

To Study the Impact of Science Teaching Methodologies on Students Achievement: A Case Study of Students of District Khairpur Mir's

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Abstract

Students' attention towards learning science subjects appears to be reducing at all levels of education in developing countries like Pakistan. This problem is influenced by science teaching methodology and learning processes. The exploration of factors influencing teaching and learning provided suitable information for enhancing the learning of science subjects.

Main objective of this study is to discover science teaching and learning methodology in secondary schools of District Khairpur Mir's. The Questionnaire was prepared for students to explore the aspects that motivate students towards study. The questionnaire identifies teaching methodologies with students' achievements in response of their results.

A sample of 82 students (both male and female) was selected from different schools of District Khairpur Mir's. The age of the participants ranged between 15-18 years (with mean of 15.56 years). Their educational levels were at least ninth and tenth class and socio-economic status were lower-middle and upper-middle income groups. The data obtained were tabulated and analyzed by percentage values.

Keywords: Students; Teaching Methodology; Achievements

Introduction

Science is a major and important subject at secondary school level. Science (Physics, Chemistry and Biology) subjects play vital role in the field of Education. Through science subject students develop their' observation, experiment, critical thinking, problem solving techniques and it develops practical work strategies. Students will learn new theories to emphasize the skills of manipulating the physical world, they will inculcate reasoning from data because the students study in an innovative way to introduce unique ideas and to think over then and observe them.

The principle reason for instructing to any level of training is to acquire a vital change in the study [1]. To construct basic techniques for learning correspondence, instructors must apply appropriate instructional strategies that mostly suit to adjust targets. In the anticipated age, educator focused techniques to convey data to learners in respect to focused approaches. Till today, inquiries regarding the productivity of showing plans on understudy learning have constantly brought extensive consideration up in the topical field of instructive research.

Furthermore, investigation on teaching and learning continually endeavor towards observing the area to which unusual teaching methods improve development in student knowledge. Moderately unfortunate educational performance via the well-liked students is basically related to request of unsuccessful teaching methods by teachers to transfer knowledge to listener [2]. Significant review on the capability of showing techniques demonstrates that the benefit of education is as often as reflected by the accomplishments of learners. Education is a practice that includes required changes for learners to get clear results, [2] keeps up those instructors require mindful arrangement with the expectation of catching acknowledgment of the span of difficulty of the ideas to be secured.

Science subject shows techniques containing the qualities and strategies utilized for instructing to be actualized by educators to achieve learning objectives. These teaching methodologies problems are solved decently on topics' to be educated and imparted by the way of the learner. These days' teachers make use of only lecture method while other teaching methods are not used in the classes throughout teaching. In lecture method teachers communicate knowledge to students in the conventional way and students become passive [3].

Literature Review

Science suggests the information got or received from experiment and observation. Science subject is fundamental subject in our education. Science education provides a chance to think critically, and join the ideas of men in natural setting and employ it within the advantage of human race. It may be terribly creative if we have a propensity to utilize our skills to acquire get pleasure from it.

Science Education and its Importance

Science education provides academic data to scholars, and additionally it uses an-other kind of knowledge such as: the experimental skills [4]. "Science education may be an artistic intellectual activity resulting in joining ideas of men in natural surroundings and therefore the application of those ideas to the management of the surroundings for man's profit [5].

The object of instruction of science into secondary schools is to change the student direction of understanding. Consistently the necessary data of physical sciences is required in favor of additional learning of science as well as equipment to grip its application. It must to facilitate to accumulate investigation of all abilities; create the power to suppose and make use of arithmetic/math and data to resolve the bodily matters.

In teaching as well as learning science on Gymnasium stage, the scholars' face several troubles during perceptive logical thoughts, Laws and theory within science school room and labs. In the opinion of Wood, 1991 [6], "science education must be concerning the training of scientific processes than the training of scientific facts." Consistent with [7], this age is understood because of the age of science. Science is taken into account as a vital subject within the college syllabus. Education of science permits the scholars to spot and resolve scientific issues also try in the direction of analysis into latest area of data. During this period of science, huge number of individuals is utilized within technical pursuit, they have data of science.

