CHAPTER V

SUMMARY, CONCLUSIONS AND THEIR IMPLICATIONS

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5.1.0 Introduction

This Chapter presents the summary of the investigation under the following headings : (i) the present study, (ii) the objectives of the study, (iii) the hypotheses, (iv) method and procedure, (v) conclusions, (vi) educational implications, and (vii) suggestions for further research.

The various education commissions appointed by Government of India after 1947, along with the most recent one appointed in 1964, were unanimous in their emphasis on the quality of teachers and teacher training. It is generally accepted that the present teacher training programmes in India proved to be inadequate in meeting the needs of prospective teachers and have failed especially in transmitting those skills in teaching which go to make an effective teacher.

It is no exaggeration to say that quality of teachers depends upon the type of training they receive. The traditional approach of learning 'how to teach' by imitation and the 'born teacher' approach are among those

approaches which served as a block in reshaping through experimentation the present student teaching programmes so as to make them effective and practically useful.

The modern scientific approaches are based upon the analysis of teaching process itself. McDonald (1973) conceptualized teacher education programmes as behaviour modification systems designed to modify complex behavioural repertoires which are adaptable to a variety of learning problems. Prospective teachers will have to be trained for applications of the principles of behaviour modification in classroom situations.

A prospective teacher is considered as a student of teaching during the classroom experience (Bennie, 1972). With the right type of guidance at the right moment, the prospective teacher develops and expands his understanding of teaching. As against 'model the master teacher' approach, Stolurow (1965) describes 'master the teaching model' approach. The basic process in developing a teaching model may be summerized as : (i) analyse the teaching behaviour keeping in view the objectives to be achieved; (ii) enlist

the variables that are likely to affect and interact in the process; (iii) ascertain the beginning knowledge and skills of the pupils; (iv) determine the learning outcomes; (v) develop a conceptual framework clarifying the different relationships between the interacting elements; (vi) convert these into plans incorporating specific contents and procedures; and (vii) develop suitable evaluation procedures to validate the model. This enables the prospective teacher to integrate theory into practice. Having successfully tried a model in the classroom during practice teaching, the prospective teacher develops insights into the teaching learning process giving him confidence in developing a teaching style of his own.

With the current focus upon life and language of classrooms (Jackson, 1968) it has become possible for the firsttime to give a more or less an objective account of the different aspects of everyday teaching (Flanders, 1961 and 1970). As a result, a number of relatively discrete components have been isolated which are generally used in different combinations in the continuous act of teaching.

These component skills of teaching form the basis of microteaching technique (Allen, 1966; Allen and Ryan, 1969). The skills listed by Allen and Ryan (1969) are : (i) set induction; (ii) stimulus variation; (iii) closure; (iv) silence and nonverbal cues; (v) reinforcement of student participation; (vi) fluency in asking questions; (vii) asking probing questions; (viii) asking higher order questions; (ix) asking divergent questions; (x) recognizing attending behaviour; (xi) illustrating and use of examples; (xii) lecturing; (xiii) planned repetition; and (xiv) completeness of communication.

How can a prospective teacher acquire these skills? What should be the length of practice necessary to achieve minimum acceptable performance? What form should it take? Where should it be conducted? Who should supervise it?

Questioning happens to be one of the most important teaching skills which is likely to pay immediate and rich dividends to teacher trainees. Microteaching offers the trainee the needed safe practice ground where he can practice a particular skill without any inhibition by teaching to

a small class of four or five students, for five to ten minutes. By designing situations where training experience, supervision, and the demonstrated behaviour can being carefully controlled, a prospective teacher [redacted] be provided with opportunities to develop and practice a workable model.

In the light of above discussion the following points emerge :

1. How can effective models incorporating the teaching skills be developed?

2. What should be the mode of presentation? Symbolic or audiotaped.

3. How can microteaching be introduced in the present setup of student teaching? With what ease? and with what effects?

Answers to these questions will have to be based on some sort of experimental evidence. It is in this context that the present study was undertaken.

