



Impact of Teaching Methods on Achievement Score of Students at University Level

Dr. Muhammad Tahir Khan Farooqi, Associate Professor University of Okara, drtahirkhanfarooqi@gmail.com

Dr. Asif Iqbal, Assistant Professor of Education, University of Education Lahore, Faisalabad Campus, asif.iqbal@ue.edu.pk

Dr. Shehzad Ahmed, Assistant Professor University of Okara, shazy91@yahoo.com

Abstract- The study was planned to find out the impact of teaching methods on achievement score of students at university level impact of teaching methods on the achievement scores of students. The objectives were to find out the difference in achievement scores of students with respect to gender. One hundred and fifty students from education department were selected randomly. The self-developed instrument named, teaching Methods Identification Survey [TMIS] was used. Data were collected using survey technique and analyzed. The results revealed that lecture method frequently used by teachers as top selection. The discussion method is their second and book reading is on third rank. There was 18.2% impact is explained by the teaching methods. Female students had better achievement in book reading, discussion, demonstration, lecture method and activity method than males. It was suggested identity best fir teaching method for students to improve their performance

Key Words: Teaching Methods, Achievement Scores, Demonstration

I. INTRODUCTION

Teaching Method is defined as instructional method used for delivering the content to students. Many researches may be referred to investigate the impact of teaching methods on students' achievement scores in different countries (Asikhia 2010; Barneka 2012; Guloba, Wokadala,&Bategeka, 2010; Haas 2002; Njoroge et al., 2014; Sajjad 2011). Teaching methods depend on the skills and information a teacher wants to convey his or her students. Many studies have shown that teachers' teaching methods had an impact on students' achievement and to handle real life situations (Chetty, et al., 2014; Nye, et al., 2004). There is variety of teaching and instructional methods on the basis of their validity, authenticity and worth among learners. It should be noted that all teaching methods did not have the same value but depend on the content and students' needs. The classroom learning environment should support real interaction of multiple activities with pupils' scholastic achievement (Groszman, et al., 2013; Kane, et al., 2013). Sometimes, different teaching methods may be used at the same time and an eclectic approach will be more useful than a single one. The class participation, memorization, demonstration, lectures, discussion, and activity based methods are frequent in use by the teachers. When teachers decide about teaching method, they should be flexible and keen to adjust their teaching styles with students' needs, success and achievement to make teaching method more effective (Pooja, 2017). The effectiveness of teaching is the guarantee of success of when an appropriate method of teaching is selected by the teacher. Teaching period had an impact on achievement scores (Lavy, 2015; Rivkin&Schiman, 2015). A teacher has many options when choosing a style, by which to teach. The teachers may prepare lesson plans, get help from their colleagues and internet and by using his own innovative ideas. When selecting an appropriate teaching method, the teachers need to know about students' background, skills, knowledge, learning environment and educational goals. The recent years have discovered the appropriate teaching methods that suit with students learning and achievement (Palardy&Rumberger, 2008).

II. REVIEW OF RELATED LITERATURE

Teaching methods are classified as teacher-centered, learner-centered and general methods. Teacher centered method make the teacher dominant in educational process and students obtain information from teachers without active engagement about the subject taught. This approach is less practical, more memorizing and theoretical. It did not encourage students in learning real life situations and application of knowledge. School performance is related to teaching methods (West &Woessmann, 2010; Vandenberghe& Robin, 2004). The teacher is the sole responsible to transmit knowledge, the lecturer maximizes information delivery and minimizes time and efforts. The students may lose their understanding and interest. Direct instruction is used only to explain or demonstrate ideas by the teacher. Drill and practice method is used to repeat the skill to improve memorization of information. Studies have

explored the correlation of students' socio-economic conditions and teaching methods including class size (West & Woessmann, 2010). Lecture method provides material to scholars using one-way oral communication. Student centered methods are used to advent the concept of learning and most widely adopted method by educationists to improve active learning. The student centered method promotes interest, analytical skills, critical thinking and amusement among pupils. This method of teaching is more effective because it the opposite of teacher center method and make the stream of knowledge from learner to teacher. This method enhances goal-orientated activities among scholars and is effective to improve students' achievement. The researchers are continuously finding out the indicators that make teachers successful in class and empower students to get required skills and knowledge for the investigation of problem solving strategies (Boonen et al., 2014; Wayne & Youngs, 2003).

