AN ANALYSIS OF LEARNING BY DOING (TEACHING PEDAGOGY) AND ITS IMPACT ON STUDENTS' SCORES AT ELEMENTARY LEVEL

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ABSTRACT

Traditional education system is in common practice in our education system. In this situation students' show zero participation while teacher is only the resource of knowledge. There are so many interactive teaching methods have been presented by different school of thoughts. Learning by doing is one of them, this study carried out to analyze this teaching pedagogy and its impact on the students' academic scores and making them a self-learner. This study also dig out the ways for effective use of this theory. This theory was applied on the sample of 250 students, which was drawn through simple random sampling procedure from 10 primary schools. The pre-test and post-test design was used for data collection. Data was collected through pre-test and post-test, and analyzed by applying statistical packages paired sample t-test, paired samples correlations, one sample t-test and univariate analysis of variance. Major findings of the study show the very significant and positive impact of the learning by doing teaching. The students were engaged in different activities through which they can clarify their concepts, understand the concepts by their own efforts. Result also show that the female got high scores as compared to the males, it means that female learn and enjoy the learning by doing more than male.

Keywords: Teaching Pedagogy, Learning by Doing, Academic Scores, Elementary Level.

INTRODUCTION

Education is considered to be the basic elemental level for providing the baseline skills, communicative ability making an individual perform

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his assigned task successfully. An in depth understanding of educational psychology is indispensable because an educational setting greatly helps in providing insight into human behaviors. Knowing about the capabilities, range and boundaries of one's students is another significant factor. E.A. Peel (2017) emphasizes that educational psychology does not fully encompass the discipline of education and psychology. Educational psychology develops the basic awareness of teaching-leaning process in a learning environment. It enables people to understand curriculum, approaches of education, instructional policies and training of the individuals in educational settings.

Educational psychology is beneficial for the teacher in making learning effective by taking into consideration the factors like attention and inspiration. The familiarization of educational psychology helps the teachers in modifying the teaching-learning approaches, for it is the basic aim of educational psychology to determine the learner's future while applying the optimum efforts and work by the teachers.

Major Areas by Educational Psychology
Aggarwal (2011) explain the psychology of development and learning as under:

Teaching – Learning and the Learner
The fundamental status in teaching-learning process is occupied by the learner. The role of teacher is that of a teacher has been an educator, present there as a facilitator, creating the supportive environment for enhancing the child's abilities, innovative ideas and capacities by encouraging and allotting responsibilities to the learners. The variations in individual outlook and attitude might easily be perceived all through the period of evaluating students' performance and growth.

Development of the Learning
Learners seek great help in confidently managing their frequently arouse conflicts through teacher's consideration of their learning experiences. Fundamentally, it is altogether concerned with the various learning theories, ideologies and conceptions, rules, development of learning assistances, etc.

Situation of the Learning
It basically deals with the factors regarding the learner and teacher. Throughout this learning environment, certain dynamics play a very

significant role like providing direction, counseling, methods, assessment practices and procedures.

Situations of the Teaching

These situations help teachers in the development of better learning situations by suggesting them to select the suitable methods according to the learner's understanding of particular topics. Another most important issue to be addressed in order to get knowledge about student's mental capabilities is their ability to read. Thus, some theories are very significant in this regard like cognitivist, experientialism, social learning theories etc. The proper implementation of this process ensures the improvement in academic results. Moreover, knowing something and knowing how to do something are two diverse phenomena. Students feel more excited in a vibrant learning. Similarly, it exercises a tremendous influence on student's learning.

What is Cooperative Learning

It refers to the orderly and organized educational techniques. This approach refers to the efforts of small groups working organized to achieve a mutual end (Williams, 2017). Numerous features incorporated in the classroom learning are as follows:

What is Constructive Interdependence

It improves the collaboration among the learners because all the members work together with enthusiasm, determination and commitment. This further safeguards the success of all the group members instead of one. The greatest benefit of this approach is the enhanced sense of responsibility among members for themselves and for others.

Development of Teamwork

This constructive step guides learners to improve their group activities. Furthermore, it also makes students to tell others about their individual understanding and the manner they try to solve their problems (Jones, & Jones, 2004).

