

**THE ROLE OF APTITUDE IN MASTERY LEARNING AND
DIRECT INSTRUCTION IN THE GRADUATE TEACHER
TRAINING PROGRAMME**

*Fouzia Kousar
Dr.Saima Kamran Pathan*

ABSTRACT

The problem under investigation was to find out whether achievement through Mastery Learning (ML) and Direct Instruction (DI) was dependent on the aptitude of student-teachers in the graduate teacher training programme or not. The objectives of the study were to ascertain the aptitude of student-teachers before teaching them through Mastery Learning and Direct Instruction, to compare the high aptitude student-teachers in their academic achievement through Mastery Learning and Direct Instruction. Further objectives were to compare the low aptitude student-teachers in their academic achievement through Mastery Learning and Direct Instruction. Moreover, to compare the academic achievement of student-teachers having high and low aptitude taught through Direct Instruction and to compare the academic achievement of Mastery Learning group and Direct Instruction group of student-teachers. It is an experimental study. The population of the study consisted of student-teachers enrolled in B. Ed. programme in College of Education, Islamabad. The sample comprised of 116 student-teachers of B. Ed. class of College of Education. Research findings revealed that the student-teachers having high and low aptitude differed in their achievement after teaching them through Mastery Learning and Direct Instruction respectively, the difference being in favor of those taught through Mastery Learning. The student-teachers with high and low aptitude did not differ in their achievement when exposed to teaching through Mastery Learning. The student-teachers with high and low aptitude however differed in their achievement when exposed to teaching through Direct Instruction, the difference being in favor of student-teachers having high aptitude. Mastery Learning was found to be equally effective for student-teachers having high and low aptitude for teaching, whereas Direct Instruction was found to be effective for student-teachers having high aptitude.

The major recommendations of the study were: Keeping in view the significance of aptitude, the enrollment selection criteria may suitably be modified. The text, lesson plans, co-curricular activities and behavior of teacher may have a positive influence on aptitude. Therefore, these aspects may be improved and further research may be conducted

on these aspects. Instructional material should be developed based on these two models of teaching for different subjects at different grade levels. These two models of teaching should be tested on under-achievers and over-achievers in terms of their achievement.

INTRODUCTION

Education refers to the development of human skills and knowledge of the people. In this regard, Butt (2007:1) stated that educational system of a country is a mirror that replicates its existing social realities, hopes and ambitions of what ideally it would like to be. Education has come out as force for the socio-economic development of a nation. Investment on education contributes significantly towards the development of the human capital as Pakistan Economic Survey (2006-2007:161) emphasized that education is the basic driving force of growth and development in an increasingly interrelated and global world.

According to Parkash (2003:29), education is an integral part of modern life. Referring to teacher education, Khalid (1997:4) stressed that in any system of education teachers inhabit the vital position. No education system can be superior to the excellence of its teachers. Government of Pakistan (1998-2010:47) stated that the worth of training is unswervingly associated with value of classroom teaching. The instructor plays key disposition during execution of every single didactic improvement ahead of the basic stage. Pragmatically, the instructive credentials, comprehension of the topic, capability and expertise of training and dedication of the educator encompass valuable collision of practices of education.

According to Zubaida (2007:7), of all the education mechanism, the key one that establishes the triumph or collapse of a state in educating its citizens is the function of the teachers. Their professionalism, knowledge and academic skills mould the minds and persona of the next generations. The teacher training has produced an entire chain of versatile tasks; to convert knowledge and through it present as a role model and to develop self-esteem of students. Referring to teacher training, Bansal (2007:6) expressed that the teacher training institutions are facing the challenge of preparing a new age group of teachers to

successfully use the new learning paraphernalia in their teaching practices.

Teaching is a dynamic and an objective activity. In this course of action, one person imparts information and skills to another and its spotlight is to acquire utmost learning experiences. Whereas Hughes and Hughes (2004, p.319) defined, that teaching is more than the resourceful deliverance of methodically prepared lectures. The solution for success in teaching is that not only intelligent students can learn but also slow students can achieve the goal.

