J. Appl. Environ. Biol. Sci., 8(2)136-143, 2018

ISSN: 2090-4274
Journal of Applied Environmental and Biological Sciences
www.textroad.com

Effect of Systematic Training on Teachers' Performance: An Experimental Study

Iftikhar Ahmad[1], Dr. N.B. Jumani[2], Dr. Shamsa Aziz[3]

[1]PhD scholar, Department of Education, International Islamic University Islamabad, Pakistan.
[2]Professor of Education, International Islamic University Islamabad, Pakistan.
[3]Chairmen Education Department (Ladies), International Islamic University Islamabad, Pakistan.

Received: October 5, 2017
Accepted: December 17, 2017

ABSTRACT

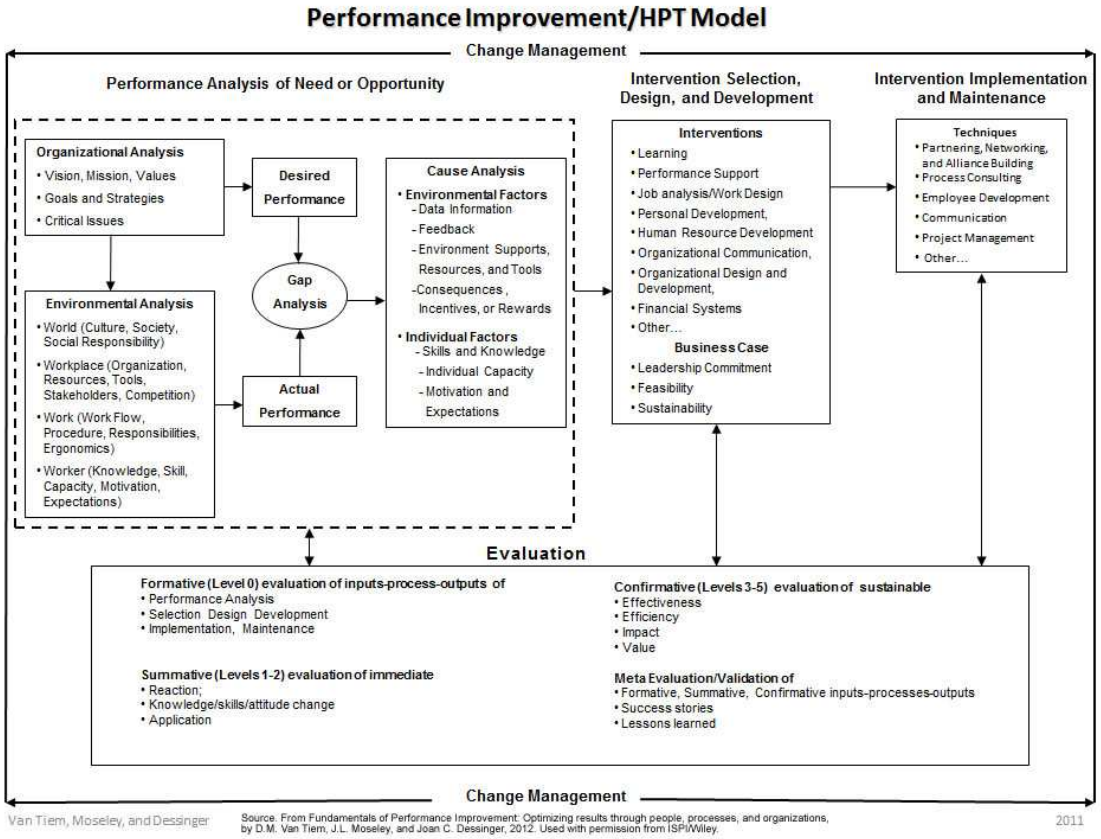
Experimental effect of training on school teachers' learning performance was determined. The 60 male Secondary School Teachers (Science/Arts) were selected through simple random method in the year 2016-17. There were one hundred and eighty teachers the then working whose list was obtained from their Executive District Officer (Education). A self made test was prepared. After pretest trainees' list was arranged in descending order. Then both experimental and control groups were equally divided and equated with the single trait of pretest scores by selecting them one by one for both groups. The researcher also took the test and got the highest marks and was identified as the exemplary performer among the trainees to deliver training to the experimental group. The training was delivered by lectures and discussions up to six weeks. The aim of the training was to enhance the knowledge and skills of trainees up to the trainers' level. 01 null hypothesis was tested to check the effectiveness of training. After training the posttest was conducted and data were analyzed through independent t test for the difference between experimental and control group which was found statistically significant. A medium large magnitude (.626) of effect size was determined by Cohen's d. Together; the findings suggest that the systematic training can be used in the government schools education department at district Rajanpur. Such type of training can improve the performance of teachers by enhancing their knowledge, comprehension, and skills. As per the findings and conclusions of this study, it is recommended that the systematic training may be adopted more frequently in educational institutions. It may increase the performance of teachers.
KEYWORDS: Experimental Research, Performance, Systematic Training, Exemplary Performer, Performance Gap.