Individual Responsibility

Each individual in a group is given specific duty. This liability endorses better results of their performance. At the same time, it also helps in assessing the existing level of achievement and improvement of the person's effort.

Social Skills

These skills are mandatory for the execution of shared objectives.

Learners are encouraged to support each other and get interconnected (Kizza, 2007). When they work together, it increases their interpersonal skills like active judgment and leadership quality etc. More importantly, these skills are enhanced throughout the positive group learning. The current research was carried out to offer assistance to policy makers and curriculum developers so that they may work on making more operational curriculum and achieve better outcome in learning process. Besides, it is hoped that the findings of the study would help teachers to implement a productive and perfect teaching learning procedure which may lead to an outstanding result.

Group Processing

When the students process in groups the not only complete their task on time but also they become the self- evaluator as they can evaluate their own task and modify it in the light of their evaluation. This process enable them to identify their weaknesses and strengths.

As we know that the teaching methods are the basic tools to modify the behavior, personality and skills of the students, students should teach with appropriate teaching method. This study was conducted to observe the impact of one of interactive teaching method, the learning by doing. The results of this study will guide the policy makers, curriculum developers and all other stake holders about negative and positive impact of the teaching method 'learning by doing. So they can improve the policy, curriculum, teaching practices and all other learning facilities in the light of the results of this research study.

Objective of the Study
1. To find out the role of learning by doing in building the student self-learner.
2. To highlight the impact of learning by doing on student academic scores.
3. To discover the strategies which support effective implementation of the teaching method, learning by doing.

Research Questions
1. Do learning by doing support the students to make them a self-learner?
2. How learning by doing affects the students' academic achievement?
3. By what means the learning by doing can be effectively implemented?

LITERATURE REVIEW

Education is the advancement in an individual's awareness, expertise, capabilities and behaviors. In Locke's opinion, as far as the process of cultivation is concerned, it is the developing system of vegetation but individual nurtures with the help of education which takes both the child and the society to greater level of magnificence.

The data has been collected by the human mind through the senses and formation of simple thoughts. It is only by experiences that the assembling of simple ideas progresses the complex ideas. Rousseau endorsed that child needs to be shaped and formed by education. The philosophies mainly centered with child development, formulated by Dewey (Dewey, 1938).

Montessori and Piaget also present the parallel interpretations. Kant, the first intellectual who offered the cognitive process of mind, opened new vistas of understanding to Piaget and some others to promote the notion of cognitive development of mind. Besides, he modernized and established Plato's rationalist theory in his conception of a prior knowledge, emphasizing that mind retains the potentials and capabilities of thought (Monroe, 1925).

Thorndike favors the active learning process to provide a vigorous setting and effective stimuli that may result in a better learning. (Dignath, Buettner, & Langfeldt, 2008). The stimulus response learning theory of Thorndike is also established by the B.F. Skinner who views learning as the development of anticipated actions and opposes the influence of psychological factors (Grinder, 1989).

Maria Montessori favors the unconventional education in primary phase of a child's life, she presented an enlightened theory for early childhood education. Besides, she also put emphasis on providing more chances and unrestricted expressions by indulging them in actions, motivating them to move from their writing tables and regarding kids as individuals. Montessori considers a student's play as an important feature of his personality, by which he gives expression to his self, enhancing intellectual and communal learning. Thus, as a substitute of giving commands to student, teacher is supposed to offer appropriate direction to them. It is acknowledged that improvement can be stimulated with the help of involvements and collective association inside the student's willingness domain (Montessori, 1912).

The Plato' Rationalist theory was refined by Kant. He said that the knowledge which is presented before the experience is called as prior knowledge. He emphasized mind as source of human thought and capabilities. So we can say the he was recognized as first person for cognitive process of mind. Based on his theory, Piaget and different philosopher started work on cognition (Brock & Adrian. 2014).

Principles of the Learning

Rockmare (2005), in order to achieve the most desired consequences, certain learning principles need to be observed in teaching, which have comprehensive strategies for taking the suitable actions. They are as follows:

Principle of Association

Learning process has been considered as continuous which might occur due to any experience. As far as the preceding learning is concerned, it paves the way for the successive phase. In this way, new knowledge is associated with the earlier on account of the successful and satiating reactions.

