

Relationship between Science Teachers' Attitude and Students Academic Achievement at Secondary Level in Abbottabad.

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Article History:	ABSTRACT
Received: 28 Jun 2019	The target of this study was to uncover the relationship between Science teachers' attitude and students' academic achievement. For this purpose, a survey type questionnaire was set to find data regarding science educators' academic/ professional qualifications and experience. To find the attitude of science educators for science, a 50 items' attitude scale consisting 5 components was formulated and adapted from TOSRA. Present questionnaire was distributed among 80 secondary grade science educators as of 40 institutions consisting gender, urban/rural and private/public secondary institutions. Quantitative analysis of data specified an opposite correlation of educators' academic as well as professional qualifications/teaching experience with their students' academic performance. Most of the educators obsessed extremely positive attitude for their respective subjective. Also, a positive relationship was found between science educators' attitude towards science and academic achievements of their pupils. More studies may be carried out for finding the reasons about a negative correlation of educators' academic/professional qualification/ experience with their students' achievements and also to explore definite variables that influence the attitude of educators towards science.
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	Key Words: Science Educators, Academic and Professional Qualification, Educators' Experience, Attitude towards Science, Students Achievements.

1. Introduction

Science edification persistently plays a crucial function in the life of human beings. The foundation of our modern society is directly depending on the development of science. This magnificent as well as a strange knowledge we describe as 'science', has done numerous works for human beings. As Aggarwal (2010) articulates that science knowledge is constant and endless process i.e. a lifelong practice and advancement. It includes the whole thing that influences persons' characters. In the same way, Singh (2016)

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specified that science edification is like a limitless improvement in receiving most modern knowledge and talents from latest sources. It is understandable that the whole development of the States is united to its science didactic system and its teaching learning process. Ejiogu (2015) has given his idea that for improving science knowledge, it is vital to make an apparent science educators' educational plan that will get ready the science educators in favor of leadership responsibility they needed.

The science educators must be willful to build a good environment for science seeking as well as learning (Reddy, 2012). In the same way, Singh and Yadved (2010) articulate that appropriate guidance of science educators carries eminent development in science learning which reflects that the science educators are not able to play their roles if not competently skilled. Gupta (2013) uttered that the function of a science educator is linked with science edification; consequently, science educator should pass on to youngsters the information, methods, humanizing of public, customs and feelings as well as learning for science.

Owing to speedily altering circumstances, a science educator is mandatory to get a higher level of specialism. Since the significance of science educator's skilled development is now deeply expanded. Consequently, Hayon (2015) affirms as the science instructors who attain interpersonal and specialized capabilities are more victorious within their science instructions according to their students' feelings, abilities and educational attainments. According to Bajah (2014) the achievement of science plan is mostly depending on our science educator because he is the one who converts all our feelings into proceedings. An exceptional science instructor should be devoted to his own occupation and should have the talent as well as knowledge to go ahead (Sparks, 2010).

Science education and the skills of science educator plays an imperative role in teaching however professional edification and teaching is more crucial because a trained science educator is superior as well as beneficial as compared to untrained science instructor. Harris and Sass (2007) specify the effect of the reliability of outcomes about the

influence of science instructors' period of experience: if the highly experienced and less efficient science instructors mostly leave the teaching job, subsequently it will cause dire need of effective and well skilled science staff. A general supposition concerning the relationship between science educators' experience and their pupils' educational attainment is that learners educated by more skilled science educators attain high levels, because their science educators have expertise in the content and obtained teaching as well as administrative practices to face different class room difficulties (Evans 2005, Gibbons, 2011, Slavin 2013).

Moreover, well skilled science instructors are likely to concentrate on the most specific subject matter of the learners that causes to change their prior information, capabilities and the surroundings (Raudenbush & Williams 2002, Stringfield & Teddie 2012). Similarly, the administrative abilities are also essential for better classroom control and organization. These are the science educator's capabilities, creativity, proficiency, practice and intelligence in finding fresh ideas to accurately use the proper method, language and accessible coaching equipment to bring out the finest from learners' educational achievements (Eso, 2003).

