



## How do you rate your teachers' performance? Analyzing the perception of students about their science teachers' at elementary schools in Pakistan

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**Abstract-** Science education has been of great importance in schools. Teaching sciences require not only knowledge skills and abilities but also depend on state-of-the-art labs where students can experience their theories. Considering this key issue this study aimed to investigate the performance of science teachers at elementary schools in Pakistan. Twenty elementary schools were selected through simple random sampling, out of these schools, 521 students were involved in data collection through convenient sampling technique. A questionnaire was used to collect data based on six dimensions of teachers' performance. An informed consent was obtained from the concerned stakeholders. All the collected data were analysed by using SPSS. Inferential statistics were calculated. Results identified that science teachers have strong command on their subject but they are lacking in laboratory work. It is also revealed that girls rated the performance of their teachers less as compared to boys. This raises concern about the available library facilities. Limitations and recommendations for future researches were discussed.

**Keywords:** Teachers' performance; Science teachers; Elementary schools; Quantitative study.

### I. INTRODUCTION

Generally teaching is a most challenging job and considered as a major factor in contributing schools' performance and effectiveness. In a school context, teacher is the key professional who shapes up students' minds, emotions and personalities (Hyun & Sajjad, 2018). An effective and well-trained teacher could motivate his/her students towards learning and push them to do hard work in their academics (Sumantri, Prayuningtyas, Rachmadtullah, & Magdalena, 2018). In the present time, this role is becoming more important to prepare youth to meet with the challenging and competitive world.

In the contemporary world, teaching-learning process is mainly building a connection between learners and teacher. This sets a platform for learning, in such environment both teachers and students can work effectively. Such teachers motivate their students through modelling, they do first and then guide their students to work in their domains. This interaction becomes more important when it comes to teaching science subjects especially at elementary classes. This is an established fact that the training students get at early grades helps them in their whole academic life. Teaching science subjects requires a lot of theoretical and practical skills, a teacher has to present the science concepts not only theoretically but through practical as well. Practical examples should be linked with the real life situations and examples. He should have a great command on using science labs and equipment to demonstrate to his students (Darling-Hammond, 2016). However, lack of training and exposure could limit your teaching skills. Such teachers mostly depend on teaching theories and do not involve students in their class and ultimately develop passive learners.

A certain amount of literature provides a strong base that teaching science subject requires effective and interactive skills, a well-trained teacher should work with their students in labs and give them practical exposure. Otherwise their students feel boredom in such classes. Next to teachers' performance in science subjects and labs, the school environment and conditions of labs and equipment could be another factors in teachers' performance (Mudulia, 2012). For example, there is not sufficient equipment in a lab, or lack of materials and space, how a teacher can accommodate his maximum students in such labs (Suleiman, 2013). Moreover, lack of science teachers and non-specialist teachers can be another possible factors in such schools (Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Such problems are prevailing almost across

the world regardless of developing and developed countries and schools are struggling to overcome these issues (Godfrey, 2013; Kalolo, 2014).

The same has been observed in Pakistani elementary schools, teachers' training, teaching resources, insufficient equipment, shortage of science teachers especially in rural schools are the main key factors in affecting teachers' and students performance (Shaukat, Vishnumolakala, & Alghamdi, 2020). Nevertheless, government is taking many initiatives and investing a lot in public schools but the available financial resources might not sufficient to serve the whole educational community. Thus, there is a huge impact on educational community due to these problems. The performance of teachers and students both is suffering in relation to their achievement, motivation, efficacy and skills (Ahmad, Samiullah, & Khan, 2019). Considering this serious matter, this study intends to investigate the perceptions of students' in view of their teachers' performance in science subjects at elementary schools in Pakistan.

### **Research Objectives**

Following objectives were formulated to conduct this research:

- To investigate the performance of teachers teaching science students at elementary schools.
- To study the differences of opinion between boys and girls as to the performance of their class teachers at elementary schools.
- To identify the performance of teachers in different science subjects.