Joyce and Weil (2000:135) introduced and presented several models of teaching consisting upon different approaches for instructional process to bring changes in the performance of the learners. In this regard, Joyce and Weil (2002:xi) synthesized that one of the group of models i.e. the behavioral systems family models are used in a broad range of applications, from teaching information, concepts and skills to increasing calm and rest, diminishing phobias, altering behavior and learning to control one's performance. The models of this family, with wide prospective for uses in school settings, are as under:

- Bloom (1971), Block (1971) and Carroll (1971) made available Mastery Learning which is well-organized and fascinating way of escalating the possibility that more students will accomplish mastery performance.
- Direct Instruction by Brophy (1976), Good (1983), Becker (1977), Engelmann (1966) and Rosenshine (1971). It approaches educational substance methodically.
- Social learning of Bandura and Becker (1981) educates about the community and its problems.

As elaborated by Bloom (1971:47-63) characteristics of Mastery Learning are given subsequently:

- Mastering of every topic characterized within requisite foremost goals as to represent functions for lessons or components.
- After that the topic split within bigger lay down of comparatively little components of learning apiece one possessing goals that presented fractions of the foremost goals and considered indispensable for mastery.

- Selection of components for teaching along with the relevant strategy of education.
- Following completion of apiece component progress of students measured discovering exact difficulties of every pupil. Consequently awareness about improvement offered to pupils granting encouragement or fortification if needed.
- Subsequent to examination additional teaching given to pupils assisting in getting through difficulties, if teaching supervises in the manner, Bloom considers learning time be exercised for aptitude pertinent placing. Pupils having low aptitude specified further time as well as additional teaching as the improvement of pupils measured through examination.

Swanson (2001:4) explained that educators go after series of proceedings while teaching by means of Direct Instruction as a rule describing goals, appraising expertise essential in support of fresh knowledge, giving novel understanding, inquiring pupils, offering teaching in grouping moreover autonomous practice, evaluating furthermore providing extra practice. He presented succeeding principles linked by means of Direct Instruction. Direct Instruction takes place as soon as a few of the subsequent signs show:

- Contravening assignment in minute components
- Managing queries
- Unswerving response
- Presenting graphic otherwise drawing illustrations
- Permitting autonomous practice as well as on your own rated teaching
- Infringement of lessons within easy segments
- Teaching within minute faction
- Teaching prearranged substance with swift tempo
- Instructor inquiring difficulties
- Instructor teaching the novel substance

Mastery Learning approaches largely depends upon personnel in favor of the accomplishment instead of other technological procedures. It declares that every instructor can facilitate almost every single pupil to gain knowledge outstandingly. The educator can assist slow and uncaring learners

to be taught like fast and motivated learner. It is not individualized programme but starts with tutoring the group and it is feasible to amalgamate it willingly into the ordinary classroom. Likewise by conventional instruction, the trainer by means of this model starts through an objective but quickly includes a step earlier to the primary instruction. This step is a pre-assessment. The pretest is imperative in the direction of the effectiveness of the unit of study because, according to Bloom, there is a direct association between student participation in learning and preconditioned skills and knowledge.

One of the view point of Direct Instruction is a conviction that each student can learn and if learning is not going on, then teaching is not occurring. It is a comprehensive model that covers teaching procedures for low performing students implementing policy and teacher training. However, applying this model, one should lead by effective identification of student's previous knowledge for accomplishing high points of exactness during divergent settings of practices. A strong academic focus generates better student commitment that results better achievement. The most exceptional exclusivities of Direct Instruction encompass educational focal point, an elevated level of teacher management and direction, superior prospects for learner's growth, an arrangement of time organizing moreover environment.

