

Effect Of Teachers' Motivation And Teaching Practices In Science Subjects At Secondary Level In Malakand Division



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Abstract: *The current study was conducted with the aim to assess the effects of teaching practices on students' academic achievement in at secondary level in Malakand division, Khyber Pakhtunkhwa, Pakistan. For this purpose, the study selected all the secondary schools as a population of the study which includes; science teachers, students and school heads of Malakand division. A stratified random sampling technique was used and sample of the study was 200 secondary schools, 250 secondary school science 380 science students of class X and 20 school heads. To assess the effects of teaching practices on students' academic achievement in Science subjects at secondary level, rating scales for teachers and interview schedule for school heads were used. It was found that there is statistically significant negative association between academic achievement and lecture method another finding show that there is statistically significant negative association between academic achievement and demonstration method.*

Keywords: Teacher Motivation, Teaching Practices, student academic achievement, Science subjects

Introduction

A community's growth and collapse can be related to the rise and fall of science education, accordingly. A scientifically and technologically advanced country is more developed than one with a weak scientific base (Faize & Dahar, 2011). According to Carrillo (2015), science has contributed significantly to human existence, culture, and civilization. It is a foundation for personal and social development, and its outcome benefits human society and creates prosperity. Secondary school science subjects (biology, chemistry, and physics) are extremely important in the field of education. Students who take science classes improve their observation, experimentation, critical thinking, problem-solving, and practical work skills. Students learn new theories that emphasize the ability to manipulate the physical world (Bean & Melzer, 2021). According to Falloon (2020),

teaching is an art that requires teachers to have not only academic and professional skills, but also to practice teaching through various approaches throughout their lives. Science educators' showing strategies are significant in homeroom rehearses assuming they adhere to proper showing directions in view of the necessities of science points and understudies (Tufail et al., 2019). The legitimate use of intuitive showing strategies upgrades the arrangement of logical information and expands students' ability for decisive reasoning and critical thinking (Burrows and Slater, 2015). Akhtar (2019). It has been found that science instructors are insufficient at showing science; the most regular showing style is the chalk and talk technique; lab work is disregarded and retention is the most remunerating strategy for learning. In a similar way Tebabal and Kahssay (2011) fight that standard techniques are teacher

centered with no development for the understudies making them idle and consequently securing data from the educator without building their responsibility level with the point and this approach is least rational, more speculative and holding.

Ahmed (2013) viewed Lecture is a teacher-centered mode of teaching that involves one-way communication in which the teacher presents the materials verbally while the student listens or takes notes. One of the traditional techniques of teaching involves primarily oral presentation of concepts, with the teacher doing the majority of the activities in the form of talking while the students are passive listeners or very slightly participating (Himmele and Himmele, 2017). The talk approach is helpful while presenting new topic or conveying outline rundowns to understudies; it could be utilized for showing gatherings of any size, and the educator can cover a ton of information in a brief timeframe (Hussain, Azeem & Shakoor, 2011). Osuyi and Anthony (2018) described the lecture method as a process in which the teacher or some other knowledgeable person supplies information to the students. Lecture teaching method does not encourage students' active participation in the class, it may lead to lack of interest on the part of the students. It encourages cramming of facts which students may not be able to recall correctly. However, lecture teaching method is not without some advantages. For example it is effective for managing large class size; it saves time and cheaper to use. A showing in the science training technique is a purposeful control of logical device and materials that permits understudies to observe logical ideas or regulations firsthand. Logical ideas are less complex to comprehend and connect with genuine encounters when made sense of close by a noticed exhibition (Basheer et al., 2017).

Demonstrations boost generalization by encouraging active participation from students and increasing their attention level (Awudi & Danso, 2023). Similarly, Johnson et al. (2014) believed that including components of cooperative learning into demonstration classes could help students better understand what they

were taught. Ameh and Dantani (2012) found that show approach as compelling in upgrading science accomplishment of auxiliary school understudies additionally contended that the methodology permits dynamic cooperation of understudies in the illustration. Hemanthakumar, Sultana, and Zarzari (2013) detailed a comparative finding where the accomplishments of natural science understudies have improved essentially by utilizing the showing informative methodology.

Objective of the Study

- i. To assess the effects of teaching practices on students' academic achievement in Science subjects at secondary level;

Research Question

- i. What are the effects of teaching practices on student academic achievement in science subjects at secondary level?

Methodology

In this study, a mixed mixed-method design was adopted. In mixed method design, Creswell (2011) perceives that using quantitative and qualitative methods conveys a comprehensive understanding of a research problem. Effects of teaching practices on students academic achievement in Science subjects were found. Independent variable and its effect on dependent variables i.e Teaching practices effect on student academic achievement were assessed.

Population of the Study

It was comprised of 394 Secondary Schools, 673 Secondary school science Teachers (SSTs) and 30948 science students and 20 school heads.

Sample and Sampling

A stratified random sampling technique was adopted to select the sample from the population. 200 public secondary schools for boys, 250 science male teachers, 380 science students, 20 school heads were taken from 07 districts of Malaknd division of KK, Pakistan.

