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"Every research project should be based on all relevant thinking and research that has preceded it, when completed it becomes a part of the accumulated knowledge in the particular field and so it contributes to the thinking and research that follow. For any specific project to occupy this place in the development of discipline. The researcher must thoroughly be familiar with previous theory and research."

(Fox, 1969)

INTRODUCTION

Research on microteaching is one of the major areas of research which attracted the attention of foreign and Indian scholars from early sixties to early eighties. The number of

studies related to microteaching in India alone exceeds fifty, excluding the studies conducted at M.Ed. and M.Phil. levels. The studies abroad exceed far more than this.

The review of the present study is divided into three main sections to follow. They are:

1. The studies related to development of self-instructional material and multimedia packages in India and abroad.
2. The studies related to teachers interactive thoughts and decisions.
3. The studies related to teachers decision making.

1. DEVELOPMENT OF SELF-INSTRUCTIONAL MATERIAL AND MULTIMEDIA PACKAGE

The early studies in microteaching both in India and abroad related to this area of research.

Allen D.W. and his associates (1969) prepared a programme on teaching skills for elementary and secondary school teachers

consisting of short films and instructional manuals. It was designed to facilitate observation practice of techniques demonstrated by master teachers. The programme was found to be useful in microteaching for preservice and inservice teacher training. However, the credit of doing a pioneering work in this area, goes to Borg et. al (1970). They developed mini courses on different teaching skills. It was an adaptation of Stanford model. Mini course model provided -

(a) Self-instructional package

(b) Feedback through self-evaluation and/ peer interaction and

(c) The teaching session was not immediate but was delayed by 24 hours. They developed as many as 17 mini courses.

The mini courses in their study take the form of a self-instructional 'package' including a programmed hand-book for study which gives detailed sequential instructions concerning course procedures. It also defines the skills to be

practised in operational terms, explains the use of these skills and provides exercises to test the teacher understanding of what he or she studied. Guidance on preparation of micro lessons focussing on the skills studied is also provided together with objective self-coding guides for the evaluation of the micro lesson. Further, it is supplied with a test of five video taped or filmed instructional sequences, designed to provide skill discrimination training, a coordinator's hand-book, designed to assist course coordinators with administrative tasks and on evaluation manual, prepared for those who wish to evaluate the course in their own situations.

Each mini course made use of a system approach which consisted of the following steps, occurring in a cyclical fashion.

(a) Precise specification of the behaviour which is the objective of the learning experience.

(b) Carefully planned training procedures aimed explicitly at those objectives.

(c) Measurement of the results of training in

terms of the behavioural objectives.

(d) Re-entry into the training.

(e) Remeasurement of the results.

The mini courses were found to be effective in bringing about desired changes in trainees. Therefore, a project was launched by organisation of Economic Co-operation and Development (OECD) to test transfer of mini courses developed by Borg et.al. in other countries. The result shows that the adopted materials were found to be as effective as the original, in bringing about the desired changes in teacher performance.

Perrott et.al. (1974) has also developed at the University Lancaster, U.K. a mini course on questioning, set induction, closure, stimulus variation, clarity of explanation, use of examples, Reinforcement. The material was an adaptation of mini courses of Borg et.al. and was found to be effective changing teacher behaviouring in desired direction.

Brown C.A. (1975) developed a microteaching,

a programme of teaching skills at the University of Ulster. He prepared material on writing instructional objectives, set induction, closure, teacher liveliness, Explanation, Listening Overview, Questioning and Answering. Attending to pupils behaviours, pupil reinforcement, pupil participation.

A series of correlational studies conducted by him on this material showed substantial relationships between microteaching performance and subsequent class-room performance. These may be interpreted as suggesting that microteaching does affect class-room performance or equally plausible, as providing a simple indication that those participants who can demonstrate skilled performance in microteaching can also do so in a class-room setting.

Turney C. et. al (1973) at Sydney University developed a material on a large number of teaching skills viz: 'Sydney micro skills'.

The series 1 - deals with the teaching skills reinforcement, Basic questioning and variability.

The series 2 - deals with explaining, introductory procedures and closure and advanced questioning.