Sungar [8], said that the break of dawn of time plus sudden increase data, help in the teaching of science toward each learner. Straight forward investigation of several usual college people can show a little less (a lot but 11%) follow a few varieties of science careers. Consequently, a few plan in the direction of setting up science learning toward persons that can interact into more learning of the science. Science associated with skill

will build an important involvement in the direction of raising our common place of lively hood. Communicate the essential scientific as well as technological data in favor of the new generation to tap growing variety of occupation, particularly in to industrious area.

Science Teaching in Pakistan

As Brew [9], said that the science instruction plays a vital role in the financial development of various social orders and peoples. Science education has found a safe place in the class curricula and nearly in every country round the world. Especially since the last few decades, science is instructed on totally different levels and that it has been continuously evolving since the last few decades.

The trend of science curricula in different countries of the world is different and it does not exclusively target the development of science understanding in students. It consists of good quality goals, as an example, the current form of science ideas given to students in the developed countries are actually placing additional stress on students' understanding in relation with the 'nature of science' [10,11]. However, this side of science education has not yet achieved the roots in different developing countries like Islamic Republic of Pakistan. When the scientist Iqbal was a faculty student in sixties, science students in the associated colleges got the definition of science as 'variety of facts; body of information and an organized body of knowledge; an absolute truth; arranged and objective knowledge [12].

Robinson [13] conducted a case study science has different kinds of consequences for the learners. By implication students develop the understanding that there is no area linked with remarkable fresh discoveries; which is regarding the absolute and final phenomenon. The implications for teaching for the lecturers of science are to have been bound to transmit information to students who do not have the concepts except the memories of what they are told. However, the science teachers totally believe that the description of science is not distant from the modern reading of science, but damaging the positive image of science in students.

On the other hand, the modern reading of science is controlled by science educationist who thinks that science is an evolving phenomenon which consists of meanings and ideas of science to be evolved by the individual students through negotiation with the teachers and material world. Teachers' previous expertise incorporates a vigorous influence on their beliefs and teaching designs.

Science teachers' beliefs regarding the most effective manner of teaching science area unit antecedently planned and developed as of their experience at the same time as student. Science teacher manipulate their personal puzzling over the quality as well as view point of science. Many studies just around the corner offer method through which lecturers prepare their values regarding the character of science [14]. Inquiry interested in the character of school science teaching is to frame teacher values with understanding of the character of science plus knowledge base.

Victimization science text book plus study of schoolroom, it examines teacher perception of science. Over lot the school text books give thought full in attention toward the character of science. Science plus information base be typically seen the same and accurate. Throughout teaching, a lot of attention is given to ideas and principles of science than in the direction of the process through which knowledge base are developed [14].

As we explore to science lecturers reply in the direction of text book in a manner to throw light in the direction of a program form of science teaching. Because of their own view area unit unfair through their previous experience, students view is prejudiced through teacher behaviors. Lecturers are often pleased about however important and influential scholars they are. Yet as an educator they influence student's brain. The whole thing educator says shows teacher inside beliefs. Many studies expose the manner science is instructed in the schoolroom that totally depends on teachers personal beliefs.

The Purpose of this Study is to Examine

- a. Students' belief about Science teaching and learning and their effects on teaching and learning.
- b. Students' belief that students achieve their goals through effective science teaching methodologies.
- c. Students' belief about science classroom environment.

Scope of the Study

This research study is conducted to determine the position of the teaching of science, students learning and students' achievements at secondary schools of District Khairpur Mir's, province of Sindh. The methods used to teach science will be investigated. This research suggests solutions to the existing Science teaching learning and students achievement related problems.

