by teachers trained to be indirect achieved higher than pupils taught by teachers trained otherwise. Roka (1976) experimented with nine inservice science teachers to find out the effect of certain verbal teaching behaviour patterns on the pupils' achievement at knowledge, understanding and application levels. The experimental studies by Sharma (1972) and Padma (1976) attempted to find out the effect of different teaching patterns on the cognitive attainment of pupils. Both

these studies were conducted involving the pupils of grade VII of Baroda city. Sharma (1972) found that a teaching pattern which involved narrow questions was more effective than other teaching patterns in attaining the knowledge and comprehension objectives. It was not possible for both the investigators to identify a pattern of teaching which was superior to others in attaining the application objective. Rajiwala (1976) conducted a study on seven grade classes of Surat Municipal Corporation schools. Fifteen teachers were trained through FIACS. The study revealed that the training in FIACS modified the teachers indirect behaviour positively. The experimental group affected pupils' adjustment, classroom trust, and initiative level positively. Pavanasam (1977) studied eighteen secondary school teachers. He found that the teachers trained in FIACS talked less, were more responsive to pupils, encouraged more pupil participation and had more pupil initiative than the control group. The interaction patterns acquired during training were sustained for more than twenty weeks after the training was completed. Desai (1977) conducted a study on the primary school teachers of Surat Municipal Corporation. Five classes were selected for experimental group and for control group. The experimental group teachers were trained in FIACS for seven days. It was found that training in FIACS modified teachers indirect behaviour positively. The training and feedback given to experimental group of teachers affected the academic

achievement of the pupils in mother tongue positively. Pillay (1978) studied the effects of patterns of teaching upon creative thinking among adolescents. The study revealed that the treatment of 'Creative Teaching Method' when compared with the traditional method, did not produce differential effect upon general creative thinking and on creative thinking in geography too. Among the five operations of the structure of intellect model, only the convergent production ability in geography of eighth graders improved significantly by the creative teaching method than by the traditional method.

Malhotra (1976) studied teacher classroom behaviour in relation to presage variables of teacher attitude and adjustment, and product variables of students liking and perceived behaviour by peers, principals and self. The study was conducted on grade XI of the urban higher secondary schools of the Punjab. It was found that there was negative relationship between the age of the teachers and indirect-direct teacher classroom behaviour. Male and female teachers did not differ in their classroom behaviour. The teachers with bachelor's degree were more indirect in their classroom behaviour than teachers with master's degree. Teachers with low teaching experience were more indirect in their classroom behaviour than teachers with high teaching experience. It was also found that science teachers were more indirect in their classroom behaviour

than arts teachers.

A study conducted by Sharma (1971) tried to find out the link between presage, process and product variables. It aimed at studying the relationship between characteristics possessed by teachers and teacher effectiveness with a view to predicting teacher success. The product criterion happened to be the pass percentage of the students taught by the teacher. The study, which was conducted on 700 teachers of normal government schools of Uttar Pradesh, used FIACS to observe the classroom interaction. It was found that the teacher talk seemed to have negative correlation with scores on Pandey's Teaching Aptitude Test and academic grades. The combination of five predictors, namely, teaching aptitude, academic grades, socio-economic status, teaching experience, and age, in order of their arrangement, appeared to be sound predictors of teacher effectiveness.

II.3 IMPLICATIONS OF THE TREND OF RESEARCH ON TEACHING FOR THE PRESENT STUDY

The foregoing discussion on the research studies in the area of teaching and teacher behaviour crystallises some of the issues, questions, and observations that may help the present investigator in formulating the hypotheses for the study.

These have been mentioned below :

- (i) In respect of descriptive studies, it may be said that they have adopted different focusses, approaches and emphasis, and it is not possible to draw any simple generalisations from all of them taken together.
- (ii) Presage variables like age, sex, SES and experience of the teacher indicate no clear relationship with teacher behaviour.