The series 3 - includes discipline and class-room management skills.

The series 4 - discusses small group and individualized teaching skills and finally

The series 5 - covers the skill of guiding discovery learning and fostering creativity.

The material also was supplemented by multimedia package. The packages were extensively used in Australia.

Duthie et. al (see British Council Teacher Education Project 1975) at Sterling University, U.K. prepared a series of documents on different teaching skills. The documents are not only used at Sterling University but also in Maharashtra and Tamil Nadu States as a part of British Council

Teacher Education Project, sponsored by British Council in India.

There are other studies by Conard R.J. (1978), Chewprecha T. (1977) who developed packages or Instructional Material on Teacher behaviour and the materials were found to be effective in changing the teacher behaviour.

In short, it can be said from the findings of these studies that the self-instructional material and multimedia packages produced desired changes in teacher trainees.

In India, the pioneering work was done in this area at CASE, M.S. University of Baroda where a series of studies was conducted in production of self-instructional material production of different skills.

Lalitha M.S. (1977) conducted an inquiry into class-room instruction.

The main objectives were -

(1) to identify and list teaching skills required for effective class-room instruction,

(2) to compare instructional materials for developing some of the identified teaching skills and

(3) to validate the instructional materials developed.

In order to identify the teaching skills, the literature was analysed, discussions with teachers and teacher educators were held and personal experience were evaluated. Then the instructionals were prepared to develop some of these teaching skills. This material was subjected to pre-tryout on the student-teachers and on the basis of their reactions the drafts were rewritten. Final tryout of the instructional materials was done as an experimental study by comparing the effectiveness of the materials synchronized with microteaching approach and the conventional student teaching approach in the development of corresponding teaching skills. The sample included all the thirty-five B.Ed. students who taught in English medium classes and belonged to the M.S. University of Baroda during 1975-76. There were three groups in the study. First group was given the training in

the skill of increasing pupil participation using the instructional materials through microteaching approach. Second group was given training in the skills of explaining, using blackboard and writing instructional objectives, in the same way as for group one, but one skill presented after another. The third group received conventional approach to student teaching. The experimental group were observed for the skills they were trained in, on the control group which was a common group for comparison for each of the other two groups were observed for all the four skills. The major findings of the study were:

(1) Skills of instruction, can be categorized as questioning skills, skills related to pupil understanding, skills related to pupil evaluation, skills related to pupil participation, skills related to pupil attention and skills related to class-room management.

(2) The experimental groups trained with using instructional material found to be superior to the conventional training group.

(3) The experimental group I and the control group III differed significantly in favour of the former group in the development of skills. Experimental group II was significantly better than the control group.

Joshi S.M. (1977) studied effectiveness of microteaching as a technique in teacher education programme.

The main objectives were -

(1) To enquire into the effectiveness of instructional materials synchronized with microteaching approach in the acquisition of four teaching skills, viz: stimulus variation, illustrating with examples, silence and non-verbal cues, and recognising attending behaviour and

(2) To enquire into the effect of instructional materials along with the microteaching upon the attitudes of student-teachers towards teaching.

The sample consisted of thirtyfour English medium student teachers selected randomly from the student-teachers of the Faculty of Education and

Psychology of the M.S.University of Baroda. They were grouped into two Experimental Groups and one control group. The experimental groups A and B consisted of sixteen and nine student-teachers and the control group C had nine student-teachers.

ATAI, Madhookar Patel's Intelligence Test BGTC Scale and observations schedules of four skills were the tools used. The main findings of the study were -

(1) Student-teachers exposed to the treatment of skill based instructional materials synchronized with microteaching for all the four skills, scores higher in the acquisition of respective skill than the student-teachers exposed to the traditional teaching programme.

(2) The experimental groups scored higher in the acquisition of general teaching competence than the student-teachers exposed to the traditional teaching programme.

(3) The experimental groups together did not differ significantly from the control group in their attitude towards teaching.

Passi, Bimla (1977) investigated effect of instructional material and feedback upon the development of some teaching skill.

The main objectives were -

(1) To examine the nature of feedback provided to the student-teachers in the prevailing student-teaching programme.