An additional key factor that may put in to the educational achievements of the science learners is the attitude of the science educators towards their subject. Zimbardo (2008) describes attitude as a positive or negative estimation of community, matter, event, dealings and opinion or just about something in your environment. Findings of numerous studies have established the assumption that science educators' attitude either towards science or towards science instructions have an effect on their learners' educational success (Chidolue, 2012). Equally, Okpala (2006) confirmed, the effect of 'the attitude of science educators' towards the checking of their learners' educational success and their tendency for respective subject was constructive. A good attitude of science educators formed a kind and sympathetic classroom atmosphere; enhance experiences to sustain science learners' tasks by using time for lessons, set good behavior, promote a get together with science learners and present an encouraging message for them (Eggen & Kauchak, 2009).

Brunning (2007) explained the information concerning the science educators' attitude: Science educators' traits like individual science training skills, formation and enthusiasm, good results support learners' importance and similar traits are also linked with the enhancement of learners' educational achievements. Eggen and Kauchak (2009) affirmed that for successful science instruction constructive attitude of the science educators is the fundamental obligation. The science educator should suggest the students with profound attention to recognize the latest changes in the refresher lessons. Likewise, science educators' attitude towards their subject is vital for the expansion of professionalism and educational success of their pupils. The academic achievement of the science learners is an added natural talent linked with intelligence and other civic dynamics (Onocha, 2000). For science coaching and its education to be more consequential and motivating; there have to be input uniformly from the science instructors and the science learners for the rationale to create a positive approach with advanced learning success. Consequently, the attitude of science educators should be for their pupils' academic achievements. Therefore, once the science learners display the predictable attitude, the results clearly reflected the effect of the learning method in education (Igwe, 2007).

Science educators' attitude and their students' educational achievements may be examined by gender dissimilarities. Explaining the attitude Dodeen (2003) described as attitude of science educators towards their subject has been changed by gender; as further stated that female educators have more positive approach for their subject as compared to male educators. Studies on the differentiation within attitudes towards science of gender educators are repeatedly carried out, that have found significant results; moreover, a number of researches have declared that male science educators have more attitudes towards their subject as compared to female science educators, and also male are more probable to carry on learning science (Weinburgh, 2000). Women science educators have tendency towards their institutions as well as learning, however men have positive attitudes towards their subject and are likely to be successful in science (Oliver & Simpson, 2009).

Concluding the above discussion, it is reflected that the function of science educator as facilitator of education as well as the contributions to learners' educational achievements is extremely large. Our nation's fortune is based on its didactic organizations with classrooms that reflect a science instructor, who as an organizer and administrator of the school, is mainly responsible for the new generation of our nation and also, he is a real founder of coming generation of engineers, scientists as well as good citizens. Richardson (2013) observed that the instruction of science is like a nation building job and supremacy of science teaching depends on the competence as well as efficiency of science instructors, which showed that if science instructors are occupationally expert, educated, motivated and devoted then science teaching will be better. Since science educators' attitude towards their respective subject means their manners, approach, commitment and dedication to their field; so, having such dedication and also a constructive approach for science reflects that science instructor's presentation will be superior and his struggle hard will be victorious. Consequently, it was very vital to work out the relationship between science teachers' attitude and students' educational success for the purpose to have profound consideration of base for more exploration as well as policy formulation for the brilliance of science education.

2. Theoretical Framework

Nowadays, learning of science has become very important and learning science in a more interactive way through the usage of communication technology is highly encouraged. Moreover, learning science is also very beneficial as it has been linked with other subjects such as History, Geography, Mathematics, English and other languages. This will certainly help the children in many ways as they get to learn many things simultaneously. Teachers should try to make learning of science an enjoyable experience, the one that the children will remember for a life time as science is an on-going process and it will continue even when these children have stepped out of primary school. The future of our society will be determined by citizens who are able to understand and help shape the complex influences of Science and technology on our world (Ungar, 2010).

By definitions of the behavior and attitude change, according to studies and related test subject, usually it is the collection of a people's negative or positive manner (mode) to a specific object or position or any event. Petty (2007) showed the attitude as well as the behavior comprehensively as "separate common findings about himself/herself, about others, objects, situations and different problems". On the bases of many affective, behaviors and cognitive bases, these common evaluations affect the progress and alterations as well as the formations.