Principle of the Purposeful Learning

Of vital significance is the fact that the learning objectives need to be important and clear for the learners. If learning is focused, it becomes more operative. Whenever teachers give any assignment, they should be concerned about its being achievable for the participants.

Principle of Motivation

Motivation is the aspiration, making people inspired to accomplish some task. In order to attain it, a great effort is required on the part of learner. Thus the learning scheme must be all-inclusive and complete to provide a thorough and strong parameter to attain the ends and aims of the learner. Teacher motivation is essential for the students to cope with the more challenging learning.

Principle of Attitude and Willingness

The most significant impact exercised on the learner is his willingness to learn. Only in this positive and favorable environment, learning takes place more effectively.

The Self-Movement Principle

Of vital significance is the fact that the door of learning is sealed from

inside and only learner can open it, otherwise the process of learning never occurs this is a dynamic approach. The teacher inspires the learner with the development of stimulating learning condition. Proper activities must be undertaken like conducting the demonstration, which provides an occasion of activity for the learner. There exist various sources that create an effective learning environment by indulging in the learning accomplishments.

Rehearsal Principle

Another significant phenomenon to make an effective learning environment is the active participation of students by performing the task, more specifically the learning by visual and audionic instruments can be enhanced by practically doing it. The suggestion of the important units might be properly systematized into course content while practical theories motivate the learners by offering the practical actions.

Principle of the Students' Learning Abilities

As far as the level of communication and the knowledge about the subject matter is concerned, they should be in an appropriate order as per the student's learning capabilities which vary extensively among individuals.

Understanding of Curriculum through Learning Theories

The psychological effect of curriculums helps us in a better understanding of the theories of learning which are generally categorized into four expansive groups which are as follows:

- Cognitive learning and humanistic learning theories.
- Developmental Learning
- Constructivism
- Behavioral learning

Theories of Development

Psychoanalytic theory has been considered as one of the most influential theories for human development which discovers the features stirring the unconscious conducts of an individual. Sigmund Freud is the originator of the psychosexual theory and psychoanalytic theory of personality.

Theories of Behaviorism

The behavioral conditioning takes place when stimulus response is strengthened. (Dicket et al 2005). It held the belief that reinforcement and

encouragement occur when a stimulus is offered leading to a positive reaction recurring frequently in the future. As far as this theory is concerned, learning becomes more operative on account of teachers' practice, as they frequently utilize during teaching by giving punishment and incentive to the students for their conducts. The fundamental premises of this theory start with the notion that a child comes to this world with an unsoiled tab but with the passage of time it gets polluted due to various events occurring in life (Foxall, 2007).

Intellectual Means

The psychology mainly focused on the area of cognition. There is difference in cognitive and behavior theories of learning. It discusses all the elements of learning and intellectual without discussion the learning environment. It describes the structure and the process of the cognitive development (Rachlin, 2000).

Cognitive Theory of Jean Piaget

This theory deals with the conceptual model of the world that how a child does create his environment. Robert Gange is the central provider to the cognitivist who practice certain cognitive strategies to resolve issues regarding learner's attitudes (Bandura, 1986).

Instructional Strategies of Learning by Doing

Churchill (2003) suggests some strategies for learning by doing. Detail is presented below:

Questioning Purposefully

It is a self-motivated technique because it increases learner's cognitive abilities and grows their engagement. Questions are frequently asked in the class either by the fellow students or their teachers.

Question Posed by the Students

The learning stimulation comes when students ask questions.
- It highlights or identifies the region of misunderstanding and test of their understanding.
- It raises the student association among one another.
- Teacher asks questions
- It improves and refines student's rational skills.
- It measures learner's understanding, abilities and attitudes.
- It frames personal association with the course content.
- When teacher asks questions it helps to provoke learner's concentration and inquisitiveness.

Demonstration in the Classroom

When learners feel difficulty in the application of theory, demonstration occurs in which both teacher and students participate. It greatly helps teachers for the improvement of their instructional strategy. If utilized expertly, it enhances the learner's concentration level and makes the learning extraordinary for the students. Moreover, this strategy is productive for the learners particularly in memorizing and remembering the contents. In short the positive influence of demonstration on students learning might never be denied.