(2) To study the attitude of student-teachers towards microteaching.

(3) To develop instructional materials for selected teaching skills.

(4) To study the effectiveness of instructional materials in developing corresponding teaching skills and general teaching competence among student-teachers and

(5) To study the effect of different training approaches upon the attitude of student-teachers towards teaching.

The sample consisted of 25 student teachers of the Faculty of Education and Psychology, M.S. University of Baroda, out of which two experimental groups (Group A, N = 16, Group B, N = 19) were

formed. The two experimental groups were trained in the different clusters of skills under study. Instructional materials were developed for the purpose. The control group C (N = 19) had traditional teacher training.

The main hypothesis of the study was - the student-teachers of the experimental group having the treatment settings for various teaching skills do not differ significantly from the control group with regard to

(i) Skill of introducing lesson;
(ii) Skill of achieving closure;
(iii) Skill of reinforcement;
(iv) Skill of fluency in questioning;
(v) Skill of probing questioning;
(vi) BGTC and ATAI were used.

The main findings of the study were -

(1) Students who uncerwent the microteaching programme were in favour of it.

(2) On BGTC Scale, Group A and B differed significantly from Group B.

(3) All the three groups did not differ

significantly among each other on their attitude towards teaching.

(4) Comments of supervisors clustered ground and a few aspects of teaching like questioning, explaining, etc.

Buch M.B., Passi B.K. and Shah G.B. (1978) undertook a study on adaptation of a self-instructional material on questioning.

The main objective of the study was to adapt the self-instructional microteaching course on effective questioning developed in Britain, by the D.E.S. microteaching research unit; University of Lancaster, under the direction of Prof.Elizabeth Perrott.

The course was designed as a self-instructional training package to help the inservice teacher or preservice teacher, to develop questioning skill for use in class-room discussions, and has been adapted, field-tested and re-developed in the light of results of co-operative research project.

The written materials were adapted to suit the language and curriculum requirements of Indian teachers and schools. The films were replaced by

audio recordings of Indian teachers and pupils.

The adapted package provides -

(1) A teacher's handbook, which enables the trainee to study the skills he will be practising.

(2) An introductory audio tape which supports the materials prepared for the practice session.

(3) Four audio tapes which support the four instructional sequences.

(4) A co-ordinator's guide which is designed to assist the organiser of self-instructional microteaching course.

(5) An evaluation manual - this is a guide for those who wish to field-test the course in other setting.

The studies are conducted in the secondary schools of Baroda and primary schools of Surat in the year 1977.

The major finding of this study was that there was significant difference in desired directions in fourteen teacher behaviours related to questioning.

Shah S.G. (1979) developed and tried out multimedia package on effective questioning in the context of microteaching.

The main objectives were-

(1) To develop self-instructional multimedia package on effective questioning which would be helpful to preservice and inservice secondary school teachers and

(2) to try out the package by experimentation and to explore the feasibility of the self-instructional multimedia package.

The sample consisted of thirtytwo teachers selected randomly, out of which sixteen were inservice teachers teaching in secondary sections of Gujarati medium schools of Surat City and sixteen were teacher-trainees from a College of Education. The researcher developed multimedia package of questioning skill. The data were collected through tools such as background information sheet, attitude inventory scale, behaviour coding system, evaluation guide for raters, perception of the teachers about multimedia

package and interview schedule for quantitative evaluation of multimedia package. The experiment was conducted by using single group design.

The main major findings of the study were -

(1) The teachers exposed to the treatment of the self-instructional multimedia package course showed significant improvement in all the skills except one.

(2) Results obtained on package course evaluation questionnaire indicated that the package course was quite interesting for the participants.

(3) Qualitative evaluation of the package led to the conclusion that teachers were quite satisfied with the package course so far as its educative importance was concerned.

Paintal I.P. (1980) conducted a study in which adoption of self-instructional material on microteaching developed for British teachers was undertaken.

The main objective of the study was to know the effect of transferring the self-instructional microteaching course of

effective questioning developed for British teachers at the International Microteaching Research Unit, University of Lancester, to preservice and inservice teachers in the States of Delhi and Haryana.

