

# Efficacy of Audio-self Feedback in Improving Teaching Proficiency

Dr. Vibha Chawla

Assistant Professor

Rayat Bahra College of Education, Hoshiarpur, Punjab, India.

**Abstract:** Teaching proficiency is primarily related to possession and improvement in the required knowledge, skills and abilities for effective teaching. A proficient teacher will sharpen learning abilities of students and bring positive effects on their academic performance. The development of key teaching skills through self-judging, self-reflecting, self-testing and self-planning can be used by the student teachers to improve their teaching proficiency. Microteaching is one of the tools for developing teaching skills among student teachers by correcting their mistakes. This study was carried out to explore the use of self derived feedback from one's audio recording (audio-self feedback) in improving teaching proficiency. The effect of audio-self feedback on development of five microteaching skills among student teacher was explored. It had been found that there was significant relationship between efficiency of using the five selected teaching skills and general teaching competence acquired through audio-self feedback. The stanine scores were obtained from pre-test and post-test scores of teaching competence of student teachers to ascertain the change in the level of performance of the student teachers.

**Keywords:** Audio-self feedback, teaching proficiency, microteaching, teaching skills, stanine scale.

## INTRODUCTION

Every perfect human being desires to live a successful life. If life has to be successful, the skills and the ability to conveniently solve the problems of life have to be acquired. In trying to realize this successful life he would be facing many problems. He needs certain type and amount of knowledge, skills, attitudinal framework and behaviours, which are necessary to solve his problems of life and realize the successful and complete life. Thus desirable amount of knowledge, skill and attitudinal behaviour are developed by the means of education. An overall and long-range aim of a programme of professional education for teachers is to effect the qualitative improvement of the entire educational system and the standard of the nation. The development of new knowledge is appropriately passed on the next generation for conservation and future advancement. An appropriate communication implies not only a thorough knowledge of the subject matter but also an adequate mastery of the scientific art of the communication in terms of techniques and methodology of teaching. Therefore, as aptly put by the Education Commission-“Investment in teacher education can yield very much dividends because the financial resources required are small when measures against the resulting improvements in the education of millions. First rate teacher training institutions can thus play a crucial role in the development of education”

In order to achieve this long-range aim more precise thinking and execution of the programme will be then directly related to the objectives. Even the student will learn better if they are also acquainted with the objectives of their educational activities and students evaluation will again be valid only if it is done in terms of following activities: (a) to teach in the art of teaching (b) How to create learning in the environment (c) a socio-emotional climate should be created in the classroom. Hence the main objective is to turn them into competent teachers. Feedback is a process, whereby, the individual gains information concerning the correctness of his previous responses so that he can adjust his behaviour to compensate for errors. It is a process of modification of behaviour. The output from a system, which is returned as input to control future output is called feedback. It is a cardinal element of teaching learning process because informing a learner that a given action is successful gratifies the cognitive, affective and ego enhancing drives, which increases the probability of action recurring. So feedback implies a conformation of correctness. Every goal seeing system employs feedback and the provision for the feedback allows the system to be refined. Feedback directs the system towards achieving a pre-determined goal state and maintaining the same. Microteaching is a technique or device of imparting training to the inexperienced or experienced teachers for learning the art of teaching by practising specific skills through scaled down teaching encounter.

Competence is the degree of accomplishment of an objective with respect to quality and time lines. It is an aspect of the total personality of the individual. It is defined as adequate for the purpose, suitable, sufficient or as legally qualified, admissible or as capable. It refers to the adequate preparation to begin a professional carrier and has a direct linkage to certification requirement. The competency based education is an approach of instruction that aims to teach each student the basic knowledge, skills, attitudes and values essential to competencies. A competency is seen as the ability to cope with a certain class of problems encountered on the job. A teacher who can deal with problems in a certain area is said to be competent in that area. A fully competent teacher is one who can cope successfully with any professional problem. Competency is the adequacy for a task or as possession of required knowledge, skills and abilities. The competencies identify a single level of proficiency or range of levels, determined through theoretical or empirical processes at which a teacher should perform. The competencies are the underlying characteristics of a person which can be a motive, a trait, skill, an aspect of one's self image or social role or a body of knowledge which he or she uses. The advancement in competencies is termed as proficiency.