By concluding above, Mastery Learning is concerned with human beings instead of other technological practices where every teacher knows how to facilitate almost each and every learner to be taught remarkably in the ordinary classroom circumstances where teacher already holds the curricula. It facilitates each student to work, develops self-direction and inspiration for learning. It starts by way of teaching in groups. Moreover, it is not individualized programme. Integration of Mastery Learning within ordinary classroom is a potential. Whereas, while practicing Direct Instruction, the teacher explains the objectives of the lesson and activities, its link to previous knowledge or experiences, communicates about the stages of the lesson and responsibilities of students during those activities. The teacher also gains the attentions of the learners, controls goals, selects appropriate resources for the aptitude of students and speeds up the teaching process and assesses their performance.

Mastery Learning can be implemented simply by modifying group instructional procedures to ensure that some students have more time and they receive appropriate individual instruction according to the results. Major goal of Direct Instructions is the maximization of student's learning time. Mastery Learning can be implemented simply by modifying group instructional procedures to ensure that some students have more time and they receive appropriate individual instruction according to the results.

METHODOLOGY AND SOURCES OF DATA

The population of the study comprised 120 students enrolled in B. Ed. session (2005-06) in College of Education, Islamabad.

The researcher selected 116 student-teachers out of 120 student-teachers. After assessing these 116 student-teachers through aptitude scale, they were divided into two groups, each group having 58 student-teachers of high and low aptitude respectively. Student-teachers with high aptitude were further divided randomly into two groups namely Mastery Learning with high aptitude (MLA) and Direct Instruction with high aptitude (DIA). Student-teachers with low aptitude were also divided randomly into two groups namely Mastery Learning with low aptitude (MLB) and Direct Instruction with low aptitude (DIB). Each group had 29 student-teachers. The aptitude score was measured through aptitude scale administered on student-teachers of B. Ed. Class.

Factorial Design (2 x 2) was applied in the study as there were two methods i.e. Mastery Learning and Direct Instruction and two levels of aptitude i.e. high and low.

A number of 116 student-teachers were taken and first of all their aptitude level was calculated from the aptitude scale. Those 58 student-teachers having high aptitude level were divided into two groups i.e. Mastery Learning with high aptitude and Direct Instruction with high aptitude each consisting of 29 student-teachers. 58 student-teachers having low aptitude level were also divided into two other groups i.e. Mastery Learning with low aptitude and Direct Instruction with low aptitude. Each group was thus comprised of 29 student-teachers.

In order to draw valid conclusions from experimental research reliable and valid tools must be used for the measurement

of variables. This requirement is generally met by applying standardized tests. Since no research has been conducted earlier in the area selected for the research, so the researchers herself developed a test for the purpose applying following tools and measurements. For the measurement of aptitude, an aptitude scale of the student-teachers was prepared by the researcher. The four chapters taken from “Educational Psychology” of B. Ed. course were taught through Mastery Learning and Direct Instruction. With the intention of measuring the achievement of student-teachers, an achievement test was administered.

Development of Aptitude Scale

For measuring the aptitude of student-teachers, the three points aptitude scale was prepared, on which a statement was followed by the three-response continuum, agree, uncertain and disagree

The Description of Achievement Test

Achievements of student-teachers measured by means of achievement test developed by the researcher in English as well as in Urdu.

Data collected was analyzed and interpreted by applying t-test and Factorial ANOVA. The level of significance used in the study was 0.05.

TABLE: 1
VARIATION IMPACT LINKING MEAN POST-TEST
ACHIEVEMENT SCORES OF HIGH APTITUDE AND LOW
APTITUDE STUDENT-TEACHERS TAUGHT THROUGH
MASTERY LEARNING

Categories	N	MEAN	SD	SE	t- VALUE	p
Post test of MLA	29	96.76	2.41			
				0.50	1.30	2.00 NS
Post test of MLB	29	96.10	1.99			

Df = 56

t at 0.05 = 2.00

TABLE: 2
VARIATION IMPACT LINKING MEAN POST-TEST
ACHIEVEMENT SCORES OF HIGH APTITUDE AND LOW
APTITUDE STUDENT-TEACHERS TAUGHT THROUGH
DIRECT INSTRUCTION