While launching upon a study on a complex phenomenon like teaching which is influenced and conditioned by a multiple of factors one may do well to remember the caution voiced by Morsh and Wilder (1954) which still seems to hold good : 'No single, specific, observable teacher act has yet been found whose frequency of percent of occurrence is invariably and significantly correlated with student achievement'. Moreover, both Howsain (1960) and Fattu (1962) observed that none of the teacher's characteristics like age, sex, marital status, intelligence, experience, cultural background, scores on aptitude tests, job interest, voice quality and special aptitudes have any links with the teacher effectiveness. Rosenshine and Furst (1973) opens their chapter in the recent : 'Second Handbook of Teaching' (ed. Travers, 1973) with the comment : 'The research on teaching in natural settings todate has tended to be chaotic, unorganised and self-serving.'

- (iii) Many process variables like charity, variation, cognitive organization, open-mindedness, style of teaching seem to influence pupil achievement.

- (iv) In the research studies discussed earlier, there is lack of studies which might have studied a specific teaching act in greater details. Teaching being a complex phenomenon, this type of studies are essential for organising the instruction in the classroom effectively. Questioning is an important teaching act and earnestly demands investigations into it. Gage (1963) suggested that investigators in the area of teaching and teacher behaviour should focus upon specific aspects of teacher's task rather than on all aspects of teaching at a time.
- (v) Process variables like questioning, lecturing, using students' ideas may be studied in greater details. Their relationship may be established with the product variables like students' achievement, attitude etc.

II.4 TREND OF RESEARCH ON QUESTIONING

Questioning has formed an important component of the teaching process. Teachers under training are continuously advised to use questioning in the classroom. Even untrained teachers use this technique intuitively. This phenomenon may be as old as education. Questions were long recognised as the indispensable tools in the hands of educators. Socrates made use of questioning in imparting the instruction. Edward (1889), mentioned in his book, 'Memorable Thoughts of Socrates' that questioning according to Socrates is the best instrument to develop reasoning in the pupils. Socrates' friends learnt to reason very well by frequenting his conversation. Although, questioning may be as old as education, but it was brought under scientific investigation during the 19th century when Stevens (1912) studied the role of questioning in the classroom

and found that the major emphasis was placed on memory questions in English and social studies classes. Even after that for a long time, the importance of researches in the classroom questioning was not recognised, but, after 1955 a large number of studies were conducted. The studies conducted in this area are discussed subsequently. In this section only those studies are included which have relevance to the present study. These studies have been categorised under different heads keeping in mind the purpose and the nature of the study. This would provide clear trend of the research on questioning and would be convenient to organise. The different heads under which the studies are classified are, questions and the extent to which they are used in the classroom, studies on questions asked in the classroom, questions and pupils' achievement and questions for developing thinking.

II.4.1 Questions and the Extent to Which They are Used in the Classroom

Since questions play an important role in the class-room, it would be desirable to know the extent to which questions are asked in the classrooms by the teachers. Buch (1975) has reported a study conducted under the Cooperative Project on Productive Teaching (COPPT) to identify the verbal classroom behaviour patterns obtaining in Indian classrooms and to compare the same with norms given by Flanders (1970). The study covered 500 classrooms in nine states and two union territories of India.

The Teacher Question Ratio (T.Q.R.) was found to be 16.32 which is lower than that of an American teacher (26). Similarly, studying the classroom verbal behaviour of selected teachers with FIACS, Buch and Santhanam (1970) reported 1251 tallies of category '4' (asks questions - FIACS) out of the total tallies of 14786, which was about 8.46 per cent of the total tallies. Likewise, studying the influence patterns of male social studies teachers as determined by Flanders' Interaction Analysis System, Buch and Quraishi (1970) reported 1580 tallies for category '4' (asks questions - FIACS) out of the total tallies of 19135. This was about 8.25 per cent of the total tallies. Santhanam, Quraishi and Lulla (1970) studied the patterns of influence of social studies male and female teachers. They reported 2400 tallies for category '4' (asks questions - FIACS) out of a total of 22173 tallies in case of women teachers and 1580 tallies for category '4' (asks questions - FIACS) out of total 19133 tallies in case of men teachers which was respectively 10.82 per cent and 8.25 per cent.