Similarly, attitude should be clear like an understandable propensity on the way to response within a unique system habitually constructive or unconstructive towards some situation as well as the matter. So, attitude has both cognitive as well as the emotional parts. Eggen and Kauchak (2001) identified attitudes related to science teachers that produced a caring as well as the very supportive classroom environment and are energetic, looking forward, firm, democratic experiences to support science student's responsibilities by using time for course correctly, made good activities, meet freely with science students and give supportive message for them. For effective science teaching positive attitude of the science teachers is the basic requirement. A science teacher should be so interesting that he must work his pupils into such a position of deep interest in what the science teacher is going to teach them that every other thing of attention is stopped in his mind. And the science teacher must convey the pupils with deep interest to know about the coming steps in relation with the course are them High grades of academic achievements may be obtained as well as the students think better about themselves and the course they are reading and searching when science teachers pass teaching time excellently.

In a conceptual sense attitude is related with a unique way of acting, thinking, observing and behaving. Also, it has very serious inferences for the science students, the science teachers, the society with which the science students are directly relate and the whole institution. Learning experiences also build the attitudes and these are learned by examples, thinking of parents, science teachers as well as the class fellows or friends. The same copy style is a role to perform in science teaching as well as in science learning's. By

following the inclination of the science teacher, the science students' draws their own attitude, and this may nearly to affect the science students' academic achievements.

Bandura (2010) in his theory showed clearly that attitudes are copied by watching others (the structures, parent, science teacher, mentor, class fellows) that indicate the behavior. As the structure or model express it and the science students observe and make copies of the same models and styles. Similarly, the science teachers are role models whose attitudes are often copied by their science students. The science teachers' willingness, styles, feelings about their studies, could have a considerable effect on their science students. But unfortunately, most of the science teachers do not realize that how they teach science, how they behave with their science students because it's very important instead of what they teach. Very briefly, the attitude of the science teachers towards science and science teaching directly affect the student's academic achievements and their own science attitudes are affected by their beliefs as well as the culture.

Academic achievements of the science students could be defined as the expressions of science knowledge and study, attained or the techniques improved at school level, reflected by exam or test and the marks given by the science subjects' teachers. And it may be expressed as any expression used to reflect science students' scholastic standings. The science students' academic achievements are a separate inherent potential in the line of intelligence connected with other sociological variables. And psychologist, educators and researchers have found different variables that have effects on science students' academic achievements. Ford (2013), firmly stated and claimed that science students with greater abilities got better scores in comparison to those with low intelligence and the science students with negative self-concept had poor academic achievements.

One of the major causes of concern is the enduring 'swing away from Science' in many countries. Since only those students, who take Science, or Science and Mathematics, are able to pursue further in scientific education and scientific careers, the decline in the number of Science-based students as a proportion of all students eligible for higher

education in the country has raised concerns about the nation's economic future (Roberts 2002). At the core of such concerns is recognition that the nation's standards of 'achievement and competitiveness, is based on a highly educated, well trained and adaptable workforce', and that the low uptake of Mathematics and Science and the negative attitudes towards these subjects poses a serious threat to economic prosperity.

- **Objectives**

The research in hand was to find out the relationship between science teachers' attitude and students' academic achievement at secondary level in Abbottabad.

The research objectives were (i) to determine the attitude of science educators towards their subject (ii) to compare the attitude of gender of science educators towards science (iii) to find the relationship between science educators' qualification and students' academic achievement (iv) to find the relationship between attitude of science educators towards science and students' academic achievement.

- **Hypothesis**

Based upon the objectives of the study, four null hypotheses have been formulated as (i) the attitude of science teachers' is negative towards science (ii) there is no significant difference between the attitude of male and female teachers' towards science (iii) there is no significant relationship between the science teachers' qualification and experience with academic achievement of their students (iv) there is no significant relationship between attitudes of science teachers' towards science and their students' academic achievement

- **Delimitation**

Due to limited time frame the study work was enclosed to the subsequent part only: To find the attitude of science educators towards their subject, only five components of TOSRA were selected.