### **Research Questions**

On the basis of the objectives following questions were designed to conduct this study:

- What is the opinion of students in relation to the performance of their teachers teaching science at elementary schools;
- What is the differences of opinion between boys and girls as to the performance of their class teachers at elementary schools?
- What is the perception of students about their teachers teaching different science subjects?

## **II. LITERATURE REVIEW**

This study aimed to investigate the perceptions of elementary students about their teachers' performance in teaching science. Public schools in Pakistan are facing various problems in science education. As mentioned elsewhere, lack of school resources, laboratories, equipment, teachers' training, shortage of science teachers are the major problems of public schools and specifically at elementary schools (Shaukat, Vishnumolakala, & Alghamdi, 2020).

This shortage leaves a teacher with no option except teaching theories and promote rote learning among students (Halai, 2008). Available research highlighted the certain variable which badly affect the performance of teachers in teaching science subjects e.g., beliefs, efficacy, motivation, proper training and their interest.

Teachers' personal experience during learning constitute their poor beliefs and that ultimately impact their teaching (Avery & Meyer, 2012). If we look at the system of our public schools and their teaching standards, we could only identify lecture method that promote rote learning among students (Rice & Roychoudhury, 2003) and this is not helpful in learning science and practical subjects. Such experiences affect the competency of teachers and they mainly got expert in teaching content knowledge and usually avoid participatory environment and practical (Mulholand & Wallace, 2001). Such beliefs can only nurture when they learn or get train in an environment which is supported for the desire learning objectives and outcomes.

Similarly, their self-efficacy could be linked to their previous experience, knowledge and skills in teaching science. This also can be linked with teachers' behaviour and teaching practices (Bandura, 1997). High quality teaching is only possible through teachers' efficacy and strong teaching beliefs that set a teaching philosophy for teachers (Knaggs & Sondergeld, 2015). Brand & Wilkins (2007) suggested that teachers' competency is mainly depend on his/her own learning experience in a constructivist and pragmatic environment to practice the learned concepts. This is further endorsed through the study findings of Gunning and Mensah (2011) who highlighted the importance of micro-teaching. Micro-teaching gives you opportunity to shape up your teaching experience which at later stage constitute your competency.

Moreover, teaching science courses, modelling of instructor science pedagogies is an important factor to enhance students' learning experiences and skills (Knaggs and Sondergeld, 2015).

Both self-efficacy and teaching beliefs raise the motivational level of teachers towards teaching and resultantly enhance teachers' competency in their related domains. Both phase of teachers' career, pre-service and in-service play a vital role in developing such competencies and teaching methods. Since teaching sciences requires experimentation and observation thus it is pre-requisite to have such teachers who can promote inquire based learning, argumentations and critical thinking approaches (Furtak, Seidel, Iverson, & Briggs, 2012). These approaches helps to build students understanding and increase their interests in science subjects. A huge amount of literature is focusing on teachers' professional development programs in view of teaching science in schools (Park, Dimitrov, Patterson, & Park, 2017; Pringle, Mesa, & Hayes, 2017).

Professional development programs can bring systematic change in teaching practice, enhance teachers' content and pedagogical knowledge, and teaching practices (Bismack, Arias, Davis, & Palincsar, 2014). Well-designed programs can leave positive effect on teachers and students performance and overall enhance schools' performance. Such programs can also be proven as re-fresher courses for teachers to enhance their knowledge and skills in teaching science subjects. Authors Beyer and Davis (2009) stressing at the need of sound curriculum for such professional development programs which provides an evidence to teachers to work in real classroom environment.

In addition to personal attributes and skills of teachers, other numerous barriers play their role in conducting practical activities in classroom. In a typical laboratory, proper laboratory equipment, material for experiments, chemicals and safety equipment required for efficient lab experience. In line with these things laboratory environment, teachers' interest, competency and methods of working also of great importance. Moreover, school climate, principal attitude towards such facilities also play important role for the efficient working of labs. When it comes to Pakistan, Government is rapidly investing in uplifting school facilities and providing conducive learning environment. But, science laboratories in rural schools are still waiting for government attention and upgradation (Arshad, Qamar, & Gulzar, 2018).