II.4.2 Studies on Questions asked in the Classrooms

Although the term 'question' may be as old as education, the potentialities of questions were recognized later. Stevens (1912) studied the role of questions in the classroom and found that the major emphasis was placed on memory questions in English and social studies classes. The author called for

a more intelligent use of questions as an instructional device, the usage of which should stimulate reflective thinking in addition to the mere memorization and recital of factual data. Unfortunately, for many years, little attention was paid to Stevens' call for careful study of the use of classroom questions either at the theoretical or the practical level.

After 1955, however, a large number of studies were conducted. These studies reinforced Stevens' findings. Using a classification system based upon Guilford's (1956) model of thinking process, Gallagher (1965) found that most teachers were at the cognitive memory level. Davis and Tinsley (1967) reached similar conclusions using Bloom's (1956) Taxonomy of Educational Objectives, Cognitive Domain, as the criterion measure. They reported that teachers asked more memory questions than all other kinds of question combined.

Floyd (1960) reported that memory questions were asked most often by primary grade teachers. Gurzak (1968) also conducted a study at primary level and found that recall questions were asked more than half of the time (57 per cent) by teachers in grades 2, 4 and 6. Johan (1970) studied oral questioning practices of teachers in social studies classes. His study revealed that at least 54 per cent of the questions asked by the teachers fell into memory category. He found that elementary school teachers asked more questions than secondary

school teachers. Categories higher than interpretation were mostly neglected. Stevens' study was replicated by Adams (1964) who found that high school social studies teachers asked more memory questions than high school English teachers. High school teachers as a group tended to ask more memory questions than did junior high school teachers. Similarly, Brannen (1974) more recently found that in 90 per cent of the secondary schools social studies classrooms, the teacher's questions were at the 'information' level requiring pupils to only recall previously studied material rather than at the higher levels. Nielson (1977) reported that 34 percent of the questions chosen by pre-service teachers and 27% of the questions chosen by in-service teachers were of knowledge type. The two groups of teachers did not differ significantly. Fulton (1977) described the content, mode, frequency and direction of second grade children's questions in classroom settings with integrative and dominative teachers. It was found that the questions of the children with integrative teachers differ significantly from the questions of children with dominative teachers in two of the five content categories: Physical World, and Human Actions and Intentions. There were no significant differences in three content categories : Reality and History, Rules and Usage, and Calculations. A significant interaction effect was obtained between teacher behaviour and content of children's questions. The questions of

the children with integrative teachers differed significantly from the questions of children with dominative teachers in two of the five mode categories: Cognitive-memory and convergent. There were no significant differences in three mode categories: Routine, divergent and evaluation thinking. Children with integrative teachers asked more questions than children with dominative teachers.

In India also a few studies have been conducted regarding the types of questions asked by the school teachers. Thaker (1973) reported about the use of various types of questions asked by teachers in science and Gujarati language. His observation was that the proportion of memory, translation and interpretation questions is 29.3 per cent, 1.9 per cent and 8.8 per cent respectively with regard to science teachers and 17.39 per cent, 15.47 per cent and 5.7 per cent respectively with regard to Gujarati language teachers. It was found that memory, translation and interpretation questions were asked more by untrained teachers than by trained teachers. As regards the application and synthesis questions, it was reported that their use was more in case of trained teachers. The study revealed that as a whole, both trained and untrained teachers used narrow questions most of the time rather than open questions. Kaul (1975) studied the questioning behaviour of science, and humanities teachers in English medium schools in Baroda. She found that direct teachers devoted 0.18 per cent

of their time for higher order questions whereas indirect teachers devoted 0.35 per cent of their time for higher order questions. The study revealed that most of the time was devoted to lower level questions by both direct and indirect teachers. George (1975) reported that higher secondary teachers of Baroda district in Gujarat State and Murattupuzha district in Kerala State put more convergent questions than divergent questions. He further found that on an average the convergent teacher question ratio was 10.276 whereas divergent teacher question ratio was 0.375. Kumar (1976) studied the questioning behaviour of social studies and humanities teachers in English medium secondary schools of Baroda. He did not find significant difference between social studies and humanities teachers in the use of different types of questions. He further reported that indirect social studies teachers used significantly less memory questions and more interpretation questions than the direct teachers. With regard to humanities teachers it was reported that indirect teachers used significantly more application and analysis type of questions than the direct teachers.