5.1.1 The Present Study

The present study entitled 'Effects of Modeling and Microteaching on the Acquisition of Certain Skills in Questioning' pertains to the area of student teaching. This experimental study was conducted employing three phases, namely, a pilot phase, the second phase, and the third phase. The pilot phase was planned to provide orientation in the microteaching technique for both the investigator and the student teachers of the B.Ed. class of the Faculty of Education and Psychology, M.S. University of Baroda enroled for the academic year 1973-1974 and who opted for the experimental sessions. The pilot phase was also meant for developing guidelines for the execution of the second and the third phases of the study which were conducted at the Government College of Education, Ratnagiri, Maharashtra, with student teachers of the B.Ed. class enroled for the academic year 1974-1975.

The problem can be clarified further by explaining the key terms, namely - modeling, microteaching, and the skills in questioning. The operational definitions can be

given as follows :

1. Modeling : The two modeling treatments which served as two independent variables of the experimental study were : the symbolic modeling and audiomodeling. Symbolic modelings were the scripts of lessons (usually micro) depicting the use of the particular skill in questioning. The audiomodelings were the tape recorded lessons based upon the lesson scripts of symbolic modelings actually staged and recorded. These two types of modelings were presented to the respective groups and student teachers of those groups planned similar lessons and presented them to a group of five or six primary teachers who acted as students.

2. Microteaching : This third independent variable was [illegible] to 'teach' and 'reteach' after getting the feedback and time to replan the same lesson. This formed the treatment for the third group.

3. Questioning : The three target skills in questioning were : (a) asking probing questions; (b) asking convergent questions; and (c) asking divergent questions. The

subskills under each one of the above skills are given below :

(a) Probing questions - The teacher was expected to try to - (i) introduce prompts, (ii) seek more clarification, and (iii) refocus the question.

(b) Convergent questions - The teacher was expected to try to ask pupils to - (i) develop definitions of terms under discussion, (ii) give illustrations based on the idea, and (iii) compare and contrast between ideas, events, objects, and persons.

(c) Divergent questions - The teacher was expected to try to ask pupils to - (i) predict from the given data, (ii) develop hypothesis from the given data, and (iii) reconstruct the statements, (iv) infer from the given data.

5.1.2 Objectives of the study

(1) To develop different types of models depicting the use of three different skills in asking questions.

(2) To study the effects of modeling and microteaching on

the acquisition of three skills in questioning at different stages of the acquisition.

(3) To study the effects of training in questioning skills on the classroom performance.

5.1.3 Hypotheses of the study

Treatments, namely - symbolic modeling, audio-modeling, and microteaching would have differential effects upon the acquisition of skills in asking probing questions, convergent questions, divergent questions, and classroom performance. This major hypothesis can be split up as follows :

(1) Microteaching will come out to be the most effective treatment followed by audiomodeling and symbolic modeling proving to be the least effective treatment for acquiring the skill of asking probing questions.

(2) Microteaching will come out to be the most effective treatment followed by audiomodeling and symbolic modeling proving to be the least effective treatment for acquiring

the skill of asking convergent questions.

(3) Microteaching will come out to be most effective treatment followed by audiomodeling and symbolic modeling proving to be least effective treatment for acquiring the skill of asking divergent questions.

(4) The gain scores on the classroom performance of student teachers will not differ under the symbolic modeling, audiomodeling and microteaching treatments.

5.2.0 Method and Procedure

a) Besides the eighteen student teachers who opted for the experiment at the Faculty of Education and Psychology, M.S. University of Baroda, a team of four teacher fellows, eight research fellows, and two M.Ed. students were oriented with the theory and technique of microteaching. The supervisory team was oriented to observation systems, approaches to student teaching, and microteaching. The treatment consisting of the following steps was administered to the group of student teachers who opted

for the experiment : (a) classroom observation, (b) roleplay; (c) lesson planning; (d) microteaching; and (e) introduction to the skills in questioning. The three stages of data collection were : (i) practising the skills in 'fluency in questioning, (ii) probing questions, and (iii) evaluation of the microteaching programme by the student teachers. The schedule of the experiment was : A group of ten student teachers was divided into two subgroups each of five student teachers. One subgroup taught the lessons while other acted as students. After a five-minute microlesson by one student teacher he alongwith the supervisor went for critique while the second microteacher began his lesson. After five minutes the first supervisor came for observing the third lesson while the first microteacher replanned the lesson. In this way the five 'teach' sessions in one room and five in another room were completed. The reteach was organized on the same day where the supervisors and microteachers changed their rooms while the 'students' remained in their rooms.