The sample consisted of the 164 subjects (thirty males and one hundred thirtyfour females) out of which were eightythree B.Ed. students, seventy inservice teachers and eleven teacher educators from Delhi and Haryana. The original Lancester course consisted of five video taped instructional sequences in which questioning skills were demonstrated and explained. It also used video tape recorders and cameras to record the microteaching lessons given by the teachers which they played back for self-evaluation. It was felt that in India microteaching experiments involving expensive video tape recorders and cameras would not be economically available. Therefore, it was decided to rely on live demonstration lectures and printed instructional material which could easily be duplicated and made available to teach and to read. Attitude scale was also filled in to know the attitude of teachers towards the programme.

The observation schedule for recording the use of the questioning skills is the class-room, attitude scale towards teaching was the tool used.

The main findings of the study were -

(1) In the two groups which the investigator observed in their class-rooms for differences in teaching behaviour before the course and immediately after the course, it was found that both groups had definitely shown improvement in the use of the questioning skills of prompting, seeking further clarification and asking questions that called for a set of related facts.

(2) Comparing the teachers' reports on the influence of the course on their pupils behaviour, it was noted that 56% of participants had reported an improvement in the quality of answers given by their pupils and in the level of pupil participation.

(3) Majority of the trainees showed favourable attitude towards microteaching than Perrott's group of inservice teachers.

Adeshra J.N. (1981) studied development of teaching skills in student-teachers using auto-instructional material and using microteaching under different conditions.

The main objectives were -

(1) to study and compare the effects of the three training approaches, viz: Auto-instructional material plus traditional training (TRT), microteaching with simulated conditions (Mts) and microteaching with real conditions, (MTR), on general teaching competence (GTC);

(2) to study the effects of co-variable like sex, intelligence anxiety, personality factors, etc. on the development of GTC through the three approaches.

Pre-test post-test control group design was used for the study. Three groups of preservice student teachers selected for received the three treatments separately. The control group received treatment of auto-instructional material on four teaching skills, viz: Introducing lesson, Stimulus variation, Silence and non-verbal cues and

achieving closure. No microteaching treatment was given to the control group. The other two experimental groups received microteaching treatments in the skills in different conditions. Various tools like 16 PF, ATAI and BGTC were used for the study. GTC scale was administered in pre-test, post-test I (i.e. immediately after treatment) and post-test II (i.e. after a traditional practice teaching).

The major findings of the study were -

(1) All the three groups including the one which received auto-instructional material gained significantly in GTC, the highest gain was in the MTR, the latest in TRT.

(2) Two microteaching groups did differ significantly in post-test I. The difference was in favour of MTR. However, the difference in the two groups diminished in the post-test II.

(3) Both the microteaching groups differed significantlyin GTC from TRT in post-test I was well as the post-test II.

Passi B.K. and Sharma Vibha (1981) studied the adaptation of material on questioning translated

into Hindi.

The main objective of the study was to study the effectiveness of adapted self-instructional microteaching course on effective questioning skill in Hindi in terms of

(1) achievement of trainees on criterion test of effective questioning and

(2) reactions of the trainees towards each component of the material (SIMEQ, Hindi).

The study was conducted on a sample of 52 B.Ed. trainees of the Department of Education, University of Indore. The data were collected by using criterion test on effective questioning (CTEQ) and opinionaire on SIMEQ Hindi).

The main findings of the study were -

(1) Overall mean performance on the criterion test of effective questioning of the experimental group is higher than that of the control group.

(2) The experimental group has responded favourably to the package of SIMEQ-Hindi.

Sharma S.K. (1981) undertook a study on

effectiveness of Hindi teachers in which he developed self-instructional material on skill of loud reading.

The main objectives were:

(1) To study the relationship between teachers' demographic variables (sex and age) and teaching competency at higher secondary level.

(2) To study the relationship between other presage variables (teacher's attitude towards teaching interest in teaching, Self-perception for his teaching behaviour and intelligence) and teaching competency at higher secondary level.

(3) To study the relationship between teaching competency of higher secondary Hindi teachers and product variables (pupils' academic achievement and pupils' liking about the teaching behaviour of their teachers).