1. INTRODUCTION

Systematic training of teachers after their long term development of university education is very economical tool to enhance their performance at their workplaces. A great concern for almost all government schools in Pakistan is to enhance the performance of their teachers and other employees. "Thus, conducting a systematic needs assessment is a crucial initial step to training design and development, and can substantially influence the overall effectiveness of training programs [3]". Systematic training is a well planed intervention to improve the performance of employees. International Society for performance improvement, Canadian Society for training and development and American Society for training and development has done a lot of work on such type of training. Specific knowledge, skill and comprehension are necessary for the performance of a teacher [2]. A gap is measured between required level of performance and existing level of performance as it was created in human performance technology model by International Society for Performance Improvement [4]. It uses systematic and systemic approach focusing on performance measurement. A system is more than the simple sum of its elements (13). Almost all schools are human systems where low learning is usually due to their teachers and other employees. Training may be a good solution if low performance is due to the lack of knowledge and skills of the teachers.

***Corresponding Author:** Iftikhar Ahmad, PhD scholar, Department of Education, International Islamic University Islamabad, Pakistan.

International society for performance improvement has created the following model.



[4]

Figure 1: Human Performance Model

This human performance model by International Society for performance improvement was partially used to create the gap between exemplary performer (trainer) and trainees. These cyclic processes systematically focus on measuring human performance at almost all levels. Human performance model helps to address the primary causes by identifying and analyzing it systematically at an organizational level. It provides foundation to identify, analyze and create performance gap. It helps to design and develop cost-effective and workable solution to fill the gap. It measures results continuously in a cyclic process and each cycle decreases the identified performance gap.

Cause analysis model by [9] helped the researcher to find out the reasons behind the low performance of teachers in the government schools at district Rajanpur[9].

Table 1 Cause Analysis Model

	Information	Instrumentation	Motivation	
Environmental Supports	1. data	2. Instruments	3. Incentives	Rooted in environment
Person's Repertory of Behavior	4. Knowledge	5. Capacity	6. Motives	Rooted in individual performance

All teachers were from the same department and district so it was presumed that they had almost same kind of instruments provided and motivation level to do work. Their performance was different due to their individual differences of knowledge and skills. "HPT is a measurable way of solving problems or realizing opportunities related to work performance and human capital improvement. Human performance is results-driven and focuses on achievements that are valued by individual performers and the organization as a whole, but the approach also emphasized the need for analysis to determine root causes and assess or evaluate [10]". Performance is a measurable outcome of an activity which has always some worth. "Academic achievement is the performance level of a student

which focuses on attaining learning objectives, desired knowledge, skills and competencies in the learning process" [12]. For example in general when a painter paints something as per given standards, or a driver covers some distance with required safety; they accomplish something which is the necessary condition of performance. Thomas F. Gilbert had given us a good comprehensive theorem about performance. "Human competence is a function of worthy performance (W), which is a function of the ratio of valuable accomplishments (A) to the costly behavior (B) [9]".

"Training refers to a systematic approach to learning and development to improve individual, team and organizational effectiveness [1]". All schools consist of systems and subsystems having dense interaction between them. By changing the way of interaction among trainers and trainees, the learning outcome can be changed. "A system is more than the sum of its parts [12]". Training changes not only knowledge and skills of employees, but also their motivation level. "Systematic approaches are analogous to the act of touching a spider web: touching a single strand of a spider web makes the whole web vibrate [7]".