b) No supervisory personnel was involved besides the investigator who was free to organize the experiment during the second and the third phases of the study which were organized at the Government College of Education, Ratnagiri. The second phase was organized in the first half of the academic year 1974-1975 with thirty student teachers divided into three groups, each group having four student teachers offering Hindi, three offering Geography and three offering Science as one of their method subjects. Each group had four female teachers and six male teachers, the age range being 20 years to 43 years. The 'roleplay' item discussed during pilot phase at Baroda was dropped from both phase-II and phase-III as inservice primary teachers were to act as students for microteaching. Two lessons for each of three skills under the three modeling treatments were organized in phase-II of the study.

c) Phase-III of the study was organized during the second half of the academic year 1974-1975 with a another batch of thirty student teachers out of which twenty were

having either English or Marathi as one of their method subjects. The group was, thus, predominently language oriented. Every student teacher from the three experimental groups completed four lessons in each of the three skills in questioning under the three treatments with inservice primary teachers acting as students. This means two cycles of 'teach-critique-replan and reteach' for the student teachers of microteaching group as against one cycle of phase-II of the study.

d) The treatment consisted of exposing the three groups to three treatments systematically and uniformly. Group A - consisting of ten student teachers - was exposed to symbolic modeling (refer to Appendix III-A, B, C), namely presenting a written script. Group B - consisting of ten teachers - was exposed to audiomodeling, namely, listening to audiotaped script of the symbolic model used for the exposure of Group A. The remaining group of ten students completed a cycle of teach-critique-replan-reteach in microteaching. A pamphlet (refer to Appendix-IIID) was distributed to all the student teachers - both

experimental and nonexperimental - as a first exposure to the questioning skill for the sake of uniformity. The student teachers of the experimental groups were allowed to discuss the skills in a group session just at the beginning of the sessions. Then these students were exposed to modeling treatments systematically.

e) The tools developed during the pilot study (vide Appendix I-C_1) were used for data collection for probing question dropping one item from the original proforma. The remaining two tools - for convergent and divergent questions - were developed on similar lines (refer to Appendix I-C_2 and I-C_3). The same tools were used by peer observers and for self assessment by the microteacher to assess the performance of the microlessons. The pre and post treatment assessment of the classroom performance of the student teachers of the three experimental groups was obtained with the help of the tool specially developed for this purpose (refer to Appendix I-D) in phase-III.

f) The data collection for the second phase of the study

comprised of the following steps : (1) practising the skill in asking probing questions and obtaining the assessment scores by two peer observers and self assessment by the microteacher for every lesson using the tool (Appendix-IC_1); (ii) practising the skill in asking convergent questions and obtaining the assessment scores by two peer observers and self assessment by the microteacher for every lesson using the tool (Appendix IC_2); (iii) practising the skill in asking divergent questions and obtaining the assessment scores by two peer observers and self assessment by the microteacher for every lesson using the tool (Appendix-IC_3). Two lessons for each of the three skills were organized in phase-II.

Data for phase-III were collected in the same manner for each of the three skills using the tools as mentioned above. Four lessons for each of the three skills were organized in phase-III. In addition pretreatment and posttreatment assessment scores of the classroom performance were obtained for the student teachers of the experimental

group (Appendix I-D). Self evaluation of the microteaching programme was carried out at the end of the phase-III.

5.3.0 Summary results and Conclusions

Basedupon the analysis of the data, the results obtained in respect of three skills in questioning under phase-II and phase-III of the study are presented in the following summary tables to facilitate the conclusions of the study.

TABLE 5.1

SUMMARY ANOVA TABLE SHOWING F-VALUES FOR THE THREE SKILLS IN QUESTIONING UNDER PHASE-II AND PHASE-III

		Phase-II			Phase-III		
		Skill-I	Skill-II	Skill-III	Skill-I	Skill-II	Skill-III
	Teachers	3.48**	2.67**	26.84**	1.98 NS	4.70**	3.25**
	Modeling	7.12**	36.61**	194.74**	48.82**	46.01**	31.77**
	Trials	1.08 NS	13.22**	13.53**	19.75**	6.19**	26.24**
	Observers	4.59**	4.25**	27.87**	5.25**	5.30**	0.31 NS
MxT	: ModelingXTrials	1.16 NS	3.05 NS	33.38**	1.01 NS	2.38*	1.11 NS
MxO	: ModelingXObservers	1.61 NS	0.41 NS	65.13**	1.45 NS	0.70 NS	2.49*
TxO	: TrialsXObservers	3.57*	1.58 NS	3.41*	0.63 NS	3.28**	0.65 NS
MxTxO	: ModelingXTrialsX Observers	2.73*	2.16 NS	29.13**	1.23 NS	1.25 NS	2.01 NS
	Experimental error	2.64df147	1.63df134	0.39df150	3.35df315	1.45df315	2.67df315