(4) To arrive at a cluster of factors (teaching competency) required for Hindi teaching at higher secondary level.

(5) To develop the instructional materials for one of the identified teaching competencies

required for the teaching of Hindi at higher secondary level and to study the effect of developed instructional materials on the development of teaching competency among teachers.

The final study was conducted on a sample of 48 Hindi teachers of higher secondary schools of Indore. The study employed the descriptive and experimental methods.

The major findings of the study were -

(1) No significant relationship between teachers teaching competency and their attitude, interest and intelligence was established.

(2) Training through instructional material improved the cognitive emotional and behavioural competencies of loud reading among the student-teachers of experimental groups as compared to the control group.

(3) There was no significant difference on the language teaching competency of the student-teachers of experimental and control groups in real class-room conditions.

(4) There was a positive significant correlation between the age of Hindi teachers teaching at higher secondary level and their teaching competency.

Asija D.P. (1982) identified specific teaching skills required for teaching of modern mathematics.

The main objectives were -

(1) To identify the teaching skills,
(2) To develop instructional material and
(3) To study the relative effectiveness of microteaching and teaching of modern mathematics at the secondary school stage.

The present study was completed in three phases. Each phase had its own sample. In the first phase, viz: 'Identification of teaching skills' the sample consisted of the teacher-educators, research fellows, inservice teacher and student-teachers having a background of modern mathematics. The number of these persons on first tryout was 9, 11, 16 and 11 respectively and in the second tryout the number of the abovesaid persons was 7, 14, 15 and 12 respectively. In the

second phase, viz: 'Development of instructional materials' the sample constituted the teacher educators, research fellows, inservice teachers and student teachers whose number in the first tryout was 8, 2, 9 and 8 respectively; in the second tryout the number was 13, 2, 5 and 8 respectively. In the third phase, namely 'Relative effectiveness', two groups of equal number of 11 were taken.

The major findings of the study were -

(1) Instructional materials in the form of hand books, developed for the first three skills in hierarchical order was found to be useful.

(2) Neither microteaching nor conventional practice teaching had only impact on the attitude of student-teachers towards teaching.

(3) The microteaching had an advantage over the conventional teaching practice for developing of skills specific to teaching modern mathematics.

Pattanshetti M.M. (1985) studied effectiveness of self-instructional material

microteaching course in improving college teaching.

The main objectives were -

(1) To identify basic lecturing skills and the corresponding instructional behaviours.

(2) To prepare lecture rating scale.

(3) To prepare self-instructional microteaching course SIMC materials.

(4) To provide in-service training to the college teachers through self-instructional microteaching course.

(5) To evaluate the effectiveness of the self-instructional microteaching course materials in improving college.

(6) To construct a rating scale to study the reactions of participant lecturers to the SIMC and

(7) To study the reactions of participant lecturers to the SIMC.

The sample consisted of ten social science college teachers who participated in the experiment.

Some basic lecture skills and corresponding instructional behaviours were identified. The Dharwad lecture rating scale (DLRS) was prepared using scientific procedure. It consisted of 19 instructional behaviours. The SIMC material was prepared in the form of five hand books.

(a) Introductory hand book.
(b) Hand book on skill of explaining
(c) Hand book on orientation skill
(d) Hand book on skill of stimulus variation and
(e) Hand book on skill of achieving closure.

Audio cassette contained model explanations and model micro-lessons.

The major findings of the study were -

(1) The SIMC was found to be effective in improving teaching competence of college teachers in terms of orientation skill beside skills of explaining, stimulus variation and achieving closure.

(2) The SIMC was found to be effective in improving the orientation skill, the skill of explaining, stimulus variation, achieving closure of college teachers (studies and practised).

(3) Majority of participant lecturers favoured the SIMC for the improvement of teaching competence.

(4) Video cassette and video tape recorder were found to be very useful at the experiment.

It can be concluded from the review of studies related to preparation of self-instructional material that -

(1) Use of self-instructional material on multimedia package synchronized with microteaching approach is very effective method of developing skills in teachers and teacher-trainees.