### III. METHODOLOGY

#### **Procedure**

This study was intending to investigate the perceptions of students about their teachers' teaching, class behaviour and specifically teaching science subject at elementary schools. A survey was conducted by involving elementary public schools from the two districts of Punjab, Multan and Khanewal. In total 20 elementary schools were selected through convenient sampling technique. Out of these schools, 541 students studying in class 7<sup>th</sup> and 8<sup>th</sup> were involved in this study by using simple random sampling technique. A questionnaire was adapted to collect the data from the students. Questionnaire was based on five point Likert scale. To validate the responses of students and to get an in-depth insight about their opinion 25 students were involved from the above mentioned sample for interviews. Interviews questions were based on the quantitative questionnaire. After taking their consent they were interviewed and all the interviews were recorded verbatim. All the quantitative data were entered in SPSS for analysis. The qualitative data was managed manually to infer the results.

#### **Sample**

Sample was sorted out from two districts of Punjab, Multan and Khanewal. In total 20 schools were selected conveniently, (10) boys and (10) girls' schools to ensure the proper representation of both gender. Out of these 20 schools, in total 521 science students studying in class 7<sup>th</sup> and 8<sup>th</sup> were selected by using simple random sampling technique was applied to collect this sample. An informed consent was obtained from the District Education Officer and concerned school principals.

#### **Research Instruments**

A thorough attention was given to review the related literature to find a suitable and relevant research instrument that catering the needs of our research. Originally questionnaire was in English and but considering the contextual language and level of students it was translated in Urdu. There were 41 item with following six dimensions/sections; time sense, subject command, teaching methods and teaching aids, attitude, use of laboratory, class control. Students were asked to rate their responses on five-point Likert

scale ranging from Below Average to Excellent. The reliability of the questionnaire was calculated .91 which was quite strong and provide an evidence to proceed for further analysis.

### Data Collection

Data was collected by involving students from 7<sup>th</sup> and 8<sup>th</sup> grades studying at elementary schools in two districts of Punjab, Multan and Khanewal. Researchers visited each school and administers the questionnaire. Researchers went to each class and distributed the copies of questionnaire to fill up. Researchers was present there as they were filling up the questionnaire just in case they need any help to understand any item. As mentioned above, informed consent was obtained from District Education Officer and all schools Principals. All the ethical codes and conduct were observed during the research process. Anonymity of data was also ensured.

### Data Analysis

All the collected data were managed and organized in SPSS. The SPSS data file was cleaned and prepared for analysis. Taking into account the nature of data and variable inferential statistics were applied to reach to certain results.

## IV. RESULTS

The study aimed to investigate the teachers' performance teaching to science students at elementary schools. The collected data were analysed by using SPSS. This section is presenting the results of study. The questionnaire was based on six dimensions/sections. Table 1, presenting the descriptive statistics of all the six dimensions. Students rated their response on five point Likert scale. We will only report the highest and lowest man values against the six dimensions of the questionnaire. The higher mean value against "subject command" (M=4.88; SD=.77) shows the performance of the teachers on their particular science subjects and also the shows the students' satisfaction with their teachers. A lowest mean value against "laboratory facilitation" was identified (M=2.36, SD=1.55) which shows students rated their teachers' performance low in view of using science labs in elementary schools.