* Significant at .05 level

** Significant at .01 level

NS not significant

TABLE 5.2

SUMMARY TABLE SHOWING SIGNIFICANCE OF MEAN DIFFERENCES BETWEEN MODELINGS, TRIALS AND OBSERVERS FOR THE THREE SILLS IN QUESTIONING UNDER PHASE-II AND PHASE-III

Factors	MDs	Phase-II			Phase-III		
		Skill-I@	Skill-II@	Skill-III@	Skill-I@	Skill-II@	Skill-III@
Modeling	$M_1 - M_2$	-0.28 NS	-1.42 **	+0.20 NS	+0.43 **	-1.26 **	-1.68 **
	$M_1 - M_3$	-1.09 **	-2.03 **	-1.82 **	+2.18 **	+0.06 NS	-0.78 **
	$M_2 - M_3$	-0.81 **	-0.61 **	-2.07 **	+1.81 **	+1.32 **	+0.97 **
Trials	$T_2 - T_1$	+1.38 **	+0.73 **	-1.40 *	+0.79 **	+1.30 **	+1.12 **
	$T_3 - T_1$				+1.04 **	+1.51 **	+1.41 **
	$T_4 - T_1$				+2.07 **	+2.42 **	+2.12 **
	$T_3 - T_2$				+0.25 NS	+0.21 NS	+0.29 NS
	$T_4 - T_2$				+1.28 **	+1.12 **	-1.00 **
	$T_4 - T_3$				+1.03 **	+0.91 **	-0.71 **
Observers	$O_1 - O_2$	+1.41 NS	+0.02 NS	+0.17 NS	+0.25 NS	-0.04 NS	-0.16 NS
	$O_1 - O_3$	-0.43 NS	-0.61 NS	+1.05 NS	-0.50 NS	-0.46 NS	-0.06 NS
	$O_2 - O_3$	-0.91 **	-0.63 *	+0.88 NS	-0.75 **	-0.42 NS	+0.10 NS

@ actual values of the mean differences with directions, (+) indicating the difference in favour of the first and (-) indicating the difference in favour of the latter.

* Significant at .05 level

** Significant at .01 level

NS not significant

TABLE 5.3

SUMMARY TABLE SHOWING MEANS AND STANDARD DEVIATIONS OF TRIALS UNDER EACH MODELING FOR THE THREE SKILLS IN QUESTIONING UNDER PHASE-II AND PHASE-III

Modeling	Trials	PHASE - I									PHASE - II								
		Skill-I			Skill-II			Skill-III			Skill-I			Skill-II			Skill-III		
		N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Symbolic modeling (M_1)	T_1	30	11.27	1.86	30	9.73	1.31	30	14.33	1.75	30	11.90	2.63	30	10.40	1.70	30	14.73	1.92
	T_2	30	11.60	1.70	30	10.33	1.04	27	13.59	1.71	30	13.07	1.64	30	11.57	1.53	30	15.63	1.08
	T_3	-	-	-	-	-	-	-	-	-	30	13.10	1.31	30	12.33	1.37	30	16.03	1.97
	T_4	-	-	-	-	-	-	-	-	-	30	14.77	1.48	30	13.00	1.15	30	16.77	1.31
Audio-modeling (M_2)	T_1	30	11.77	2.24	26	11.35	1.17	30	13.47	2.14	30	12.20	1.86	30	12.06	1.26	30	16.57	1.48
	T_2	27	11.59	1.61	27	11.55	1.66	30	14.00	2.19	30	12.63	1.37	30	13.03	1.20	30	17.77	1.31
	T_3	-	-	-	-	-	-	-	-	-	30	13.00	1.31	30	13.37	1.04	30	17.87	1.20
	T_4	-	-	-	-	-	-	-	-	-	30	13.50	1.26	30	13.90	1.20	30	18.27	0.93
Micro-teaching (M_3)	T_1	30	12.00	1.64	24	11.33	1.57	30	15.23	2.30	30	10.03	1.81	30	10.26	1.70	30	14.97	1.04
	T_2	27	12.89	2.08	24	12.79	1.52	30	16.37	2.52	30	10.80	1.20	30	12.06	1.20	30	16.83	1.70
	T_3	-	-	-	-	-	-	-	-	-	30	11.16	1.37	30	11.60	1.42	30	16.60	1.92
	T_4	-	-	-	-	-	-	-	-	-	30	12.10	1.09	30	13.13	0.88	30	17.60	2.14