(2) Self-instructional material on general teaching skills in regional languages is conspicuous by its absence.

2. <u>STUDIES RELATED TO TEACHERS INTERACTIVE THOUGHTS AND DECISIONS:</u>

Overview of studies using stimulated recall techniques to study teacher's interactive thoughts and decisions:

Researchers on teachers' thinking have

attempted to describe the thinking that teachers do while interacting with students in the class-room. More specifically, researchers have been concerned with the content to which teachers make interactive 'decisions' that had to change their plans or their behaviour in the class-room.

Twelve research studies that were conducted abroad used stimulated recall interviews to elicit self-reports of teachers' interactive thoughts and decisions. The studies varied considerably in the grade level and experience of the participants, the number and subject matter of the lessons that were videotaped and used in the stimulated recall interview and the actual format of the stimulated recall interview. Eleven of the 12 studies were done with elementary teachers and students from Grades 1 through 6 while 1 study was done with seventh and eighth grade students.

Wodlinger (1980) focussed on only one teacher, and several investigators taped only one lesson for each teacher (Fogarty, Wang, and Creek, 1982; Morine and Vallance, 1975, Semmel, 1977). The

subject matters of the lessons that were videotaped varied considerably across the 12 studies and included reading, language arts, spelling, mathematics, social studies and physical education.

In a laboratory study of teachers' interactive thoughts and decisions, Peterson, Clark and Marx (Clark and Peterson, 1981, Marx and Peterson, 1981; Peterson and Clark, 1978) had 12 experienced teachers each teach 2.5 hour social studies lesson to three groups of seventh and eighth grade students. Teachers were videotaped while they were teaching.

At the end of the each lesson, each teacher viewed the videotape of the first five minutes of the first hour of teaching and three 1-3 minute segments of each hour of instruction to "stimulate recall" of their interactive throughts during instruction.

After viewing each of these four segments, the teacher responded to the following questions:

1. What were you doing in the segment and why ?
2. Were you thinking of any alternative actions or strategies at that time ?

3. What were you noticing about the students ?
4. Hou are the students responding ?
5. Did any student's reactions cause you to act differently than you had planned ?
6. Did you have any particular objectives in mind in this segment ? If so, what were they ?
7. Do you remember any aspects of situation that might have affected what you did in this segment ?

The study by Housener and Griffey (1983), where teachers viewed only selected segments of the videotape of their lessons, teachers viewed the entire videotape in eight studies (Conners, 1978b; Fogarty, Wang and Creek, 1982 Lowyck, 1980; Marland, 1977; McNair, 1978-79; Morine and Vallance, 1975; Shroyer, 1981 and Wodlinger, 1980), listened to the entire audiotape of their lesson to one study (Semmel, 1977) and viewed the entire videotaped lesson twice in one study (Colker, 1982). However, even in these studies where the interviewer played the entire tape to the teacher, the procedure differed according to, whether the teacher selected the videotaped segments that

were the focus of the interview (as in the Lowyck, Wodlinger and Shroyer Studies) whether the teacher and interviewer were both allowed to select segments that were the focus of the interview (as in the Semmel and Conners studies).

Moreover, in the Peterson, Marx and Clark study and in the studies by Colker, Housner and Griffey, McNair, Morine and Vallance and Semmel, teachers responded to a structured interview with a prespecified set of questions. In contrast, in the studies by Conners, Lowyck, Marland, Shroyer and Wodlinger, the format of the stimulated recall interview was a clinical one in which a few general and specific questions were predetermined by the researchers, but the actual questions varied from interview to interview as determined by the interviewer.

(as cited by Peterson and Clark 1986)

Although the format of the stimulated recall interviews differed considerably across

the 12 studies, the coding and analysis of the stimulated recall interviews were similar in all the studies. The teachers' responses to the interview were audiotaped and coded by categorizing each of the teachers' statements or 'thoughts' into one of several categories. The number of complete thoughts in each category was then tallied and compared across content categories. The major findings were as follows:

The Content of Teachers' Interactive thoughts:

Six studies have described the content of teachers' interactive thoughts. These are: Marx and Peterson (1981) McNair (1978-79), Calker (1982), Marland (1977), Conners (1978b), and Semmel (1977). Despite the variability in the methodology used in these six studies, the findings from the studies are remarkably similar.