Organization of the Assessments

The educator gives instructions about the subject matter but does not allow learners to write each word but only key words. This has proved to be an effective technique for retention and review and help teachers to realize the defects. However, teachers are required to take two types of assessments i.e. pre assessment and post assessment pre assessment is directed to recognize the misapprehension and it is the preliminary stage for learning and then perceiving the flaws. Teacher explains and provides contents and then conducts a post assessment to analyze the improvement in learning. It has proved to be a very effective technique to know their performance.

Find Recent News Items and incorporate it to Curriculum

The choice of relative current news is another important tool for an effective knowledge. The emergence of existing course with the preparation of brief written synopsis of news items helps teachers to advance great global awareness.

Effective Guest Speaker

Students occasionally feel bored during the whole class duration, thus the proper selection of the guest speaker enhances their stimulation to their work. Students get ready before the arrival of guest speaker.

Transformation of Study Material into Puzzles

In order to incite student's inspiration level, some challenging activities need to be designed. At the preliminary stage, distribute arranged samples and then, ask students to join their puzzles and share them either in small groups or with other class fellows. This would help in finding out the correct answer for the prepared puzzles.

Combined Discussion into Course Projects

As far as class discussions are concerned, these techniques greatly help

students in locating information and formulating convincing argument and counter arguments. Teachers develop the habit of thinking critically and thus they are enabled to give their opinions verbally or on paper.

Instructional Learning Strategy

Another effective role has been played by instructional learning strategy. If it is proficiently planned and assisted, it stimulates learners' concentration and commitment. Besides it also offers pertinent and accurate approaches which are linked with the imperative syllabus for the learner's, experts and professionals alike.

Create Field Trips

In order to achieve an all-inclusive range of effective learning results, an educational tour held in open-air, outside the realm of conventional environment, provides an effective help to learners for achieving reliable information. The academic's abstract material could be refined when learners undertake this trip and convert their abstract knowledge into practice. The nature of this educational study trip could be a simple walk nearby or outdoor campus. It might be short trip to observe an art museum or an environmental location which boosts learner's concentration, their eagerness so it has positive impacts learning.

Obstacles in Active Learning

There have been certain obstacles encountered by teachers for active learning process. They are as follow:

The most important among them is the influence of families on school results because child education is highly dependent on parents' actions and behaviors. The role of family is quite significant in creating an environment which promotes various skills. When parents interrelate, children imitate their conversation, recognize objects, and inquire about new words during communication. Parent's attitudes towards reading has an important influence on children's view of reading and their engagement with the literature process (Alshaboul, 2004).

RESEARCH METHODOLOGY

This research study was conducted to check out the impact of teaching theory learning by doing. The quantitative approach was used to conduct this study. Pre-test and post-test was developed for the collection of data to know the academic achievement.

This theory was applied on the sample of 250 students, which was

drawn through simple random sampling procedure from 10 primary schools (05girls and 05 boys), selected through simple random technique. 25 students enrolled in grade 7th each school were selected.

The pre-test and post-test design was used for data collection. Data was collected through pre-test and post-test, and analyzed by applying statistical packages paired sample t-test, paired samples correlations, one sample t-test and univariate analysis of variance.

RESULTS

The data collected through pre-test and post-test was analyzed to make inferences. Data was analyzed by applying different statistical packages as under:

Paired Samples Statistics

A paired sample t-test was conducted to compare the results of pre-test and post-test and analysis is presented in following table

Table.1: Comparison of Pre-Test and Post-Test Scores

	Mean	N	Std. Deviation	Std. Error Mean
Pre_Test	26.38	250	9.825	.621
Post_Test	45.78	250	3.468	.219
Difference	19.40	250	9.979	.631

Above data indicated that the pre-test mean scores was 26.38 and post-test mean scores was 45.78.

It means the teaching pedagogy learning by doing greatly affects the students' academic scores.