TABLE 5.4

SUMMARY TABLE SHOWING SIGNIFICANCE OF MEAN DIFFERENCES BETWEEN TRIALS UNDER EACH MODELING FOR THE THREE SKILLS IN SUBSTIONING UNDER PHASE-II AND PHASE-III

Modeling	Trial Comparison	Phase-II			Phase-III		
		Skill-I@	Skill-II@	Skill-III@	Skill-I@	Skill-II@	Skill-III@
Symbolic modeling (M_1)	$T_2 - T_1$	+0.33 NS	+0.60 NS	-0.74 NS	+1.17 *	+1.17 **	+0.90 NS
	$T_3 - T_1$	-	-	-	+1.20 *	+1.93 **	+1.30 **
	$T_4 - T_1$	-	-	-	+2.87 **	+2.60 **	+2.04 **
	$T_3 - T_2$	-	-	-	+0.03 NS	+0.76 *	+0.40 NS
	$T_4 - T_2$	-	-	-	+1.07 **	+1.43 **	+1.14 *
	$T_4 - T_3$	-	-	-	+1.67 **	+0.67 *	+0.74 NS
Audio-modeling (M_2)	$T_2 - T_1$	-0.18 NS	-0.20 NS	+0.53 NS	+0.43 NS	+0.97 **	+0.60 NS
	$T_3 - T_1$	-	-	-	+0.80 NS	+1.31 **	+1.30 **
	$T_4 - T_1$	-	-	-	+1.30 **	+1.84 **	+1.70 **
	$T_3 - T_2$	-	-	-	+0.37 NS	+0.34 NS	+0.70 *
	$T_4 - T_2$	-	-	-	+0.87 *	+0.87 **	+1.10 **
	$T_4 - T_3$	-	-	-	+0.50 NS	+0.53 NS	+0.40 *
Micro-teaching (M_3)	$T_2 - T_1$	+0.69 NS	-1.46 **	+1.41 NS	+0.77 *	+1.80 **	+1.86 **
	$T_3 - T_1$	-	-	-	+1.13 *	+1.34 *	+1.63 **
	$T_4 - T_1$	-	-	-	+2.07 **	+2.87 **	+2.63 **
	$T_3 - T_2$	-	-	-	+0.36 NS	-0.46 NS	-0.23 NS
	$T_4 - T_2$	-	-	-	+1.30 **	+1.07 **	+0.77 NS
	$T_4 - T_3$	-	-	-	+0.94 **	+1.53 **	+1.00 NS

@ actual values of the mean difference with directions (+) indicating the difference in favour of the first, (-) indicating the difference in favour of the latter.

* Significant at .05 level

** Significant at .01 level

NS not significant

TABLE 5.5

SUMMARY TABLE SHOWING SIGNIFICANCE OF MEAN DIFFERENCES BETWEEN OBSERVERS UNDER EACH MODELING FOR THE THREE SKILLS IN QUESTIONING UNDER PHASE-II AND PHASE-III