Shively et al. (1970) examined the 'effects on teacher performance and attitudes of several manipulations of the conditions under which the micro teaching supervisors provide feedback'. The basis of their critique are: (i) A videotape of the micro teaching lesson which the teacher views with the micro teaching teacher (VT group); (ii) an audio-tape (AT group); (iii) his experience with the live lesson (LL group). The responses of the micro teaching student to the Stanford Teacher Competence Appraisal Guide (STCAG) (SR Group) of students in a basic educational psychology course (N=37) were randomly assigned to eight groups. Two groups were randomly assigned to each treatment and data was obtained from STCAG scores and an attitude scale measuring attitudes toward various aspects of micro teaching experience. Analysis of co-variance indicated significant differences in student ratings of the performance of subjects within the four treatments on all the thirteen variables. Major findings include that the AT treatment appears to be the strongest, resulting in the greatest amount of change as measured by student rating and also being highly valued by the micro teaching teachers. The SR treatment effectively produced change in teacher performance but was not highly valued. The VT treatment appeared relatively weak in producing change yet was highly valued. The LL treatment appears least effective and tends to be lowly valued.

Singh & Singh (1980) had done a study on the comparative effects of micro teaching under simulated & mixed conditions under general teaching competence and attitude towards teaching. The objectives of the study were to compare the effectiveness of the standard micro teaching technique & modified micro teaching technique of general competence of teaching and to study the comparative effectiveness of standard micro teaching technique & modified micro teaching technique on the retention of general competence of teaching. Control group trained through standard micro teaching technique and experimental group trained through modified micro teaching technique design was adopted. A sample of 20 student teachers was selected, which was divided equally into above two groups. The results of the study showed that there were no gains in general competence of control & experimental group. Wadhwa (1988) made a factorial structure of attitudes of teacher trainees toward micro teaching. The purpose of the study was to reveal the effectiveness of micro teaching and to identify the various underlined dimensions in a 40 item attitude scale towards the micro teaching. A sample of 80 teacher trainees from science and humanities group selected randomly and a comprehensive training of micro teaching were provided to them. The results 40 item attitude scale indicated the attitudes of teacher trainees towards micro teaching and help in preparing good teachers by bringing radical changes in teacher training strategy.

Asija (1990) conducted a study on teaching competence as related to development of skills specific to teaching of biology through microteaching among perspective secondary school teachers. The objectives of the study is to find whether the micro teaching group better performance than conventional training group in respect of development of skills & to find the superiority of micro teaching group over the conventional training group. The findings of the showed superiority of micro teaching group over the conventional training in developing the skills - B.B. Writing, Probing Questions, Demonstration, Drawing Diagrams & Heuristic Skills and this superiority was established on the post test as well as on retention test. Also performance of micro teaching technique in developing the ability to use the learned skills in an integrated form was better. Wilkinson (1996) studied collected data over three years from a project where preservice administrators provided feedback to pre-service teachers on their microteaching while practicing their supervision skills. Results suggested that the project helped preservice teachers shift their perceptions of teaching and facilitated the transition into teaching. Bean (1997) described preservice teachers' selection and use of specific vocabulary and comprehension teaching strategies for a microteaching session in a field-based practicum attached to a required content area literacy course. Data from interviews showed that preservice teachers were clear on the socio-cultural context of their practicum settings and the influence of cooperating teachers in selecting and using particular strategies.

Dunn and Shriner (1999) investigated two studies on teacher activities that may lead to the development of competence, if not expertise. In Study I, 136 teachers indicated in a questionnaire that evaluation and planning activities (informal and formal) best parallel deliberate practice activities that Ericsson and colleagues report as accounting for expertise in other domains. In Study II, log data and interviews from eight experienced teachers indicated that these activities provide opportunities for self-improvement even though that may not have been why teachers did them. The frequent and mindful engagement in these activities, prompting cycles of teaching – evaluation – revision, may be what accounts for expertise. Huang (2001) carried out the investigation of pre-service teachers' reflective practice in the context of their micro-teaching performance. Results showed that the content of participants' reflections focused on eight areas of teaching practice: (1) teacher characteristics (82%), (2) delivery of instruction (78%), (3) classroom interaction (40%), (4) subject content knowledge (25%), (5) questioning techniques (23%), (6) instructional aids (15%), (7) students (9%), and (8) general education issues (4%). The conclusions of the study point to the need for improvement on reflection contents and reflective thinking.