Mental modeling helps the students to manage their learning experiences in problem-solving techniques. Discovery learning improves personal experiences of students to build new concepts. Inquiry method enable students to create questions and seek their answers in investigating the knowledge. Teacher students Interactive Method uses both strategies of teachers and students by making multiple approaches. The studies in recent decades has significant impact of educational efficiency that teachers play an academic role in students' achievement (Hanushek, 2011; Rivkin et al., 2005). The question and answer reflects information in exchange of responses to questions. Discussion method present the perspectives and opinions. In authority style or lecture method, the teacher is considered as authority and role model using lengthy sessions in one-way delivery. Students are needed to get notes to absorb evidences. Lecture method is frequently used in higher education classes and disciplines with more groups of scholars. The lecture method is more concerned and suitable for history subjects to memorize the facts like names, events and dates. Demonstration or Coach method holds the strict authority role by the teacher to demonstrate his or her expertise using experiments and demos. New educational paradigms have shifted learner- centered teaching (Ndirangu, 2007). Majority of the institutions have selected the participatory teaching techniques (Sajjad, 2011). It is also called supplementary method that offers teachers opportunity to integrate lectures, demonstrations and multimedia presentations. This method is more suitable for the subjects of music, mathematics, arts, crafts, and physical education. This method is difficult for fulfill individual needs of students. The facilitator approach or activity method promotes self- learning among students in developing critical thinking and retaining knowledge of self-actualization. Teaching duration and type of teaching method are interlinked (Lavy, 2015; Rivkin&Schiman, 2015). The Delegator approach or Group method is suitable for curriculum development and lab activities and improves feedback, and creative writing skills. Best method is about nurturing, caring, developing talents and minds & talents.

Many researches has confirmed that teachers teaching methods have considerable impact on scholars' academic and real life success (Chetty, et al., 2014; Jacobson & Kauchak, 2009; Nye, et al., 2004). The effective classroom characteristics include learning environment, teaching organizational skills and interact with pupils (Grossman, et al., 2013; McCaffrey, et al., 2013). The recent literature has focused to explore the students center approaches that diverge in traditional teaching approaches like lecturing and memorization of knowledge and invent and discover the approaches that involve students to explore the knowledge of handling everyday complications (Opdenakker & van Damme, 2006; Seidel & Shavelson 2007; Van de Grift, 2014). The impact of different teaching methods on academic achievement of students is still inconclusive and contradictory and advocate the use of modern teaching methods than to traditional methods (Capps et al., 2012). The teaching strategies used by teachers in same setting have adopted teaching techniques and they share these methods with each other. Some methods become dominant is specific learning environment and they rely on the same methods to improve the progress of students (Echazarra et al., 2016). The relationships of teaching method with students' achievement has proved difficult in analyzing the data because of missing information about pupils' prior achievement score (O'Dwyer et al., 2015). The socio economic status of parents makes it easier for kids to select the school with better and modern resources (Rothstein, 2010). The teachers' efforts and use of resources may change in different situations and institutions (Gustafson, 2013). Woessmann (2003) explores the factors of scholastic achievement from diverse perspectives (Hanushek & Woessmann, 2011; Johansson, 2016; Strietholt et al., 2014). Studies have focused on causal relationship between students' socio- economic status and school-related indicators and scholastic achievement like class size effect (Woessmann & West, 2006; West & Woessmann, 2006), and school performance (Vandenberghe & Robin, 2004; West & Woessmann, 2010). The effect of teaching method on instructional objectives used by teachers in classroom leads to better achievement score (Mulliset al., 2012). According to Caro et al.

(2016), cognitive activity is positively related to achievement score in education system among students having better socio-economic background. The personality features of teachers and biasness may change the grades of students (Goe et al., 2008).

Teaching methods used by teachers improve the knowledge and skills among students that lead to desired learning experiences (Ndirangu, 2007). The selection of unique teaching method is affected by multiple factors like content that taught, objectives, teachers' preparation for lecture, learning resources and willingness and motivation of teachers make students able to apply those methods to solve every day problems (Ndirangu, 2007). The teaching methods may vary from situation or country depending upon information and skills being taught and enthusiasm and motivation of students. In the point of view of Asikhia (2010), teachers' qualification and students' environmental factors did not affect students' poor performance but teaching methods of teachers responsible for poor achievement score.