Modeling	Observer comparison	Phase-II			Phase-III		
		Skill-I@	Skill-II@	Skill-III@	Skill-I@	Skill-II@	Skill-III@
Symbolic modeling (M_1)	$O_1 - O_2$	-0.80 NS	+0.25 NS	-0.21 NS	+0.90 NS	-0.12 NS	-0.83 NS
	$O_1 - O_3$	+0.15 NS	-0.35 NS	-0.69 NS	+0.05 NS	-0.42 NS	-0.28 NS
	$O_2 - O_3$	-0.65 NS	-0.60 NS	-0.48 NS	-0.85 NS	-0.30 NS	+0.55 NS
Audio-Modeling (M_2)	$O_1 - O_2$	+0.69 NS	+0.16 NS	-0.20 NS	+0.12 NS	-0.02 NS	-0.35 NS
	$O_1 - O_3$	+0.06 NS	-0.66 NS	-0.65 NS	-0.90 NS	-0.25 NS	+0.00 NS
	$O_2 - O_3$	-0.63 NS	-0.82 NS	-0.45 NS	-1.02 NS	-0.23 NS	+0.35 NS
Micro-teaching (M_3)	$O_1 - O_2$	-0.05 NS	-0.44 NS	-0.90 NS	-0.37 NS	+0.05 NS	+0.68 NS
	$O_1 - O_3$	-1.53 **	-0.88 NS	-0.60 NS	-0.67 NS	-0.70 *	+0.08 NS
	$O_2 - O_3$	-1.48 **	-0.44 NS	-1.50 NS	-0.37 NS	-0.75 *	-0.60 NS

@ actual values of the mean difference with directions (+) indicating the difference in favour of the first, (-) indicating the difference in favour of the latter.

* Significant at .05 level

** Significant at .01 level

NS not significant

TABLE 5.6

SUMMARY TABLE SHOWING SIGNIFICANCE OF MEAN DIFFERENCES BETWEEN OBSERVERS UNDER EACH TRIAL FOR THE THREE SKILLS IN QUESTIONING UNDER PHASE-II AND PHASE-III

Trials	Observer comparison	Phase-II			Phase-III		
		Skill-I@	Skill-II@	Skill-III@	Skill-I@	Skill-II@	Skill-III@
T_1	$O_1 - O_2$	+0.30 NS	-0.02 NS	+0.03 NS	-0.53 NS	-0.76 NS	-0.54 NS
	$O_1 - O_3$	+0.13 NS	-0.63 NS	-0.47 NS	-0.97 NS	-0.10 NS	-0.34 NS
	$O_2 - O_3$	-0.12 NS	-0.61 NS	-0.50 NS	-1.50 *	-0.34 NS	0.20 NS
T_2	$O_1 - O_2$	+0.68 NS	+0.07 NS	+0.30 NS	-0.03 NS	0.59 NS	0.20 NS
	$O_1 - O_3$	-1.04 *	-0.60 NS	-0.80 NS	-0.47 NS	-0.17 NS	0.03 NS
	$O_2 - O_3$	-1.72 **	-0.67 NS	-1.10 NS	-0.44 NS	-0.76 *	-0.23 NS
T_3	$O_1 - O_2$	-	-	-	-0.30 NS	-0.04 NS	-0.50 NS
	$O_1 - O_3$	-	-	-	-0.16 NS	-0.47 NS	0.10 NS
	$O_2 - O_3$	-	-	-	-0.46 NS	-0.43 NS	0.60 NS
T_4	$O_1 - O_2$	-	-	-	0.17 NS	0.07 NS	-0.17 NS
	$O_1 - O_3$	-	-	-	-0.43 NS	-0.10 NS	0.00 NS
	$O_2 - O_3$	-	-	-	-0.60 NS	-0.17 NS	0.17 NS

@ actual values of the mean difference with directions (+) indicating the difference in favour of the first, (-) indicating the difference in favour of the latter.

* Significant at .05 level

** Significant at .01 level

NS not significant

Conclusions of the Study

Based upon the analysis and discussion of the results obtained in phase-II and phase-III of the Study the following conclusions appear to emerge :

(a) Probing questions :

(i) Microteaching appeared to be the best treatment for acquiring the skill in asking probing questions when tried at the beginning of the academic year. The symbolic modeling treatment did not differ significantly from audiomodeling treatment.

(ii) Symbolic modeling appeared to be the best treatment for acquiring the skillin asking probing questions followed by audiomodeling and microteaching coming out to be the least effective treatment when tried with predominently language oriented group of graduate teachers during the second half of the academic year.

(iii) Mean scores obtained for both 'reteach-I' and 'reteach-II' were significantly higher than the mean scores for 'teach-I' and 'teach-II' when

there were two cycles of 'teach-reteach' in microteaching. No such significant difference was found with one cycle of 'teach-reteach'.