Research Methodology

This study was undertaken to evaluate the different effects of teaching methodologies of science subject on students' achievement, and to find out the effective teaching methodologies of science subjects. The research work was carried out in fourteen Government secondary schools and two Government Comprehensive higher secondary schools of District Khairpur Mir's.

Research Strategy

The present study is conducted by survey method. Quantitative method (Questionnaire) of research is used for collecting data in pure sciences such as Physics, Chemistry, and Biology. Through this survey method irrelevant variables are eliminated. In this research male as well as female students are involved under beginning of mean score into examination of science teaching methodologies and students achievements.

Independent Variable: Following is the independent variable for the study

- Teaching Methodologies

➤ Dependent Variables

Following are the dependent variables for the study

- Academic Achievement
- Learning Outcomes of Students

➤ Population

There are ten High Schools for boys and girls in District Khairpur Mir's, Sindh, Pakistan. Students (male and female) of high schools of District Khairpur Mir's Sindh (Pakistan) during session 2015-2016 were population of this Survey study

➤ Sampling

There were eighty-two (82) students of ninth and tenth class of Schools of District Khairpur Mir's during the session 2015-2016. The sample was divided/categorized into two equal groups under the origin of an achievement from the ninth and tenth science classes.

Data Analysis

Analysis of Student Questionnaire Results

(1) Science is a primarily a formal and practical way of representing the real world

Total	SA	%	A	%	U	%	D	%	SD	%
82	70	85.47	7	9.95	02	2.4	1	1.20	2	2.4

In above statement total respondents were 82. Respondents answered in all options but mostly answered in strongly agree and agree. These answers show that Science is a primarily a formal and practical way of representing the real world.

(2) It is good to use teaching Aids material in science class

Total	SA	%	A	%	U	%	D	%	SD	%
82	61	74.48	13	15.14	2	2.4	2	2.4	4	4.77

In item no. 02 respondents mostly answered in strongly agree and agree from these answers it can be concluded that it is good to use teaching aids material in science class.

(3) It is important for science teachers to give students directions for doing effective science subject learning

Total	SA	%	A	%	U	%	D	%	SD	%
82	61	74.48	16	19.09	2	2.4	2	2.4	1	1.20

In above statement respondents answered mostly in strongly agree, agree and some respondents answered in undecided, disagree and strongly disagree. These answers show that it is important for science teachers to give students directions for doing effective science subject learning.

(4) To linking of one topic with other, is essential for understanding achievement of the students

Total	SA	%	A	%	U	%	D	%	SD	%
82	49	59.12	19	23.44	4	4.87	6	7.31	4	4.87

In item no.04 respondents answered mostly in strongly agree and agree these answers show that linking of one topic with other topic is essential for achievement of the students.

(5) Science teachers facilitate you to work together for understanding difficult topics

Total	SA	%	A	%	U	%	D	%	SD	%
82	53	64.63	22	26.82	2	2.4	3	3.6	2	2.4

In item no.5 respondents mostly answered in strongly agree. These answers indicate Science teachers facilitate

students to work together for understanding difficult topics and students achieve good grades.

(6) Science teacher use different ways to stimulate students' science skills, for learning outcome

Total	SA	%	A	%	U	%	D	%	SD	%
82	61	74.27	16	19.09	2	2.4	2	2.4	1	1.20

Above item respondents mostly answered in strongly agree. These answers indicate that Science teacher uses different ways to stimulate students' science skills, for students learning outcome.

(7) Science teacher adapts different ways to teaching learning strategies and Techniques for student's achievements

Total	SA	%	A	%	U	%	D	%	SD	%
82	61	74.27	15	17.21	2	2.4	2	2.4	2	2.4

In item no.7 respondents answered mostly in strongly agree, agree, and some respondents answered in undecided, disagree and strongly disagree. These answers clearly show that Science teacher adapts different ways to teaching learning strategies and techniques for student's achievement.