(as cited by Peterson and Clark 1986)

Several findings emerge from the examination of the studies.

1. A relatively small portion of teachers'

reports of their interactive thoughts deal with instructional objectives. Teachers mantioned objectives only 14% a less of the time across the four studies that used objectives as a category.

2. A relatively small percentage of teachers' statements about their interactive thoughts deal with the content or the subject matter (5% to 14% across three studies).

3. A relatively larger percentage of teachers' reports of their interactive thoughts deal with the instructional process including instructional procedures and instructional strategies. The percentage was amazingly similar - 20% to 30% - across the five studies that used a category like "instructional process" in their content analysis.

4. All of the six studies found that the largest percentage of teachers' reports of their interactive thoughts were concerned with the learner.

In the studies by Marx and Peterson, McNair and Colker, the percentage concerned with the learner was approximately 40%. In the study by Semmel (1977), the percentage was higher (60%), perhaps because this was the only study in which teachers were dealing with exceptional children or perhaps because in the study, each teacher was teaching only one child. In contrast, Colker (1982) found no significant differences between teachers' reports of interactive thoughts about learners in a tutoring situation compared to a small group situation or a large group situation. Thus, the greater focus that the students were exceptional children or possibly to the fact that the teachers were preservice rather than inservice teachers.

In the studies by Marland and Conners, a small percentage of teachers' reports of their interactive thoughts was categorized as "Information-pupil". However, a further analysis of their data shows that a large proportion of teachers' statements about the

learner was included in their four categories entitled "Perceptions", "Interpretations", "Anticipations" and "Reflections".

The total percentage of teachers' reports of interactive thoughts dealing with the learner in the Marlands study is 50% - a percentage that comes close to the percentage reported in the other four studies. If one conducts the same analysis on the categories in the Conners study, one finds that the total percentage of teachers' statements about learner including perceptions about the learner, interpretation about the learner, expectations about the learner, self-awareness about the learner, information and mediation about the learner, is 44.1%. If one looks only at the studies in which normal learners were taught, the percentage of interactive thoughts reported about the learner was between 39% and 50%. The categories used by Marx and Peterson (1981) and McNair (1978-79), Marland's (1977) categories reflect more of a 'cognitive processes' description of teachers' interactive thought.

Conners (1978b) and Lowyck (1980) used similar categories to describe teachers' interactive thoughts. These categories come closer to describing the 'processes' that teachers engage in during teaching and more closer to a cognitive processing analysis of teaching similar to the analysis of human problem solving and decision making that have been conducted by cognitive psychologist. (Shulman and Elstein, 1975). Moreover, these results suggest that, in the future, researchers might construct a content by processes matrix of teachers' interactive thoughts. The content would reflect 'what' the teacher is thinking about during interactive e.g. objectives, subject matter, instructional process, the learner, material, or time and the processes would reflect 'how' the teacher is thinking about it(i.e. perceiving, interpreting, anticipating or reflecting).

All the categories reflect interactive thoughts that are directly related to the teachers' task of teaching. With the possible

exception of the category 'fantasy' none of the categories suggests that teachers' thoughts ever include "off-task" thoughts such as thoughts about what they are going to do after school, or throughts about their personal problems or personal life. This is in distinct contrast to the content of students' reports of interactive thoughts during a stimulated recall interview when students are shown videotaped segements of themselves in a teaching learning situation, they freely admit to and describe off-task interactive thoughts (Peterson, Swing Braverman and Buss 1982; Peterson Swing, Stark, and Wass 1983).

Because it seems unlikely that teachers' interactive thoughts are always task relevant, and it seems likely that off task thoughts would sometimes intrude, then the high frequency of task-relevant thoughts may be artifact of stimulated recall procedures that were used in these studies. If teachers have control over stopping the videotape and talking

about their interactive thoughts, then they are likely to pick only those places where they are having task-relevant interactive thoughts. Moreover, because the interviewers did not convey to the teachers that it was acceptable to have "off-task" thoughts, the demand characteristics of the situation may have been such that the teachers felt obliged to report only interactive thoughts, that were "on task". Thus teachers may have selectively recalled or reconstructed their reports of their interactive thoughts to reflect only task-relevant thinking.