II.4.3 Questions and Achievement

Attempts have been made by researchers to study the relationship between teachers' use of various types of questions and students' achievement. Most investigators have classified questions into two categories. In general, the two categories

are labelled as 'lower cognitive' and 'higher cognitive' questions.

The studies in this area provide contradictory conclusions. There are studies where the results do not indicate significant differences in pupils' achievement when lower cognitive and higher cognitive questions are used. The studies of Perkins (1966), Harris Serwer (1966), Harris et al. (1968), and Wright and Nuthall (1970) belong to this category. On the other hand, there are other studies which conclude that pupils achievement differs according to the level of questioning. Kleinman (1964) and Spaulding (1965) found that pupils achievement mean scores were in favour of those teachers who used higher order questions. Francis (1968) reported that the employment of higher cognitive level questions (analysis and evaluation) produced significantly greater scores in social studies achievement than did low cognitive level (Knowledge). Further it was reported that better reader in both conditions achieved higher. Martiken (1974) conducted a study in which levels of questioning and their effects upon students' performance above the knowledge level of Bloom's Taxonomy of Educational Objectives were seen. No statistically significant differences were found. Likewise Duel (1974) studied the effect of level of questions, type of objectives and judged importance of tested materials upon post-test performance. Results were reverse to his hypothesis which was that the differences between subjects provided with

behavioural objectives and those provided non-behavioural objectives will be non-significant for recall questions but significant for application questions. Marline (1976) found that a significant gain in the development of student understanding of key biological concepts depended on the level of questioning used in the classroom. Friedman (1977) more recently found that achievement scores of the students who were taught through application type of questions were higher than those who were taught through memory type of questions. There was no significant difference between two groups in the scores at comprehension level. Brohl (1977) conducted a study to determine whether there are differences in achievement among pupils in special education classes according to the cognitive level of questioning employed by the teacher during instructional procedures. One hundred eighteen EMR pupils in eight special classes and their teachers participated in the study. It was concluded that the type of question employed by the teacher of EMR children similar to the subjects of this study does affect performance in special education classes. The use of equal numbers of high and low level cognitive teacher questions resulted in greater achievement on a high cognitive measure; while the use of low cognitive teacher questions resulted in greater achievement on a low cognitive measure. The use of high cognitive questions alone did not enhance performance on either the high or the low criterion measures.

Mills (1977) designed a study to show what the actual one-to-one correspondence is between teachers' questions and students' responses when teachers vary their questioning from lower order through higher order. It was found that along with the variation in the questioning from lower to higher the students' responses also varied from lower process of reasoning to higher process. Cartwright (1978) reported that the subjects who received comprehension level stimulus questions, regardless of their positions, scored higher on the comprehension sub-test items than they do on other two sub-tests (Knowledge and Application). Subjects received application stimulus questions scored significantly higher on application sub-test than on other two. In the same way knowledge group also scored significantly higher on knowledge sub-test than other two. Matthes (1978) investigated the effects of varying levels of oral cognitive questions on the reading comprehension of selected subjects, reading at fourth grade level. It was found that the students who received higher oral cognitive questions scored higher than other two groups on reading comprehension achievement test.

Researchers in India also have undertaken certain studies of this type where effectiveness of different teaching patterns have been studied with regard to instructional objectives. Sharma (1972) studied the relationship between patterns of teacher classroom behaviour (i) narration, P_1 ; (ii) open questions, P_2 ; (iii) narrow questions, P_3 ; and (iv) narrow

questions with feedback, P_4 ; and pupils attainment in terms of instructional objectives (knowledge, comprehension and application). She came out with following findings : (1) The attainment of narrow questions (P_3) resulted into the highest adjusted mean scores (21.405) of total attainment which is significantly higher at .05 level, than the mean values of P_1 (17.454), P_2 (17.887), and P_4 (17.752). (2) Treatment of narrow questions (P_3) resulted in the highest adjusted mean scores (13.438) of attainment in terms of knowledge objective, which is significantly higher at .01 level than the mean value of P_1 (10.925) and at .05 level than the mean values of P_2 (11.445) and P_4 (11.092). (3) In the case of attainment in terms of comprehension objective, again the mean value of the treatment of (P_3) comes out to be significantly higher at .05 level, than those of P_1 (4.706), P_2 (4.735), and P_4 (4.795). However, no significant differences are found amongst the treatments as far as attainment in terms of application objective is concerned.