L'Anson et al. (2003) examined the range of strategies that can be used to promote reflection, focusing on microteaching as a vehicle for enabling students to become aware of their values, attitudes, and assumptions about learning as these are enacted within microteaching. The subsequent feedback becomes a dialogue between student, peer, teacher fellow, and tutor that provides different refractions of this practice and contributes to the development of pre-critical, internalized, and hypothetical thresholds. Kupetz and Ziegenmeyer (2005) evaluated a blended learning concept for a university teacher training course for prospective teachers of English. The concept aimed at purposeful learning using different methods and activities, various traditional and electronic media, learning spaces covering contact and distance learning, and task-based learning modules that begin with multimedia-based case stories. The

activities discussed include classroom recordings and multimedia-based case stories, an electronic interview with an expert who was an experienced grammar school teacher, and mini-practices, which implement micro teaching in a classroom setting. The mini-practice offers guided insights into analyzing teaching materials, hands-on experiences with lesson planning and the experience of acting as a teacher in an authentic teaching context. Furthermore, the mini-practice is meant to help the students broaden their perspectives on “English lessons at school” and change their perspective, that is, from a pupil’s to a prospective teacher’s.

Fernandez and Robinson (2006) stated that Microteaching Lesson Study [MLS] is a cooperative learning experience that could challenge the prospective teachers thinking about teaching and support their connection of theory and practice during an initial course on learning to teach mathematics. They studied seventy-four prospective teachers' perspectives on MLS over four sections of the course. MLS brings together cooperative groups of prospective teachers in cycles of planning, teaching, reflecting, and revising lessons. Findings from analysis of quantitative and qualitative data gathered through MLS Feedback Surveys and written reflective MLS reports revealed that our prospective teachers perceived MLS to be a worthwhile learning experience. Anseel and Lievens (2007) conducted a study to examine how feedback interest after career assessment can be influenced by changing individuals' beliefs about the importance and modifiability of the various performance dimensions. In an experiment, 82 master students completed a computerized assessment tool developed for assessing managerial potential. Results showed that participants in the experimental condition were more interested in feedback about important dimensions as opposed to unimportant dimensions and were more interested in feedback about non-modifiable dimensions as opposed to modifiable dimensions. These findings might assist career counsellors and organizations in designing strategies that direct feedback interest toward performance dimensions that are most important for their clients' career or that are most valued in their organization.

It had been found that teachers face difficulty in generating quality feedback as per the time schedule and this affects teachers their self-efficacy & emotions negatively (Chambers et al., 2009; Tschannen-Moran & Johnson, 2011; Brackett et al., 2013). Krebt (2015) proposed three methods for linking by life-long learning with self-assessment (a) developing of critical skills for evaluating individuals' learning (b) developing self-directed learning for organizing and focusing his learning (c) developing the responsibility for learning. Borgmeier et al., 2016 described self-assessment as a tool for teachers to evaluate themselves by giving them the ownership about process of evaluation and providing them awareness of their weak areas which needs modification. The improvement in feedback strategies by application of audio feedback devices had been reported recently in number of research studies (Cann, 2014; Knauf, 2015; McKeown et al., 2015). The research studies conducted so far are aimed at exploring the effectiveness of audio recordings in improving the teaching learning process. The efficacy of audio-self feedback in improving teaching proficiency through learning of micro teaching skills by student teachers is still not much studied. The present study was carried out to explore whether audio-self feedback is useful in improving the teaching proficiency by developing set of micro teaching skills under micro teaching setup. The following are the null hypotheses for the study:

1. There is no significant effect of efficiency of using the different skills acquired through Supervisor Feedback on General Teaching Competence of student teachers.
2. There is no significant effect of audio-self feedback on the level of performance of student teachers.

## METHODOLOGY

### Sample

The 10 student teachers were randomly selected from B.Ed. course in D.A.V. College of Education, Hoshiarpur for the present research study out of which four were male & six were female.