**Table 1, Descriptive statistics for the six dimensions in view of assessing teachers' performance**

Items	Dimension	Mean	SD
1	Time sense	4.25	0.86
2	Subject command	4.88	.77
3	Using audio-visual aids	4.66	.88
4	Helping attitude	4.37	0.97
5	Laboratory facilitation	2.36	1.55
6	Classroom management	4.71	.81

N = 521

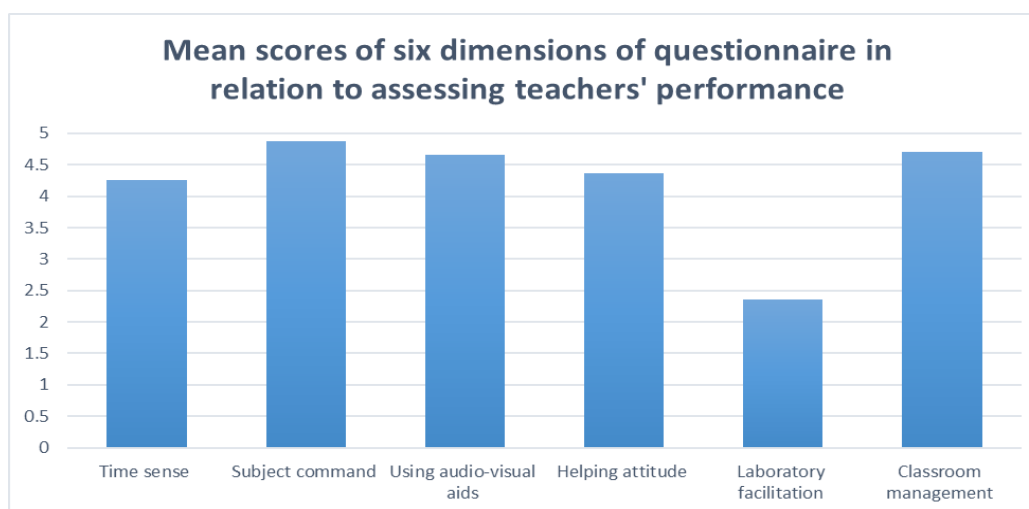


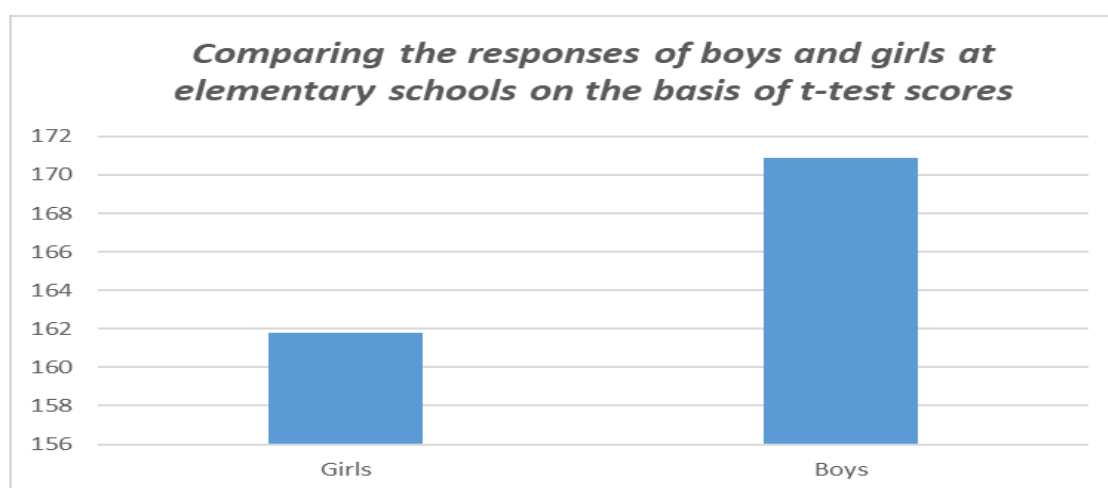
Table II, highlighted the difference of opinion of girls and boys in view of their teachers' performance in teaching science subjects in elementary schools. T-test was applied to analyse the difference of opinion between girls and boys. The t-test value clearly shows a significant difference of opinion between boys and girls of elementary schools,  $t\text{-test} = (\text{Girls}, M=161.78, SD=17.34), (\text{Boys}, M=170.90, SD=18.81), p < .05$ . This means teachers teaching in boys' school are teaching science subjects more effectively than teachers of girls schools. This also shows the male teachers use more science labs than female teachers. The following is the graphical representation of these results.