Research Instruments

After review of the literature the four research instruments were designed as following;

i. A five point Likert scale comprising 50 items for Secondary School science teachers was developed to collect the data about the teaching practices and its effect on student academic achievement .

ii. An interview schedule was designed to seek opinion from school heads regarding teaching practices and their effects on student academic achievement.

Data Collection

The researcher collected the data personally by visiting the approachable areas.

Data Analysis

After the collection of data, it was decoded and tabulated. To assess the effects of teaching practices on student academic achievement Pearson correlation test was used to find the relationship. Following data analysis was made;

Table 1: Significance of Correlation between Academic Achievement and Lecture Method

		Academic Achievement	Lecture Method
Academic Achievement	Pearson Correlation	1	-.412**
	Sig. (2-tailed)		.000
	N	382	250
Lecture Method	Pearson Correlation	-.412	1
	Sig. (2-tailed)	.000	
	N	250	250

The correlation analysis between Academic Achievement and Lecture Method revealed a Pearson correlation coefficient of -0.412**, indicating statistical significance at the 0.01 level (2-tailed). This moderate negative correlation suggests a significant inverse relationship between academic achievement and the utilization of the lecture method in teaching. In other words, the tendency to employ the lecture method decreases as academic achievement increases, and vice versa. The negative sign implies that higher levels of academic achievement are associated with a reduced reliance on the lecture method. In

comparison, lower levels of academic achievement are associated with a higher utilization of the lecture method.

The significance level of 0.01 (2-tailed) underscores the reliability of this correlation, signifying a low probability of the observed relationship occurring due to random chance. This finding implies a need to explore and adopt alternative teaching methods that may be more effective in promoting academic achievement. Educators and institutions may benefit from considering a diversified instructional approach to enhance student learning outcomes.

Table 2: Significance of Correlation between Academic Achievement and Demonstration Method

		Academic Achievement	Demonstration Method
Academic Achievement	Pearson Correlation	1	-.188**
	Sig. (2-tailed)		.003
	N	382	245
Demonstration Method	Pearson Correlation	-.188**	1
	Sig. (2-tailed)	.003	
	N	245	245

The correlation analysis between Academic Achievement and Demonstration Method yielded a Pearson correlation coefficient of -0.188**, indicating statistical significance at the 0.01 level (2-tailed). This correlation suggests a

weak negative relationship between academic achievement and the application of the demonstration method in teaching. Put, as academic achievement increases, the tendency to employ the demonstration method decreases,

and vice versa. The negative sign implies that higher levels of academic achievement are associated with a reduced reliance on the demonstration method. In comparison, lower levels of academic achievement are associated with a higher utilization of the demonstration method.

The significance level of 0.01 (2-tailed) highlights the reliability of this correlation, indicating a low probability of the observed relationship occurring due to random chance. While the correlation is statistically significant, the magnitude of the correlation coefficient suggests a relatively weak association between academic achievement and the demonstration method. Educators may consider exploring other teaching strategies or enhancing the application of the demonstration method to optimize its impact on student learning outcomes..

Discussion

The aim of the current study was to assess the effects of teaching practices on student academic achievement in science subjects at secondary level. The study shows that science teachers use a dual approach to teaching, depending on more conventional techniques like lectures and demonstrations but also acknowledging the need of more contemporary, student-centered methods. The majority of conventional methods link with international patterns in scientific teaching (Bernard et al., 2021). Nonetheless, the recognition of the value of modern educational techniques and technology points to a rising understanding of the necessity of innovation in the classroom. It was found from this study that academic achievement and lecture method showed statistically significant negative association. The current study are also in line with other studies like (Ford, Mitch & Gomez, 2012; Euzent et al., 2011) majority of the research studies provides evidence suggesting that traditional teaching practice like lectures is unrelated to student performance. Another finding in this study was that academic achievement and demonstration method showed statistically significant negative association. This connection is supported by the literature, which indicates that instructors who believe they are effective are more likely to use innovative

teaching techniques (Dulmen, 2023). On the other hand, the effective application of student-centric teaching strategies can raise instructors' motivation and sense of achievement (Julies, 2020).

Conclusions

The aim of the current study was to aim to assess the effects of teaching practices on students' academic achievement in at secondary level in Malakand division, Khyber Pakhtunkhwa, Pakistan. *After the analysis of the data*, it was concluded that the Pearson correlation coefficient -0.412 with p-value <0.001 between Academic achievement and lecture method shoed statistically significant negative association. In addition, that The Pearson correlation coefficient -0.188 with p-value <0.001 between Academic achievement and demonstration showed statistically significant negative association

Recommendations

1. Educational authorities should invest in comprehensive professional development programs for science teachers. These programs should focus on updating pedagogical skills, integrating technology into teaching, and fostering a deeper understanding of modern, student-centric methodologies. Regular workshops, seminars, and training sessions can contribute to building a skilled and adaptive teaching workforce.
2. Recognizing the importance of technology in modern education, educational institutions should initiate technology integration programs. These programs should provide teachers with the skills and resources needed to incorporate educational technology into their teaching practices. Access to digital tools and platforms can enhance the effectiveness of teaching and learning processes.

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