"Results of the meta-analysis revealed training effectiveness sample-weighted mean ds of 0.60 (k=15,N=936 for reaction criteria, 0.63 (k=234, N=15014) for learning criteria, 0.62 (k=122, N=15627) for behavioral criteria and 0.62 (k=26, N=1.748) for result criteria [3]".

But a little attention has been paid towards systematic training especially in Pakistan so far. Therefore, the researcher took interest to find out the effect of systemic training on teachers' performance.

1.1 Research Questions

Do the Secondary School Teachers (SSTs) trained through systematic training and the untrained tend to score differently on posttest?

1.2 Hypotheses

Research hypothesis: H_a: $\mu_i > \mu_j$ (The trained teachers' mean score is more than the teachers' who do not receive training).

Null hypothesis: H_0: $\mu_i \leq \mu_j$ (The trained teachers' mean score is equal to or less than the teachers' who do not receive training).

2. MATERIALS AND METHODS

2.1 Research Design

Pretest posttest control group design was used for this study. "The strongest comparisons come from true experimental designs in which subjects (students, teachers, classrooms, schools, etc.) are randomly assigned to program and comparison groups. It is only through random assignment that evaluators can be assured that groups are truly comparable and that the observed differences in outcomes are not the result of extraneous factors or pre-existing differences [6]".

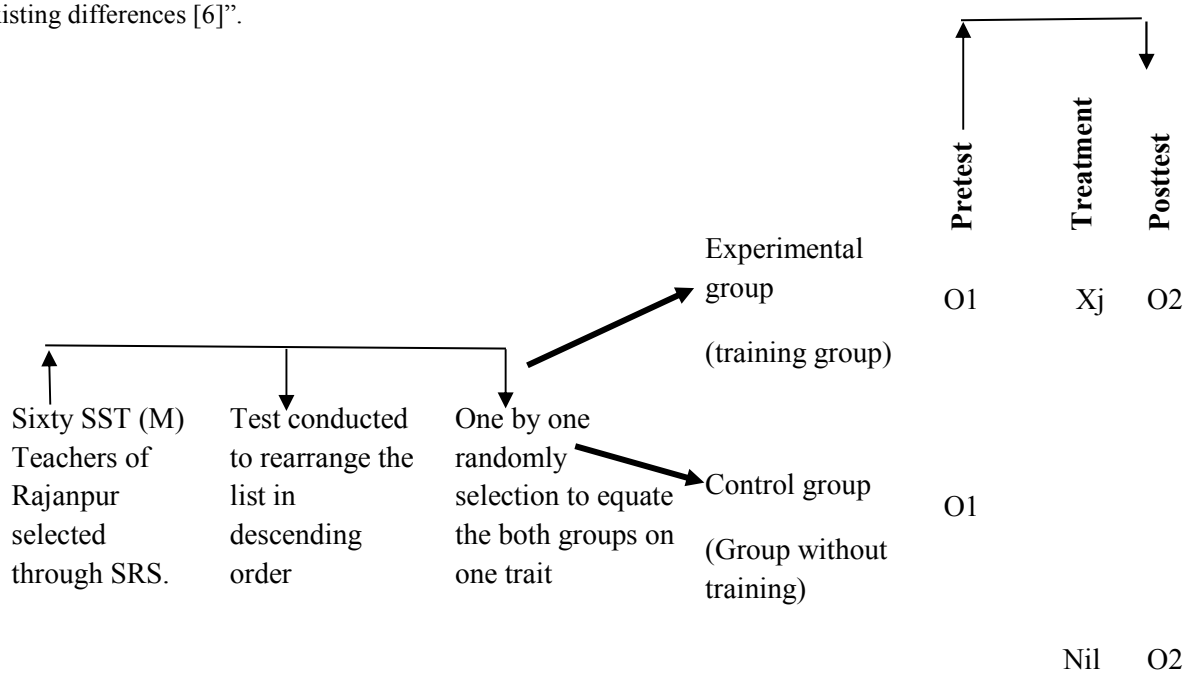


Figure 2 Pretest Posttest Control Group Design

This design was considered fit to control for internal threats to validity.