The situations where English is used as medium of instruction should have more interactive than that of passive (Pillar & Skilling, 2005). The teacher should know the needs of learners in English classroom (Thompson, 2004). The developing countries has common teaching methods like lectures being teacher-centered due to lack of instructional resources (Guloba, Wokodola, & Bategeka, 2010). Modern countries had adopted new and interactive teaching methods to impart the knowledge. Life-long teaching methods have gained the popularity in educational institutions to promote the learning process (Teo & Wong, 2000). Many studies have focused to explore the impact of teaching methods at secondary level on students' achievement, like USA (Haas 2002), Kenya (Njoroge et al., 2014), Pakistan (Sajjad 2011), Uganda (Guloba, Wokadala and Bategeka, 2010) and Nigeria (Barneka 2012), (Asikhia 2010). The main objective of teaching method is to bring change in learners' achievement (Oigara, 2011). The effectiveness of teachers' teaching methods is reflected in achievement of teaching learning method to improve marks and grades (Whalen, 2012). Two main approaches of teaching method are prevalent in literature, teacher centered and learner centered (Oigara, 2011). Teacher centered methods are lecture, drill and question answers. There is a link between students' skills and teaching methods (Tereseviciene et al., 2011). A substitute of traditional lecture method is investigated by many researchers (Daugviliene & Ruzevicius, 2009; Visockiene & Puskunigiene, 2012). The lecture method can easily adapt in specific situations, audience, material, and classrooms (Cvilikaite, 2013).

Objectives

- i. To explore the teaching methods used by the teachers.
- ii. To investigate the impact of teaching methods on the achievement scores of students.
- iii. To find out difference in students' achievement scores with respect to gender.

Research Questions

- i. What are the teaching methods used by the teachers?
- ii. What is the impact of teaching methods on the achievement scores of students?
- iii. What is the difference in students' achievement scores with respect to gender under multiple teaching methods?
- iv. What is distinction in achievement score of male and female students?

III. RESEARCH METHODOLOGY

The study is descriptive in nature. The data collected with the help of survey method.

Population and Sample

All the students enrolled in department of education in Education University Faisalabad Campus were the population of the study. There were about three hundred students enrolled in department. One hundred and fifty students were selected randomly from different semesters.

Instrumentation

The self-developed instrument named, teaching Methods Identification Survey [TMIS] was used. Five teaching methods were identified as the most prevalent teaching methods that teachers often used while delivering the lectures. The most used teaching methods were lecture (91%), demonstration (76%), activity based (72%), textbook reading (65%), and discussion method has (63%) use (Rutkiene & Tandzegolskiene, 2015). The Students' semesters' result was collected as their achievement scores. The instrument consisted of forty items. Each teaching method has eight items. The validity of the

instrument was verified by the experts in education field. The reliability analysis was calculated by pilot testing on thirty students. They were not included in the final sample. The value of Cronbach was computed as .823 as good for research studies.

IV. DATA ANALYSIS

The data were analyzed using statistical analysis. The Mean, SD and t-tests were applied for data analysis. RQ:

1. What are the teaching methods used by the teachers?

Table 1. Priority of Teaching Methods Used by the Teachers

Statistics					
Tests	Book	Discussion	Demonstration	Lecture	Activity
	Reading				Based
Mean	3.75	3.80	3.65	3.85	3.72
Std. Deviation	.914	.635	.694	.738	.863

In table 1, mean and standard deviations are used to rank different teaching methods. The mean values indicated that teachers used lecture method frequently as their top selection (M= 3.85). The discussion method is their second top priority in using it in classrooms. The book reading method is stood at third position with respect to teachers' selection methods. The activity based method is the fourth priority of teachers and demonstration is the least priority of teachers in their classes. It was concluded that majority of teachers used lecture method for instructional purposes and least preference for demonstration method. The reason is that they are teaching to education discipline where science concepts are rarely applied and practiced. Hence, demonstration is the least priority of arts teachers.

RQ: 2. What is the impact of teaching methods on the achievement scores of students?

Table 2. Impact of Teaching Methods on the Achievement Scores

ANOVA

Mode		SS	Df	MS	F	Sig.
		1363.4				
1	Regression	55	5	272.691	6.416	.000**
	Residual	6119.79	144	42.499		
	Total	7483.33	149			

Model Summary

Model	R	R ²	Adjust R ²	Std. Error of Estimate	R ²	Change Statistics			Sig.
						F	df1	df2	
1	.427	.182	.154	6.51914	.182	6.416	5	144	.000**

** $p < 0.01$

The table 2 explored the regression model and ANOVA. It was evident that teaching methods had an impact on achievement score of students. The results from ANOVA, $F(5, 272.69) = 6.416, p < 0.01$. The next table provides the values of R and R² respectively. The R value denotes simple relationship which is 0.427 indicate moderate correlation. The value of R² shows how much total variance in dependent

variable, achievement score is explained by independent variables, teaching methods. In this case, 18.2% impact is explained, which is small.