### Design of the Study

The dependent variable (teaching competence) had been measured before and after applying audio-self feedback using single group Pre-Test Post-Test design. The five teaching skills i.e. Skill of Introducing the Lesson (ITL), Skill of Explanation (E), Skill of Probing Questions (PQ), Skill of Stimulus Variation (SV) & Skill of Blackboard Writing (BW) were developed among the student teachers with the help of audio-self feedback.

### Tools Used

The following tools: Baroda General Teaching Competence Scale; Observation Schedule cum Rating Scale for the Skill of Introducing the Lesson; Observation Schedule cum Rating Scale for the Skill of Explanation; Observation Schedule cum Rating Scale for the Skill of Probing Questioning; Observation Schedule cum Rating Scale for the Skill of Stimulus Variation; Observation Schedule cum Rating Scale for the Skill of Black Board Writing as described by Chawla & Thukral, 2011, were used in this study. Two Pentium IV Computers, My Sound Studio Software, Dynamic Stereo Headphone with Microphone & CD-RW were the instruments used for audio recording. The audio recording was subsequently used for audio-self feedback.

### Data Collection

The pre-test score of student teacher was obtained by applying the BGTC scale before the start of the skills acquisition phase. The student teachers were subsequently taught in detail about the concept of microteaching,

teaching skills, and components of selected teaching skills. The four micro lesson plans (two for each teaching subject) of about six minutes for each of the selected skill was prepared by each student teacher. In this way each student teacher had prepared the 20 micro lessons. Subsequently audio recording of the micro lesson delivered by the student teacher on the Pentium IV Computer was done by using My Sound Studio Software and Dynamic Stereo Headphone with Microphone. Immediately after the recording, audio recording was saved on CD-RW and was shifted to Pentium IV Computer placed in the feedback room. Subsequently it was played on the computer & listened by the student teacher alone. Subsequently the feedback was derived by student teacher himself/herself on the basis of his/her audio recording so as to bring desired changes in his micro lesson plan and teaching skill. The student teacher then modifies the micro lesson and teaching behaviour in light audio-self feedback. This process of audio recording and deriving audio-self feedback continues till the desired behaviour or teaching skill was acquired. In this way each student was trained by audio-self feedback in five selected teaching skills by using standard microteaching cycle. Finally BGTC Scale was applied on each student teacher for obtaining post-test score.

### Data Analysis

The data was analysed through descriptive statistics like mean, standard deviation, product moment coefficient of correlation to quantify effect of audio-self feedback on the general teaching competence of student teachers. The effect of audio-self feedback on the level of performance of student teachers was evaluated by Stanine scale.

## RESULTS AND DISCUSSION

The overall efficiency of using five selected teaching skills by the student teacher is calculated by dividing the total final score obtained by the student teacher in all the teaching skills by the maximum total score (224) of all the five teaching skills and multiplying by 100. BGTC Scale scores was evaluated as final score (FS) to explore the relationship between efficiency of using the five selected teaching skills and general teaching competence of student teachers trained through audio-self feedback. Table 1 shows performance data of the student teachers trained through audio-self feedback i.e. average final score in each of five selected skill, efficiency of using the five selected teaching skills, final BGTC scale score and of the student teachers and product moment coefficient of correlation between efficiency of using the five selected teaching skills and final BGTC score.

The average efficiency of using all the five selected teaching skills had been found to be 82.72 and average post test BGTC scale scores of the group is 92.7. Further the coefficient of correlation between efficiency of using five teaching skills & post test BGTC scale score has been found to be 0.486. This indicates moderate correlation between efficiency of using the five selected teaching skills and general teaching competence for the student teachers trained through audio-self feedback and this value of  $r_{\eta f}$  is more than even the tabulated value at .20 level of significance for 8 df. This indicates that there is significant relationship between efficiency of using the five selected teaching skills and general teaching competence acquired through audio-self feedback at .20 level of significance.