2.2 Population

The participants of this study were government sector Secondary School Teachers (male) in the district Rajanpur, so all one hundred and eighty the SST's (male) working in the year 2015-2016 were the target population of the study.

2.3 Sample

The list of Secondary School Teachers (SSTs) of science and arts was obtained from the office of Executive District Officer (Education) Rajanpur. Sixty SSTs were selected through simple random method.

2.4 Research Procedure

In this study first of all, a gap was measured in exemplary performer and other performers as indicated in human performance technology model between existing level of performance and required/desired level of performance. The researcher being exemplary performer tried to transfer his knowledge and skills to others performers in 6 weeks. In this way the exemplary performer tried to minimize the performance gap between him and the other trainees. Academic achievement (marks obtained in the test) was taken as dependent variable and the delivery of training was taken as independent variable.

2.4.1 Training Material Compilation

Standard text given by [9] in his book "Human competence: engineering worthy performance", and the text given by the International Society for Performance Improvement on training, information, instruction, and incentives were selected for this training. The text typically explains how teachers can improve their performance.

2.4.2 Pretest Setting

Pretest of all the participants selected (including the researcher) in the sample was given. There were 50 multiple choice questions, each question carried 2 marks. Pretest was marked and a descending list of participants on the base of marks obtained was prepared.

2.4.3 Instrument

A self developed standardized M.C.Qs' test comprising 50 questions was prepared for trainees. Candidates had to select the best answer from given options and fill in the blanks. There were no differences in pretest and posttest except the order of questions.

2.4.4 Table of Specification

The multiple choice questions of self-made test in the context of Bloom's Taxonomy were designed in the following composition.

Table 2 Table of Specification

Content/Topics	Domain of Bloom's Taxonomy	Percentage
Human Performance Technology, Systematic Training, Incentive, Instruction and Information	Knowledge	20%
	Comprehension	48%
	Application	32%

2.4.5 Reliability of the Test

"Reliability is defined as a measure of the internal consistency and stability of a measuring device" [8]. Cronboch's alpha was used to find out the reliability which was 0.80. The high coefficient is the indication of high Reliability so the test was considered reliable.

2.5 Data Analysis

The posttest scores for control group and experimental group were summarized by finding out their means, standard deviations, minimum, maximum and total number of participants analyzed through descriptive statistics. The scores of both groups were displayed through histograms. The difference between posttest by control group and experimental group was determined by using independent t test.

2.6 Internal and External Validity of Experiment

Pretest posttest control group design was used in this research which is capable to control extraneous variables. Sources of variation were controlled by making conditions as similar as possible for both groups. Unknown sources of variation were minimized by doing randomization of participants.

So the results of this experiment can only be considered for the SSTs (Male) of District Rajanpur.

3. RESULTS

The display and numerical description for pretest and posttest scores are as under:
Posttest Scores for Control Group