(b) Convergent questions :

(i) Microteaching appeared to be the best treatment for acquiring the skill in asking convergent questions followed by audiomodeling and symbolic modeling coming out to be the least effective treatment when tried at the beginning of the academic year.

(ii) Audiomodeling proved to be the best treatment for acquiring the skill in asking convergent questions when tried with predominently language oriented group of graduate teachers during the second half of the academic year. The symbolic modeling treatment did not differ significantly from microteaching.

(iii) Mean scores obtained for both 'reteach-I' and 'reteach-II' were significantly higher than the mean scores obtained for 'teach-I' and 'teach-II'

when these two cycles of microteaching

Mean score for 'reteach-I' was also significantly higher than the mean score for 'teach-I' under one cycle of microteaching.

(c) Divergent questions :

(i) Microteaching appeared to be the best treatment for acquiring the skill in asking divergent questions when tried at the beginning of the academic year. The symbolic modeling treatment did not differ from audiomodeling treatment.

(ii) Audiomodeling was found to be the best treatment for acquiring the skill in asking divergent questions followed by microteaching and symbolic modeling proving to be the least effective treatment when tried with predominently language oriented group of graduate teachers during the later half of the academic year.

(iii) Mean score for 'reteach-I' was significantly higher than the mean score for 'teach-I' but the mean score for 'reteach-II' did not differ significantly

from the mean score for 'teach-II' when there were two cycles of 'teach-reteach' in microteaching The mean score for 'reteach-I' did not differ significantly from the mean score of 'teach-I' when there was only one cycle of microteaching.

The general hypothesis, namely - microteaching will be the most effective treatment for acquiring the three skills in questioning followed by audiomodeling and symbolic modeling being the least effective of the three treatments - was tested twice during Phase-II and Phase-III of the study. The evidence gathered so far supports the following conclustions.

(1) The superiority of microteaching treatment in the acquisition of the skills in questioning was established when tested during the first half of the academic year when the trainees were not exposed to classroom teaching regularly. The hypothesis in the form it was made was accepted in the case of 'convergent questions'. In the case of probing and divergent questions, the superiority of microteaching was accepted the differences between symbolic and audiomodeling treatments were not significant.

(2) The hypothesis of testing the superiority of micro-teaching over the symbolic and audiomodeling treatment failed to be accepted in the three skills of questioning when tested with a predominently language oriented group and tested during the second half of the academic year.

5.4.0 Educational Implications

The study was conducted under the conditions and environment generally available in a college of education for graduate teachers in India. The study indicated that microteaching proved to be effective at the beginning of the academic year. It did not produce evidence in support of the efficacy of microteaching for acquiring the verbal skills like questioning with predominently language oriented group and during the second half of the academic year, when the student teachers became deeply involved in regular classroom teaching. The study, however, reveals that modeling - either symbolic or audio - proved to be effective in producing significant behaviour changes in the student teachers during their preservice training period. One of the major implications of the study is that teaching skills can effectively be

introduced through microlessons in the normal set up of a teacher training institutions. The other implications of the study are presented under suitable heading for convenience and understanding.

1. Training of teacher educators : It is the experience that innovative programme can not be effectively implemented and carried out successfully unless the entire teaching staff is involved. The various aspects of cooperation are : to organize microlessons, to discuss them during method lecture periods, to organize tutorial groups, seminar discussions, etc. The entire supervision and supervisory function is expected to undergo changes. It is, therefore, necessory that the entire staff should be oriented through regular discussion sessions with respect to the various approaches to student teaching, the technical skills, the organization of microlessons, etc. The staff should be oriented in the new techniques of classroom interaction analysis. Simulation techniques, the role of supervisors, and changes that are needed for the acquisition of teaching skills by the student teachers. Studies have supported the effectiveness of pinpointed supervisory comments in bringing about changes

in teacher behaviour. The supervisors should be requested to develop suitable models of different skills in supervision based upon their classroom observations and discussion with student teachers.