Kesri (1974) conducted a study relating the use of narrow and broad questions to pupils' achievement in social studies in terms of knowledge, comprehension, and application. He found that teaching employing narrow questions helped to attain significantly higher mean scores for knowledge. In case of comprehension and application, the teaching with broad questions had higher mean scores, as compared to the group taught by narrow questions.

Belch (1974) conducted a study to see the effect of different questioning strategies on the reading comprehension scores of secondary level educable mentally retarded students. He found that students who responded to higher order written questions (comprehension, application, analysis, synthesis and evaluation) scored significantly higher on the post-test of reading comprehension than students who responded to low order written questions (knowledge level). He further reported that students who responded to higher order written questions scored significantly higher on the post-test of reading comprehension than students who received ~~no~~ no questions and students who responded to lower order written questions scored no better on the post-test than students who received no questions.

Padma (1975) studied the effect of different teaching patterns on pupils' attainment. It was found that when lecturing is used with the combination of problem-solving, the applicational ability can be developed. Questioning-answering with problem-solving approach could develop the application ability and questioning-answering, problem-solving and feedback pattern was also found effective in developing the applicational ability.

Shaida (1975) studied teaching patterns - questioning and feedback and pupils' attainment. It was found that narrow

questions with feedback produced significantly higher means for knowledge scores of 8th class boys in social studies than the patterns of narrow questions with no feedback, broad questions with feedback and broad questions with no feedback. The teaching pattern of broad questions with feedback produced significantly higher mean for comprehension scores of 8th class boys in social studies than the patterns of narrow questions with no feedback and broad questions with no feedback. But, mean for comprehension scores under broad questions with feedback was similar to that under narrow questions with feedback. The teaching pattern of broad questions with feedback produced significantly higher mean for application scores of 8th class boys in social studies than the patterns of narrow questions with feedback, narrow questions with no feedback and broad questions with no feedback.

Roy (1976) found that lecturing, questioning-response, and questioning-response-feedback have equal effect on development of knowledge and application and total achievement of pupils. But, in case of comprehension lecturing style differed significantly from questioning-response-feedback.

More recently Chakraborty (1978) conducted a study on 150 students of two Bengali medium schools. The students of each school were divided into three groups which were taught through different strategies, viz., lecturing and questioning-

answering, lecturing and questioning-answering by using behavioural objectives, and discussion by using instructional materials. The study revealed that lecturing and questioning-answering by using behavioural objectives was found to be more effective than lecturing and questioning-answering for knowledge, comprehension, application and total achievement at post-test level and for knowledge, application and total achievement at retention level. Lecturing and questioning-answering with behavioural objectives was found to be more effective than discussion by using instructional materials for knowledge, comprehension, application and total achievement at post-test level and for application at retention level.

II.4.4 Questions and Thinking Levels

A number of instructional strategies have been developed that place great importance upon the role of questions asked by both teachers and students. Some evidence seems to confirm the assertion that the teacher's use of question types is 'by far the most influential single teaching act' (Taba et al., 1964), because, there, an almost perfect correlation between the levels of thought pupils displayed in their answers to teachers questions and the type of questions asked by their teachers has been found (Taba, Livine and Elzey, 1964). Gallagher (1965) concluded that students expressive thought is very much dependent upon the teacher's style of questioning. Similarly, Stammer (1974) found significant differences in the

general quality of pupil responses to different levels of questions and in some instances, to different types of questions, whereas Charas (1973) found no significant relationship between teaching methods (lecture, discussion using broad questioning and discussion using narrow questions) and the development of critical thinking ability of the students.