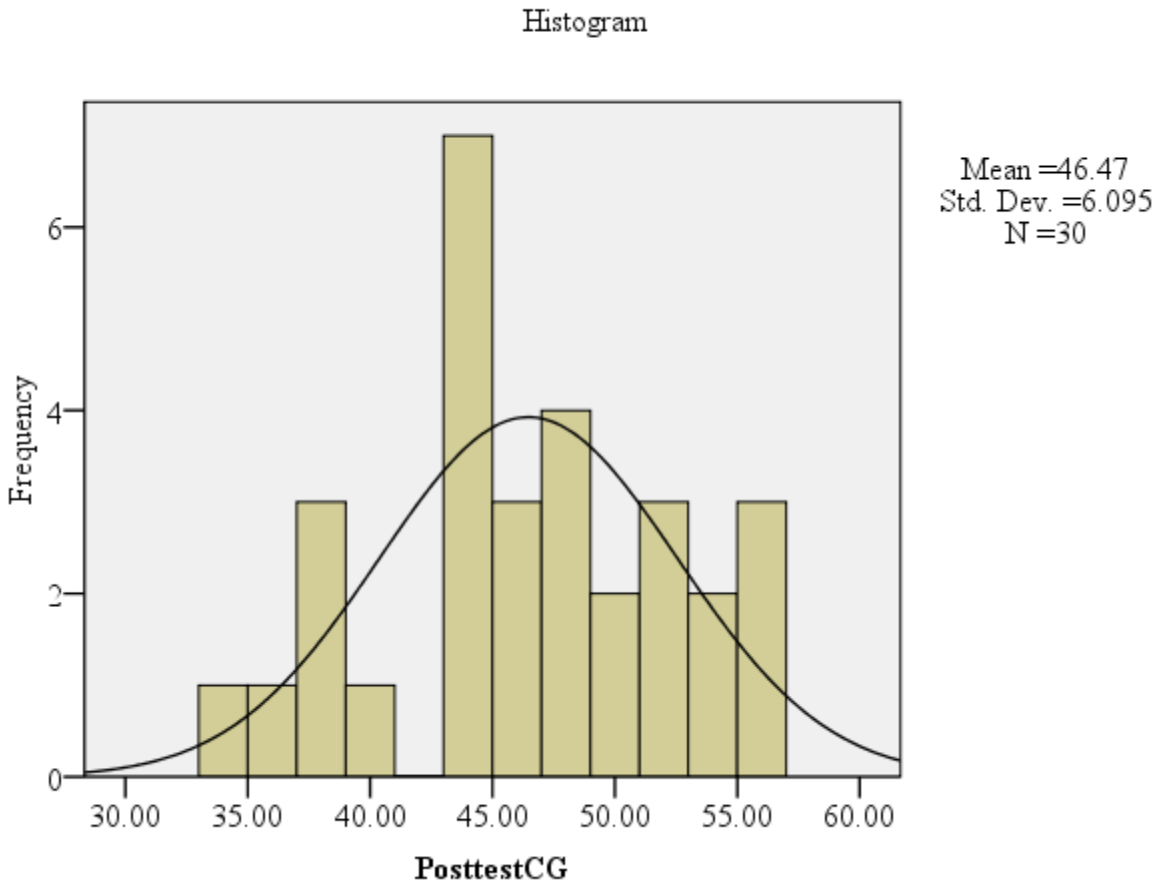


Figure 3: Display of Posttest Scores for Control Group

The histogram shows that posttest scores were normally distributed. There were not any out of pattern scores present in the display of posttest scores for control group.

Table 3: Description of Posttest Scores for Control Group

	N	Minimum	Maximum	Mean	Std. Deviation
Posttest CG Score	30	34.00	56.00	46.47	**6.10**
Valid N (list wise)	**30**				

Table 3 described the posttest scores of control group.