Paired Samples Correlations

To find out the relation b/w pre-test and post – test, Paired Samples Correlations was conducted. Result is as under

Table 2: Correlation between pre-test and post-test scores

		N	Correlation	Sig.
Pair 1	Pre -Test & Post - Test	250	.132	.038

Above data show that pre-test and post-test correlation = 0.132. Moreover this correlation show +ve correlation, the students got high scores in pre-test also show high scores in post-test and this correlation was significant p = .038.

One Sample t –test

To measure the significant level between the pre-test and post-test, one Sample t –test was conducted

Table 3: One Sample t –test

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	95% Confidence Interval of the Difference				
		Lower	Upper			
Pair 1 Pre-test – Post-test	-19.400	-20.643	-18.157	-30.737	249	.000

This table show the p = .000, there was significant difference in the scores of pre-test and post-test.

Univariate Analysis of Variance

Table 4: Dependent Variable Difference

Gender	Mean	Std. Deviation	N
Female	20.70	10.004	125
Male	18.10	9.824	125
Total	19.40	9.979	250

Above data show that the M = 20.70 for female, and M = 18.10 for male. It means that the learning by doing has greater effect on females as compared to the males.

DISCUSSION

This study was conducted to highlight the impact of learning by doing teaching pedagogy on the students. The results of the study show the very significant and positive impact of the learning by doing teaching. The students were engaged in different activities through which they can clarify their concepts, understand the concepts by their own efforts. In this method the teacher play her role as a facilitator just. Before the intervention through learning by doing the researcher take the pre-test of the sample students, after applying the intervention for 1 month, the post-test was administered. There was significant difference (p =.000) in the pre-test and post-test scores. This significant difference show that students learn a lot through learning by doing.

Results of the study also demonstrate that the students who got high

marks in pre-test show very high scores in post-test scores. Each of the student show high scores in post-test as the results display the positive correlation value between the scores (.132).

When the scores of females and males in post-test were compared, the results show that the female got high scores as compared to the males, it means that female learn and enjoy the learning by doing more than male.

CONCLUSION

From all above discussion and the results of the study it was concluded that student should be engaged in learning activities, to make them an active partner in teaching-learning process. Students get bored to just listen the teacher, and even when they try to acquire knowledge by themselves, they understand the concepts in depth and their misconceptions and misunderstandings were got cleared on time. So in this era there is greater need to engage the students in interactive teaching pedagogies for better results.

RECOMMENDATIONS

Educational Policy Need More Attention

As Pakistan came into existence 72 years ago, but still the education system is very poor. The number of skilled youth is very little. Education is the source of human resource who serve the society for its betterment. So there is greater need to give more attention to the educational policy, as educational policy provide the guideline for running the education system.

Teaching methods should be the part of the education policy, education policy should also focused on the content for each level of education system.

Life Skills Programs and Appropriate Learning

EFA and MGDs 2000 emphasized on universal education, comprehensive education, ensuring the learner needs and life skill programs for young students. But still after passing about 19 years, the goals are unachievable. Life skills programs should be explained and developed. Teachers should be trained to inculcate life skills among the students.

Learning by doing is one of the approach which support the achieving of the EFA and MGDs goals. Similarly other interactive pedagogies will

be very fruitful. There is a greater need to implement the new teaching pedagogies in the classrooms.

Motivate the Teachers

The teachers in our education system feel easy to use traditional teaching methods, as the use of teaching pedagogies which engage the students seem difficult to them. Moreover the use of these teaching pedagogies needs special attention.

It is recommended that the teachers should be motivate for using these interactive pedagogies in their classrooms. To motivate them, some incentives in terms of appreciations, reduced workload, increasing salaries should be provided to them.

Teachers Training Programs

Use of interactive pedagogies need some technical support. Thus teachers training programs should be arranged which not only introduce the innovative teaching pedagogies but also provide the techniques to manage interactive classrooms with little and available resources.

Social Orientation

It is common scenario that there is no/little link among all of the education stakeholders, policy makers, curriculum developers, educational experts, teachers, students and parents. It is recommended here that social orientation programs should be arranged to build the attitudes of the stakeholders for opting the interactive pedagogies. This social orientation will assure the success of new pedagogies implementation and production of skillful youth.

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