RQ: 3. What is the difference in achievement scores of students with respect to gender under multiple teaching methods?

Table 3. Achievement Scores of Students with Respect to Gender Under Multiple Teaching Methods

Indicators	Group	n	x	sd	t	P
Book Reading	Males	35	3.22	.802	-3.967	.000**
	Females	115	3.85	.897		
Discussion	Males	35	3.30	.412	-5.263	.000**
	Females	115	3.79	.649		
Demonstration	Males	35	3.33	.558	-3.657	.000**
	Females	115	3.75	.704		
Lecture	Males	35	3.31	.515	-4.590	.000**
	Females	115	3.82	.756		
Activity	Males	35	3.18	.476	-4.554	.000**
	Females	115	3.72	.916		

** $p < 0.01$

independent-sample t-test was used for comparing the achievement score of male and female students under different teaching methods. A noteworthy distinction was shown in mean scores for male students ($M = 3.22$, $SD = .802$) and female students ($M = 3.85$, $SD = .897$; $t(148) = -3.967$, $p = .000$) for book reading method. The discussion method had a significant difference in mean scores for male students ($M = 3.30$, $SD = .412$) and female students ($M = 3.79$, $SD = .649$; $t(148) = -5.263$, $p = .000$). The demonstration method also had clear cut difference in mean scores for male students ($M = 3.33$, $SD = .558$) and female students ($M = 3.75$, $SD = .704$; $t(148) = -3.657$, $p = .000$). The difference was also found in lecture method as mean scores for male students ($M = 3.31$, $SD = .515$) and female students ($M = 3.82$, $SD = .756$; $t(148) = -4.590$, $p = .000$). The activity method had also a significant variance in mean scores for male students ($M = 3.18$, $SD = .476$) and female students ($M = 3.72$, $SD = .916$; $t(148) = -4.554$, $p = .000$). It was concluded that female students had better achievement score in all the teaching methods than that of male students.

RQ: 4. What is the difference in achievement scores of male and female students

Table 4. Achievement Scores of Male and Female Students

Indicators	Group	n	x	Sd	t	P
Book Reading	Males	35	78.57	7.33	-2.586	.013*
	Females	115	82.17	6.82		

* $p < 0.05$

The results of t-test analyzed the achievement score of male and female students. A noteworthy distinction was shown in mean scores for male students ($M = 78.57$, $SD = 7.33$) and female students ($M = 82.17$, $SD = 6.82$; $t(148) = -2.586$, $p = .013$). It was evident that female students had better achievement scores than that of male students in all the teaching methods.

V. CONCLUSION AND DISCUSSION

The mean values indicated that teachers used lecture method frequently as their top selection. The discussion method is their second top priority in using it in classrooms. The book reading method is stood at third position with respect to teachers' selection methods. The activity based method is the fourth

priority of teachers and demonstration is the least priority of teachers in their classes. It was concluded that majority of teachers used lecture method for instructional purposes and least preference for demonstration method. The reason is that they are teaching to education discipline where science concepts are rarely applied and practiced. Hence, demonstration is the least priority of arts teachers. The most frequent methods of teaching are demonstration, lectures, discussion, and activity based methods (Pooja, 2017).

The value of R^2 shows how much total variance in dependent variable, achievement score is explained by independent variables, teaching methods. In this case, 18.2% impact is explained, which is small. Many previous studies had an impact of teaching methods on achievement scores of students (Asikhia 2010; Barneka 2012; Guloba, Wokadala, &Bategeka, 2010; Haas 2002; Njoroge et al., 2014; Sajjad 2011), in handling of real life situations (Chetty, et al., 2014; Jackson, 2012; Nye, et al., 2004). Moreover, classroom learning environment on pupils' scholastic achievement (Grossman, et al., 2013; McCaffrey, et al., 2013). The current study also supported the previous studies. A noteworthy distinction was shown in mean scores for male students and female students for book reading method, the discussion method, the demonstration method, lecture method and the activity method. It was concluded that female students had better achievement score in all the teaching methods than that of male students. The previous studies revealed that female students preferred activity and demonstration methods while male students prefer lecture method (Umar, Dauda, &Mutah, 2016). The current study also revealed that female students had better achievement scores than that of male students in all the teaching methods.

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