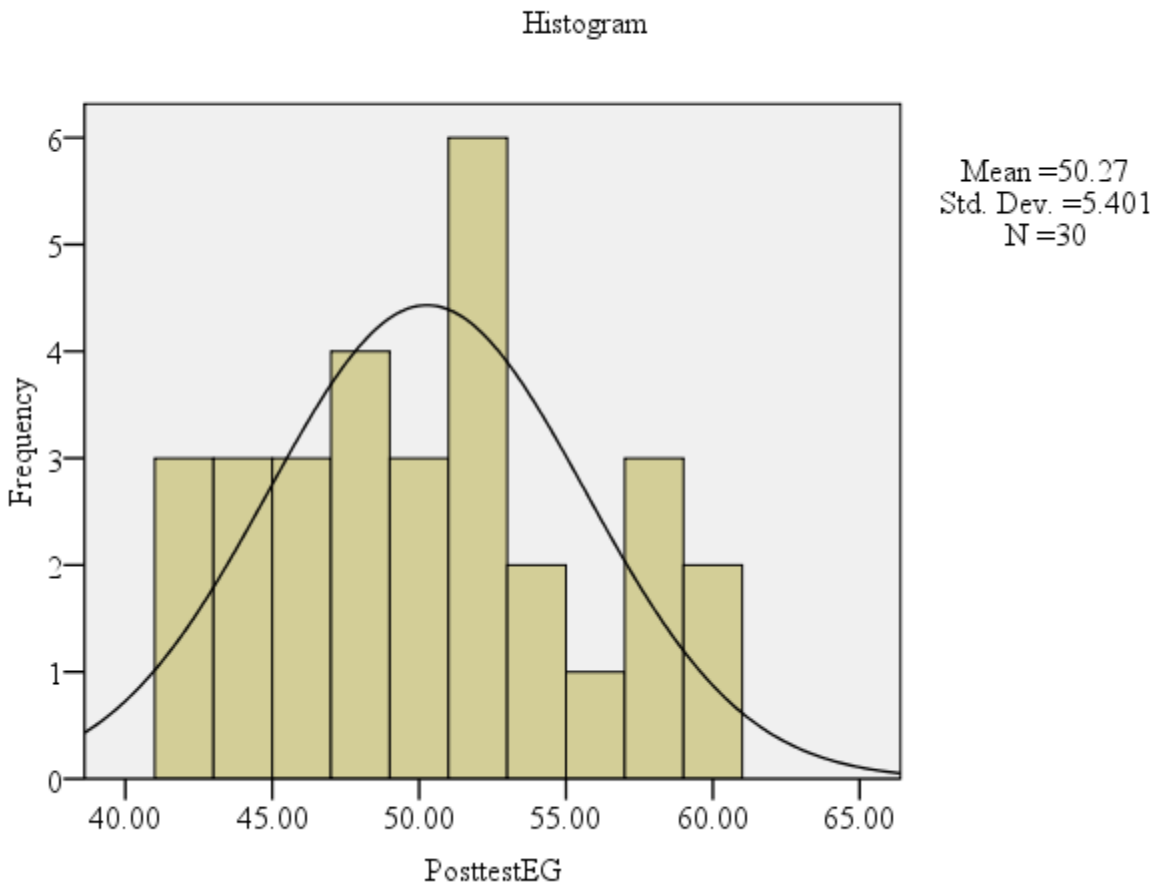


Figure 5: Display of Posttest Sores for Experimental Group

The histogram shows that posttest scores are normally distributed. There were not any out of pattern scores in the display of posttest scores for experimental group.

Table 4: Description of Posttest Scores for Experimental Group

	N	Minimum	Maximum	Mean	Std. Deviation
Posttest EG Score	30	42.00	60.00	50.27	5.40
Valid N (listwise)	30				

The mean score of the experimental group is greater than the mean score of the control group. Table 4 described the posttest scores of experimental group. The mean score of the experimental group is higher and standard deviation is lower than that of the control group. It indicated the positive effect of training. Dispersion in scores of the experimental group decreased after treatment which also favoured the positive influence of training. It also decreased the possibility of any lurking variables.

Hypotheses Testing

Research hypothesis: H_a: $\mu_i > \mu_j$ (The trained teachers' mean score is more than the teachers' who do not receive training).

Null hypothesis: H_0: $\mu_i \leq \mu_j$ (The trained teachers' mean score is no more than the teachers' who do not receive training).

Table 5: Results of t-test and Descriptive Statistics for Academic Achievement by Training

Group	Mean	SD	t	*df*	ES	p-value
Experimental group	50.27	5.40	2.56	58	.62	.01
Control group	46.47	6.10				

p<.05

The results of table 5 showed that the mean scores of the experimental group and the control group were 50.27, 46.47 and SD 5.40, 6.10 respectively with a p-value .01 and t value 2.56, p<.05. The degree of freedom was 58. The effect size (ES) was .621.

Table 5 rejected null hypothesis and showed that the group who received training was statistically different from the one who did not. As the relevant hypothesis was directional based on the review of related literature, therefore, the difference was in favour of the experimental group.

4. DISCUSSION

Size effect .626 found in this study is consistent with the past results of the effectiveness of training programs in different organizations evaluated by Donald L. Kirkpatrick's training evaluation model. Reassuringly, [2] conducted a meta-analysis of 1152 studies from 165 sources and ascertained that training in comparison with no-training had an overall positive effect size of 0.62 in job-related behaviors or performance (mean effect size or ES= 0.62).