**Table II, Comparing the responses of boys and girls at elementary schools**

Gender	Mean	SD	Df	Sig
Girls	161.78	17.34	519	.000
Boys	170.90	18.81		

$N = (\text{Boys}=258); n = (\text{Girls}=263)$

Similarly, table III, presents the difference of opinion of students from 7<sup>th</sup> and 8<sup>th</sup> grades studying at elementary schools. Following results shows that there is no difference of opinion between the students of 7<sup>th</sup> and 8<sup>th</sup> grades students in view of reporting the performance of their teachers teaching science subjects ( $M=165.95, SD=166.83, p > .592$ ).



**Table III, Comparing the opinion of 7<sup>th</sup> and 8<sup>th</sup> grade students at elementary schools**

Grades	Mean	SD	Df	Sig
7 <sup>th</sup> grade students	165.95	16.97	519	.592
8 <sup>th</sup> grade students	166.83	20.23		

$N = (7^{\text{th}} \text{ grade}=250); n = (8^{\text{th}} \text{ grade}=271)$

In relation to measuring the teachers' performance in view of difference of science subjects, descriptive statistics was applied. Table IV, presents the mean score against each subject of science with minor variations which shows that on average teachers' performance in these subjects are almost the same with little variations, Chemistry, ( $M=168.72, SD=15.11$ ), Biology, ( $M=165.87, SD=19.32$ ), Physics, ( $M=164.87, SD, 20.55$ ).

**Table IV, Descriptive statistics of science subjects**

Subjects	Mean	SD
Chemistry	168.7205	15.11
Biology	165.8713	19.32
Physics	164.8730	20.55

$Biology = (171), Chemistry = (161), Physics = (189)$

## V. DISCUSSION AND CONCLUSION

This study aimed to investigate the teachers' performance in view of teaching science at elementary schools. The study findings show that science teachers have good command on their subjects but when it comes to practical part their students are not satisfied with their lab performance. This means, science teachers are generally focusing on teaching theory and are not using interactive teaching methods, moreover, this is also possible that the laboratory settings or facilities are sufficient for the students or might be these teachers are not well trained to teach practicum. However, our results are in line with available study findings of Arshad, Qamar, and Gulzar (2018), they conducted a study on physical facilities in public schools and its impact of students' achievement. They conclude that absence and lack of physical facilities in public school could affect students' achievement and mainly in those subjects where practical is involved.

As to our next findings, we have found a significant difference in the opinion of girls and boys as to their teachers' performance. Girls rated their teacher less than boys which is aligned with the study findings of Ullah, Ullah, and Allender (2020), although, their study conducted in another province but the situation of girls schools is not different.

Overall, the situation of science education in the country is not satisfactory in terms of available facilities in schools and teachers' performance. Teachers' professional development and efficacy and beliefs are also challenging in view of teaching science in elementary schools and this is again aligned with the study results of Shah, Ahmad, and Khan, (2019).

To conclude, science education and performance of teachers' in teaching science is very important at all levels of education. Sufficient attention, teachers' professional development in science subjects and school infrastructure should be improved for effective learning in elementary schools.

## VI. LIMITATIONS AND RECOMMENDATIONS

Although, study addresses a very important issue from school education but there are certain limitations which need to acknowledge. This study involved public schools of two districts which might affect the study findings, future researches could involve more districts to grab a large amount of sample. Comparison of rural and urban schools would be of great importance in this type of study since rural schools are really lacking in such facilities thus involving such schools can give us a clear picture of the results. We have only involved students in this study, voice of principals and teachers should also be heard to know the real facts about schools. This can provide us more solid findings.

More teacher related variables e.g., self-efficacy, beliefs, interest, principal leadership etc. could provide us opportunities for further in-depth analysis of this phenomenon. Real time observation of these schools could help us to verify the study findings and facilitate us to understand the real problems of public schools.

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