**Table 1 : Performance data of the student teachers trained through audio-self feedback**

S. No.	Average Final Score in the Skill of					Total Score	$\eta$	FS
	ITL	E	PQ	SV	BW			
1	30	41	29	36	52	188	83.93	93
2	27	42	30	34	52	185	82.59	96
3	29	43	29	35	51	187	83.48	97
4	29	39	30	33	52	183	81.70	72
5	28	40	32	37	52	189	84.38	95
6	28	42	30	35	50	185	82.59	100
7	28	41	29	36	51	185	82.59	117
8	29	42	26	33	51	181	80.80	79
9	28	42	29	36	51	186	83.04	104
10	27	42	26	36	53	184	82.14	74
Mean							82.72	92.7
$r_{\eta f}$							0.486	
Note : $r_{.01}$ at (10-2 =) 8 df = 0.765; $r_{.05}$ at (10-2 =) 8 df = 0.632; $r_{.10}$ at (10-2 =) 8 df = 0.549; $r_{.20}$ at (10-2 =) 8 df = 0.443; ST = Student Teacher; $\eta$ = Efficiency of Using Five Teaching Skills; FS = Post Test BGTC Scale Score; $r_{\eta f}$ = Coefficient of Correlation Between Efficiency of Using Five Teaching Skills & Post Test BGTC Scale Score								

The second hypotheses of the study was evaluated by converting raw scores of the student teachers were converted into Stanine scores to assess the change in the level of performance of the student teachers at pre-test and post-test stages. Table 2 elucidates the level of the performance of student teachers after pre-test and post-test stages on Stanine scale.

**Table 2 : Performance scores of student teachers at the pre-test and post-test stage**

Pre-Test					Post-Test				
Stanine	Scores	Frequency	%age	Category	Stanine	Scores	Frequency	%age	Category
9	104 +	1	10	-----	9	118 +	0	0	-----
8	98 - 103	0	0	20	8	111 - 117	1	10	20
7	92 - 97	1	10	<b>High</b>	7	104 - 110	1	10	<b>High</b>
6	85 - 91	0	0	-----	6	97 - 103	2	20	-----
5	79 - 84	2	20	60	5	90 - 96	3	30	50
4	72 - 78	4	40	<b>Average</b>	4	83 - 89	0	0	<b>Average</b>
3	66 - 71	2	20	-----	3	76 - 82	1	10	-----
2	59 - 65	0	0	20	2	69 - 75	2	20	30
1	+ 58	0	0	<b>Low</b>	1	+ 68	0	0	<b>Low</b>
Mean =		80.90			Mean =		92.70		
S.D. =		12.81			S.D. =		14.03		

The mean score of student teachers at the pre-test stage have been calculated to be 80.90 with S.D. 12.81 whereas the mean score at post-test stage have been calculated to be 92.70 with S.D. 14.03. The raw scores of the student teachers were converted into stanine scores to assess the change in the level of performance of the student teachers at pre-test and post-test stages. It is clear from the table that at pre-test stage the performance of 20 percent of the student teachers is high whereas 20 percent of the student teachers fall in the category of low performance. It has been also observed that 60 percent of student teachers have shown average performance. On the other hand at the post-test stage the performance of 20 percent student teachers may be termed as superior or high whereas performance of 30 percent student teachers has been found to be low or below average. 50 percent of student teachers fall in the category of average performance.

This shows there is no change in the percentage of student teachers falling in the category of high performance category. However the percentage of student teachers in the low performance category is increased from 20 to 30 percent i.e. 10 percent of the student teachers show a downward tendency. In other words there is shift of 10 percent of student teachers from average performance category to the low performance category. Thus the second hypothesis that "There is no significant effect of audio-self feedback on the level of performance of student teachers" is rejected in the light of above discussion. Further it can be stated that the development of teaching skills among the student teachers through audio-self feedback is not effective in developing the general teaching competence among the student teachers.

## CONCLUSIONS

The microteaching setup can be used in developing the Skill of Introducing the Lesson, Skill of Explanation, Skill of Probing Questioning, Skill of Stimulus Variation & Skill of Blackboard Writing among student teachers through audio-self feedback so as to increase their teaching proficiency. It had been found that there was significant relationship between efficiency of using the five selected teaching skills and general teaching competence acquired through audio-self feedback. The audio-self feedback had not been found to be effective in improving the level of performance of student teachers in terms of general teaching competence. 10% of the student teachers move from average to low performance category. This research study demonstrated that audio-self feedback can contribute to improve the proficiency of student teachers. This type of feedback will assist in mastering their teaching skills through self-assessment and enhance the effectiveness of teaching-learning process. This type of strategy can prove to be highly effective where there is shortage of supervisors because in this of type of feedback student teachers can spend ample amount of time in developing their teaching skills with requiring any supervisor.

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