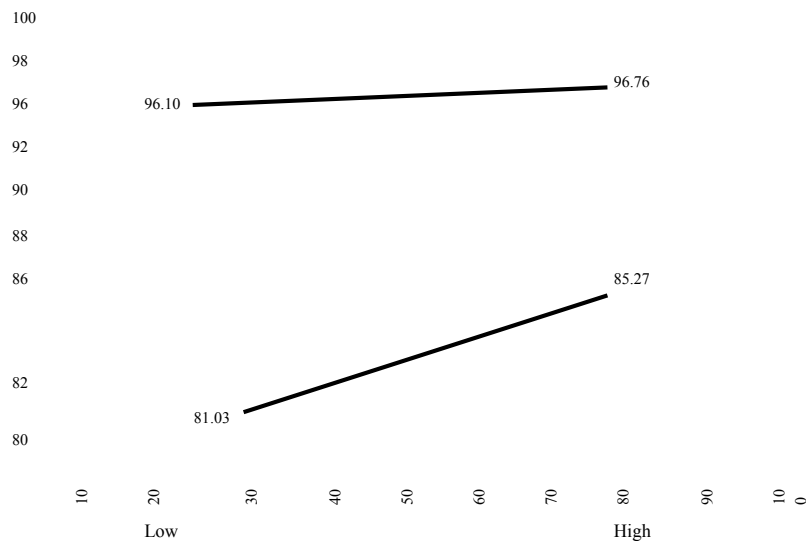
Categories	N	MEAN	SD	SE	t- VALUE	P
Post test of DIA	29	85.27	2.22			
				0.71	5.97	0.00**
Post test of DIB	29	81.03	2.86			S

df = 56

t at 0.05 = 2.00

TABLE: 3
SIGNIFICANCE OF INTERACTION BETWEEN ACHIEVEMENT
SCORES OF STUDENT-TEACHERS TAUGHT THROUGH
MASTERY LEARNING AND DIRECT INSTRUCTION

	Mean (ML)	Mean (DI)
High aptitude	96.76	85.27
Low aptitude	96.10	81.03



DISCUSSION

The study is an attempt to understand the role of aptitude with the achievement when student-teachers are taught through Mastery Learning and Direct Instruction.

From this experimental study, it is found out that Mastery Learning is the most effective with respect to the achievement with high and low aptitude levels of student-teachers whereas Direct Instruction is effective only for high aptitude level student-teachers.

Ebel & Frisbie (2004:340) while discussing about aptitude test, described that the user of aptitude scores desires to draw inferences about future behavior-what the examinee most likely will be able to do, not what he or she can do at that particular moment. On the other hand, Carroll (1974:287) stated that the knowledge of aptitude besides achievement manifested noticeably if aptitude in favor of a learning assignment calculated earlier of the individuals occupying that assignment, furthermore if achievement of the assignment is computed subsequent to a specified quantity of expertise of the assignment of learning.

The studies conducted by researchers have reflected that Direct Instruction is superior to other methods of teaching while comparing with other teaching strategies, models or methods Chen & Klahr, (1999); Karp & Voltz, (2000), and Chall, (2000).

The results of study were found same as the research studies conducted by Bessellieu, Kozloff & Rice (1998) who inferred that enhanced achievement occurred when pupils qualified by means of Direct Instruction notwithstanding traditions, ancestors' environment and other conditions of livelihood.

It concluded that the student-teachers having low aptitude did not differ in their achievement before exposing them to Mastery Learning and Direct Instruction. The student-teachers having low aptitude were different in their achievement before and after exposing them to Direct Instruction and Mastery Learning respectively. The student-teachers having low aptitude differed in their achievement after exposing them to Mastery Learning and Direct Instruction. The difference was in favor of student-teachers with Mastery Learning. In this connection, Ebel & Frisbie (2004:340) elaborated that aptitude tests are planned to foretell future performance and are based on content that may have been

learnt in or out of school. By contrast, achievement tests describe the correct position of student's learning.