(8) For science subject achievement it is necessary for Students to accompanied practical work for achievement in science subject

Total	SA	%	A	%	U	%	D	%	SD	%
82	55	67.07	21	25.60	2	2.4	2	2.4	2	2.4

Above respondents answers clearly show that for science subject achievement it is necessary for Students to carry out practical work for understanding subject and reach toward achievement.

(9) The science teacher provide help when you there are difficulties in understanding a topic or task

Total	SA	%	A	%	U	%	D	%	SD	%
82	62	75.31	8	9.75	8	9.75	2	2.4	2	2.4

In item no.9 respondents mostly answered in strongly agree and agree, and other answered in undecided, disagree and strongly disagree. These answers identify

that science teacher help students when students have difficulties in understanding a topic, when students understand topic then they achieved good grades.

(10) Science teacher manage a class in discussion, demonstration, activity, project base method for student's achievements

Total	SA	%	A	%	U	%	D	%	SD	%
82	52	63.41	19	23.17	5	6.09	4	4.87	2	2.4

Above respondents answers clearly show that Science teacher manage a class in discussion method for student's achievement, because it is necessary for student achievements.

(11) Science teacher presents clear and simple examples to clarify difficult ideas

Total	SA	%	A	%	U	%	D	%	SD	%
82	51	62.65	21	25.60	4	4.87	4	4.87	2	2.4

Above respondents answers of item no.11 clearly declare that Science teacher present clear and simple examples to clarify difficult ideas when students do not understand a difficult topic.

(12) Science teacher uses alternate explanations when students do not understand a topic

Total	SA	%	A	%	U	%	D	%	SD	%
82	53	64.10	13	15.85	3	3.6	1	1.20	1	1.20

Mostly respondents answered in strongly agree and agree in item no.12. These answers indicate that Science teacher uses alternate explanations when students do not understand a topic.

(13) Teacher has knowledge and skills of teaching of science subject

Total	SA	%	A	%	U	%	D	%	SD	%
82	70	85.47	7	8.53	3	3.6	1	1.20	1	1.20

In item no.13 respondents answered mostly in strongly agree and agree, some respondents answered in undecided, disagree and strongly disagree. These answers clearly show that science teacher has knowledge and skills of teaching of science subject.

(14) The teacher establishes and maintains eye contact with the class

Total	SA	%	A	%	U	%	D	%	SD	%
82	70	85.47	7	8.53	1	1.20	1	1.20	3	3.6

Mostly respondents answered in strongly agree and agree in above item. These answers indicate that for understanding topics science teacher establishes and maintains eye contact with the class and recognize who learn who not learn.

Conclusion

It has been observed that majority of the students were to be found answered in strongly agree and agree, these answers show that Science is a primarily a formal and practical way of representing the real world. It has also been shown in the results of this study it is good to use teaching aids material in science class. Majority of the students of schools of Khairpur Mir's favour in linking of one topic with other topic is essential for achievement of the students. Majority of the students of schools of Khairpur Mir's emphasize in teachers facilitate students to work together for understanding difficult topics and students achieve good grades. Students suggest science teacher uses different ways to stimulate students' science skills, for students learning outcome and also science teacher adapts different ways to teaching learning strategies and techniques for student's achievement. Majority of the students of schools of Khairpur Mir's emphasized on practical work with theory for better understanding. Majority of students replied in the favor of linkage between theory and practical work. It is good to science teacher help students when students have difficulties in understanding a topic, when students understand topic then they achieved good grades. Results also indicate that usage of alternate teaching methodologies like discussion method, activity based method, project based method and demonstration method may help in the better understanding of topic for students. Results of item no.11 clearly declare that Science teacher present clear and simple examples to clarify difficult ideas when students do not understand a difficult topic. It is necessary for science teacher uses alternate explanations when students do not understand a topic. For the science subject achievement it is necessary teacher has knowledge and skills of teaching of science subject. Results also indicate that for understanding topics science teacher establishes and maintains eye contact with the class and recognize who learn who not learn. Above conclusion tells us that if

teacher want to student achieve good grades in science subject then he/she perform well.

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