This systematic training was different from classroom learning for a few reasons. Firstly, it was conducted after university education (long term development) of teachers. Secondly, in classroom learning, the focus is on open learning and understanding. But in a systematic training, focus shifted from open learning to the specific learning which the exemplary performer had had as his ability. Lastly, the main focus of this training was on trainer's knowledge, skill and ability.

"As technology continues to shape our global world, educational leaders are confronted with the daunting task of preparing students to navigate successfully in a technologically driven society [11]". Technology has been a catalyst for advancing the performance of teachers. The effect of technology can be felt in our industries and medical fields as well. Our schools are not yet taking full advantage of technology. [5] expressed that teachers seem to value the technology as an instructional tool. The training was focused on the measurement of performance. It emphasized only on necessary intervention. In this way it tried to minimize the use of time, effort and money.

This study was not conducted in purely performance based organization where teachers are supposed to perform as per their knowledge and capacity. Otherwise, teachers usually save their energies even being capable of performance. The gap creation and need analysis for training were adopted according to the Human Performance Model. But the whole cyclic process of this model was not adopted in this training. In this way the results of systematic training are likely to be improved if it is conducted in the purely performance based system.

5. CONCLUSION

This experimental study found out the effect of systematic training on teachers' performance. It highlights a number of techniques adopted by a systematic training to improve performance. Effect size determined by Cohen's ES was 0.626 which indicated a medium large magnitude of systematic training effect on male secondary school teachers of Rajanpur. Such type of training used only necessary time, effort, and money of participants. In Pakistan systematic training has full potential to improve the performance of teachers in an economical manner.

6. RECOMMENDATION

Systematic training may be adopted in Government Male Schools of District Rajanpur.

7. FUTURE STUDY SUGGESTIONS

The focus of the present study was on academic performance. The results can be improved by conducting such type of study at the workplace where performance can be measured more accurately.

REFERENCES

[1] Aguinis, H., & Kraiger, K. (2009). Benefits of training and development for individuals and teams,organizations, and society. *Annual review of psychology, 60*, 451-474.

[2] A.Nawaz, N.B. Jumani, Effectveness of Microteaching on Pedagogical Design Capacity of Prospective Teachers, Journal of Applied Environmental and Biological Sciences (JAEBS), 7(10) 86-91, (2017).

[3] Arthur, W., Bennett, W., Edens, P., & Bell, S. (2003.). Effectiveness Of Training In Organizations: A Meta-analysis of Design And Evaluation Features. *Journal of Applied Psychology,* 234-245.

[4] Aziz, D. M. (2013). What's in a Name? A Comparison of Instructional Systems Design, Organization Development, and Human Performance Technology/Improvement and Their Contributions to Performance Improvement. *Performance Improvement, 52*(6), 28-35.

[5] Balanskat, A., Blamire, R., & Kefala, S. (2006). The ICT impact report. *European Schoolnet*.

[6] Barry, G., & Herman, J. (1997). True and quasi-experimental designs. Practical assessment. *Res Evaluation, 5*, 14.

[7] Chyung, S.Y. (2008). *Fundamentals of Instructional and Performance Technology*: U.S and Canada: HRD Press, Inch.

[8] Hale, J. (2011). Scientific measures: Reliability and validity. *Retrieved April, 23*, 2012.

[9] Gilbert, T. (1996). *Human competence engineering worthy performance, tribute edition* (Tribute ed.). Silver Spring, Md.: International Society for Performance Improvement.

[10] King Jr, C. L. (2013). An exploration on the use of Gilberts behavior engineering model to identify barriers to technology integration in a public school.

[11] Reich, J. (2011). Thoughts on Digital Equity. Harvard Graduate School of Education.

[12] Tariq Javed, Muhammad Aslam Asghar, Association of Motivation with the Academic Achievement at Secondary Level in Pakistan, Journal of Applied Environmental and Biological Sciences (JAEBS), 7(8) 52-57, (2017).

[13] Wittkuhn, K. (2004). Systems, nontrivial machines, circular causality, and other ghosts haunting performance improvement technology. *e Improvement,* 33-37.