Suitable handbooks should be developed on the lines of those prepared by Borg and others (1968) at the Far West Laboratory in the U.S.A.; by Perrott (1975) at the International Microteaching Unit at Lancaster, U.K. and by Passi (1975), Lalithamma (1975) and Joshi (1975) at the Centre of Advanced Study in Education, at Baroda, India. These materials should be developed on a large scale and may be made available to the student teachers as the first exposure to skills in teaching. This should be undertaken as a cooperative project by the training institutions of the State. Along with handbooks, the training institutions should develop models - either symbolic or audio - depicting the use of different skills in teaching. In this connection it is strongly recommended that the Film and Television Institute of India should develop perceptual models on the use of different skills in teaching and other instructional films for the use of teachers. The NCERT should develop

a central library of such films for the use of teacher training institutions. Suitable courses and training programmes for teacher educators should be evolved and organized by the NCERT and the Film and Television Institute of India, Poona.

2. Reorganization of student teaching programme : The present student teaching programmes should be completely restructured and be made skill oriented. The student teachers are made to observe lessons given by experienced teachers and staff members. As these observations are neither guided nor structured and hence ineffective. Along with these demonstration lessons some skill based microlessons should also be demonstrated with proper pre-orientation of the student teachers. Student teachers should be introduced with the techniques of simulation in teaching, interaction analysis, use of different observation systems, microteaching. They should be sufficiently prepared before they are exposed to regular classroom teaching. In short, they should be sufficiently oriented in the planning, perception and performance aspects of teaching through simulation and microteaching techniques.

Student should be encouraged to develop different models of teaching a technique which emphasizes the integration of theory and practice. The student teachers should be given opportunities to try a model of their own choice and be helped to develop a teaching style of their own suitable to their personality makeups. The number of lessons to be completed should be determined by the college staff not on the basis of uniformity but on the basis of individual needs and levels of performance actually exhibited. Student teaching programmes may be reviewed from time to time to ascertain their utility and needs for changes, if any. The approach should be flexible and based on individual needs. The element of assessment of performance by peers needs a special mention as it is one the conclusions of the present investigation. Observers - student teachers - could be trained in assessing performance in microlessons which are skill based. The student teachers should be helped to appreciate the skill and the content parts of teaching structured with different audio-visual aids aimed at achieving the instructional objectives.

3. Academic and administrative aspects : It is high time for the universities to modernize the existing teacher training programmes. In view of the exphasing of the acquisitions of technical skills in teaching the academic load should be reduced by curtailing the theory portion, if so needed. Classrooms are not the only places where prospective teachers can learn and aquire the skills. Skill based microlessons (with some variations, if required) organized in the institutions should be counted towards regular lessons. This will reduce the load of practice teaching experienced and often complained of by the practising schools. This will also reduce the supervisor energy in going from school to school. Teacher education programmes should be reviewed from time to time and suitable and desirable changes should be made, if necessary. For example, the present duration of eight months may be extended a couple of months by making the student teachers shoulder the full responsibility of classroom teaching after acquiring sufficient mastery over the teaching skills coupled with theoretical orientation. Inservice 'teaching clinics' for teachers should be made compulsory item for teacher

certification. Universities should give a thought to the professional growth of teacher educators by developing suitable projects on the lines of those such as the National Project on Microteaching designed by the NCERT, 1975.

5.4.1 Suggestions for further research

(1) Studies may be conducted to determine the relative effects of time short duration and longer duration microlessons, at the beginning of the academic year or at the end of the academic year, on the acquisition of teaching skills through microteaching. Studies similar to the above ones determining effects of environment, like noisy, crowded, with peers as students, with real students from the school may also be undertaken.

(2) The efficacy of different hierarchy of skills may be investigated. Investigations to see whether the teaching skills acquired in microsituation are transferred to classroom situation may be undertaken.

(3) The teacher pupil interactions may be studied in terms of quality of student response in classes taught by

teachers who have received training in teaching skills and who have not received such training.

(4) Studies in validation of the teaching skills may be undertaken.

(5) Effectiveness of microteaching may be studied with groups of teachers of different subject orientation, sciences, humanities and languages; so also with undergraduate teachers, inservioe teachers.

(6) The necessity of full microteaching sequence in case of graduate and undergraduate teachers may investigated.

(7) Effects of peer feedback, supervisory feedback, and self feedback on the acquisition of teaching skills may be investigated.

(8) Effects of furnishing appropriate practice in using different skills in teaching in actual teaching situations may be investigated.

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