The student-teachers having low and high aptitude were different in their achievement before exposing them to Mastery Learning; the difference was in favor of students with high aptitude. The student-teachers having high and low aptitude did not differ in their achievement when exposed to teaching through Mastery Learning. In this respect Best (2005:172) emphasized that measurement of aptitude to envisage the competencies or the degree of achievement that may be estimated from individuals in an activity.

The other studies conducted by researchers have shown that Mastery Learning is superior to other methods of teaching in helping students to develop most of instructional outcomes. In this regard, Sukhia, Mehrotra & Mehrotra (1991:328) maintained that the achievement test measures the current level of performance of individuals or groups in educational learning. Conclusions regarding present research furthermore revealed that in teaching to high-level aptitude and low-level aptitude teacher-students, as compared to Direct Instruction, Mastery Learning had positive effects on achievement. The results of the study have also been endorsed by Carroll (1974) and Bloom (1971). Mastery learning approach has been found to be more effective in comparison to other teaching methods in improving students learning and achievement. It is in this context that the present study becomes important and essential as it is endorsed by the specific concern of earlier researchers both in objectives of the study and its methodology.

The results of study are inconsistent with the results of Block and Burns (1977) as Mastery Learning students scored higher than non-mastery. The present study also found out that Mastery Learning was better than Direct Instruction while teaching to both high-level aptitude and low-level aptitude student teachers. The student-teachers taught through Mastery Learning showed better performance in teaching training programme. As Bloom (1968) stated that teaching by way of Mastery Learning presents respite for schooling moreover expands enduring curiosity of continuing education.

When comparing with other methods, the findings of the research study are same as Ziffer (2006) evaluated that Direct Instruction nonetheless surpassed other techniques within quarters that judged for standing out exceptionally. Students of the present research study increased learning and achieved good results when taught through Direct Instruction.

Reviewer such as Guskey (1997) for Mastery Learning and the researchers who maintained the same results like present study while teaching through Direct Instruction are Seebach (2004), Grossman (2005) and Kirschner Sweller & Clark (2006).

The above findings have implications for teachers, teacher-trainers and administrators. This study provides evidence that teaching through Mastery Learning and Direct Instruction closely relate to students' achievement. Thus, the administrators as well as the teachers should make efforts, so that the teaching-learning process remains productive. This could be achieved by adopting models of teaching in the schools as well as teacher training programmes.

Teacher-trainers need to make aware of what makes teaching more productive. To make teaching-learning process more effective the teachers should use models of teaching. Therefore, inferences of this study are vital for educationists, administrators, principals, teachers, teacher-trainers and teacher training colleges concerned with making education more fruitful and productive.

CONCLUSION

The following conclusions were drawn from the study:

- The student-teachers having low aptitude did not differ in their achievement before exposing them to Mastery Learning and Direct Instruction. The student-teachers having low aptitude were different in their achievement before and after exposing them to Direct Instruction and Mastery Learning respectively. The student-teachers having low aptitude differed in their achievement after exposing them to Mastery Learning and Direct Instruction. The difference was in favor of student-teachers with Mastery Learning.
- The student-teachers having low and high aptitude were different in their achievement before exposing them to

Mastery Learning; the difference was in favor of students with high aptitude. The student-teachers having high and low aptitude did not differ in their achievement when exposed to teaching through Mastery Learning.

- The student-teachers having low and high aptitude were different in their achievement before exposing them to Direct Instruction, the difference, being in favor of student-teachers with high aptitude. The student-teachers having high and low aptitude differed in their achievement when exposed to teaching through Direct Instruction, the difference being in favor of student-teachers learning with high aptitude.
- Mastery Learning was found to be equally effective for student-teachers having high or low aptitude for teaching whereas Direct Instruction was found to be effective for student-teachers having high aptitude.

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