3. STUDIES RELATED TO TEACHERS' DECISION MAKING:

Mackay and Marland (1978) and Louyck (1989), who have indicated that teachers' interactive decision making during instruction does not occur as frequently as was expected. This discrepancy may be due to the fact that originally, some researchers such as Peterson and Clark (1978) suggested that teachers' decision making during interactive teaching involved teachers considering two or more alternative courses of

action when they observed that the lesson was not going well. This conceptualization followed from Snow's (1972) descriptions of teacher thinking during class-room instruction. (as cited in Travers (1973))

Peterson and Clark (1978) presented a model of sequence of events. They identified four alternative paths through the model. They are as follows:

1. Path 1 - The teacher judges students class-room behaviour to be within tolerance. In other words, the teacher judges that the students are understanding the lesson and participating appropriately.

2. Path 2 - The teacher judges that student's class-room behaviour is not within tolerance i.e. the teacher may judge that the students are either not understanding the lesson or perhaps are being inappropriately disruptive or withdrawn. However, there are no alternative strategies or behaviours in the teacher's behaviour repertoire.

3. Path 3 - The teacher again judges that student's behaviour is not within tolerance and teacher has alternative strategies or behaviours available in the teaching repertoire, but decides not to change teaching behaviour to attempt to bring student behaviour back within tolerance.

4. Path 4 - The teacher judges that student's behaviour is not within tolerance, but alternative teaching strategies are available, and the teacher decides to behave differently to bring student behaviour back within the limits of tolerance.

Peterson and Clark (1978) categorized the reports of the cognitive processes of 12 teachers and found that the greatest majority of teachers' reports of their cognitive processes could be categorized as path 1. Teachers reported considering alternative strategies in

only 20% to 30% of the cases across the three days of other investigators. The average of 28.3 interactive decisions and deliberate acts reported by the teachers in Marland's (1977) study, only 24% (6.8) of them involved the teacher's explicit reference to considering one or more alternatives and evidence that the teacher followed through with his choice of alternatives.

The findings of investigators who have attempted to determine hou many alternative courses of action, teachers tend to consider when they consider changing their behaviour during interactive teaching. In their study of 18 second grade teachers and 20 fifth grade teachers, Morine and Vallance (1975) found that teachers considered an average of three alternative courses of action.

Marland (1977) found that in the vast majority of interactive decisions, teachers reported considering only two alternatives.

Wodlinger (1980) found that the teacher considered only one course of action for the

majority of her interactive decisions.

According to Peterson and Clark (1978) that teachers consider alternative courses of action during interactive teaching as well as the results which suggest that when teachers consider alternative courses of action, they do not consider many alternatives.

Marland (1977) found that 44% of teachers reported interactive decisions and deliberate acts secured in response to a judgement by the teacher that student's behaviour was not within tolerance.

Wodlinger (1980) found that 51% of the teacher's reported interactive decisions had antecedents that originated with the teacher or the environment rather than with the student. He further reported that 16% of the teacher's reported interactive decision originated with the teacher's cognitive state or affective state. In addition, the environment, including time, constraints, interruption by another adult and instructional material and equipment served as antecedent for 35% of the teacher's

reported interactive decisions.

Similarly Fogarty et el (1982) found that although cues from students served as antecedents for the majority of teachers' reported interactive decisions, 'non-student' cues served as antecedents for a large part of teachers' reported interactive decisions.

Finally, Housner and Griffey (1983) found that teachers' observations of student behaviour served as antecedents of 85% of teachers' reported interactive decisions.

(As cited by Peterson and Clark 1986)

CONCLUSION:

The review related to studies in the area, indicates that students' class-room behaviour and teachers' interactive throughts and decision are closely associated. The teachers' interactive thoughts and decisions largely depend upon the students' behaviour. Hence, changing interactive decision making behaviour of a prospective teacher becomes a legitimate task of any teacher programme.