Francis (1970) studied the effects of analysis and evaluation questions upon critical thinking. He found that pupils using test type materials with emphasis upon analysis and evaluation questions did not differ significantly with respect to inference from pupils who received similar type materials with emphasis of knowledge questions. Further, he found that higher cognitive level questions produced significantly more caution overall among girls than was true of boys and girls using lower level questions. The higher level questions stimulated more caution in boys than the girls at the middle stage. Wilson (1973) sought to assess the relationship between levels of thinking used by a teacher and pupils to determine if the teacher's level of thinking will be raised significantly with a corresponding raise in the pupils' level, if awareness is developed through the use of an interaction analysis feedback system. Results showed the change in mean levels of thinking of experimental group teachers and pupils to be significantly higher than those for the control group.

Levels of thinking were reflected by the verbalization that took place in the classroom.

Adams (1975) examined the relationship between teacher use of higher level cognitive questions and the development of critical thinking. No significant differences were found between the experimental and the control groups in the overall mean gain scores of critical thinking as measured by the Sequential Tests of Educational Progress, although, it did reveal a trend toward increased critical thinking among the classes in which teachers used higher level cognitive questions. A significant relationship was found to exist between the cognitive level of teacher question and the student response. Further, it was found that the correspondence between the cognitive level of the teacher question and the student response was greater in classes where teachers used higher level cognitive questions. The study supported the effectiveness of teachers use of higher level cognitive questions in the development of critical thinking in students. Similar assumptions were made by Withal (1951), Mitzel and Robinowitz (1953), Aschner (1962), and Flanders (1963). Smith (1978) studied the effect of questioning strategies on drawing inferences in reading. It was concluded that reading for inferences is a teachable and measurable skill. Word knowledge does not appear to interact with methods of instruction.

Questions can structure the learning situation and guide students to make the correct inferences in making inferences in reading. Nicholson (1978) reported that a majority of discussion questions in the teachers manuals required an expected response on the literal level of thinking. Majority of questions emphasized the lower level thinking process.

II.4.5 Interspersed Questions and Retention

Some researchers have attempted to study the effect of interspersed questions on retention. One study reports significant results whereas the other does not. Boker (1974) studied immediate and delayed retention effects of interspersing questions in written instructional passages and found that subjects in questioned group retained significantly more question relevant information than a non-questioned controlled group on both an immediate and 7-day delayed retention measure. On the other hand Helvoight (1974) studied the effects of three types of interspersed questions on the retention of prose material by varying ability students and concluded that interspersed questions did not aid prose retention.

II.5 IMPLICATION OF TREND OF RESEARCH ON QUESTIONING FOR THE PRESENT STUDY

The foregoing discussion on the research studies in the area of questioning crystallises some of the issues, questions and observations that may help the present investigator in

understanding the problem and formulating the hypotheses for the study. These have been mentioned subsequently :

- (i) An examination of the research studies quoted in the preceding section indicates that eight to sixteen percent of the total classroom verbal behaviour of teachers is devoted to questions.
- (ii) Memory type of questions form a predominant part of questioning behaviour. The studies conducted by Thakor (1973), Kaul (1975), and Kumar (1976), to investigate the kinds of questions asked by the teachers in the classroom have got serious limitations. For example, the findings of Kaul (1975) and Kumar (1976) were based on a very small sample, in fact, 12 teachers each (6 social studies + 6 humanities, 6 direct + 6 indirect etc.). It indicates that in India studies to find out the kinds of questions asked in the classrooms are yet to be replicated. Moreover, studies conducted abroad and in India indicate that most of the teachers use memory type questions to a very large extent, but, efforts have not been made to find out the reasons for the same.
- (iii) Different kinds of questions provide various instructional outcomes in terms of educational objectives, viz., knowledge, comprehension, application, critical thinking etc.
- (iv) Researches on questioning are not in a position to provide any information about the factors which may be associated with the questioning behaviour of teachers in the classroom.

The problem, the hypotheses which have been formulated on the basis of this review of research and the methodology adopted to test the hypotheses are discussed in the succeeding chapter.