This research was imperative for numerous reasons as it presented knowledge, of the association of qualification, as well as attitude of science educators with educational attainments of their pupils. This study is anticipated to give a clear print of science educators' qualifications compulsory to achieve substantial increase in academic achievements of the learners. Present research differentiates the performance of well experienced and highly qualified educators that is helpful for administration to select right team for different levels of the science learners. This study is helpful for the public, the administration, the nation, the curriculum schemers and the scholars to consider and appoint suitable science educators for future.

3. Materials and Methods

This research was descriptive, and its main purpose was to determine the relationship between science educators' attitude towards science and students' academic achievements. For finding this relationship, subsequent measures were taken on.

- **Population**

The population of this research was consisted of 197 male and 135 female secondary level science educators and 5026 male and 1775 female (10th grade) science students of the year 2016 in district Abbottabad. “

- **Sample**

An appropriate sample of respondents was taken from total population. 40 secondary institutions (20 each public/private sector) consist of equivalent portion of gender / rural and urban (each sector 10 institutions) were taken by a technique as stratified random sampling. By using random sampling technique two science educators and 20 science students were taken from each sample institute. By this method 80 science educators (40 from each gender private and public sector /urban as well as rural) and 800

students (each gender / private and public sector / urban and rural consist of 400 each) were sample of present research.

3.1 Data Collection

Three tools were developed for collecting data as (i) for collecting the results of 10th grade students in their science subjects a questionnaire was setup (ii) for science teachers qualification/experience another survey type questionnaire was formulated and (iii) for determining attitude of educators towards science, an attitude scale i.e. 5 point Likert scale was formulated and adapted from TOSRA (Test of Science Related Attitude) consisted of 50 items and 5 parts was given to the respondents.

The reliability of Test (Attitude Scale) Cronbach Alpha was found as 0.886 and tools were passed through judgmental validation; the research tools were improved and accomplished with pilot testing. The academic scores of 800 students of yearly exam of the year 2016 were taken from B.I.S.E Abbottabad Pakistan. The enthusiastic attitude and collaboration of the respondents made it feasible for the researcher to have a return rate 100 % from the respondents.

3.2 Data Analysis

For the process of analyzing the collected information in the form of data, the SPSS software was applied for percentage, frequency, arithmetic mean, correlation, t-test. Standard deviations and regressions were applied as numerical instruments. T-test was applied for finding the significance of the difference between the mean scores of genders. Histograms were used to show the value of attitude of educators for their respective subjects. In the same way the association of attitude of educators for science with 'students' academic achievements' was found by applying respective correlations. Same correlation was also used for the relationships between qualifications of science educators and student's academic achievements. The differentiation as well as the comparison of the

attitude of gender was established. Findings and conclusions were drawn, and some suggestions were also made in the end.

4. Results and Discussion

The results of the study were tabulated and the variables i.e. academic as well as professional qualifications and ‘educators teaching experience’ have been assigned proper scores. Analyzed data is given in the subsequent tables.

Table 1
“Demographic data of the respondents”

Characteristics	Male	Female	Total	Percentage
Academic qualifications				
B.A/B.Sc	20	21	41	51.2 %
M.A/M.Sc	19	20	39	48.8 %
Professional qualifications				
Untrained	12	10	22	27.5 %
B.Ed	25	28	53	66.2 %
M.Ed	02	03	05	6.2 %
Experience (years)				
01--05	28	24	52	65 %
06--10	10	14	24	30 %
11--15	01	01	02	2.5 %
16--20	01	01	02	2.5 %

Above table 1 gives percentage/frequency of qualifications and teaching experience of gender of science educators of the chosen institutions. “It was found that 51.2 % science educators had B. A/B.Sc. qualifications whilst 48.8 % science educators were M.A/M.Sc. Similarly, 66.2 % of the science educators had professional qualification B.Ed. whereas 6.2 % of science educators had M.Ed. qualifications.”

On the other hand, 27.5 % of the science educators did not acquire any professional qualification. Also, majority of science educators (65 %) had lowest teaching experience as between 01--05 years and 30 % of the science educators had experience

between 06--10 years whereas only 2.5 % educators had teaching experience each 11-15 years and 16--20 years.

Table 2
Significance of difference between different variables' mean scores of male and female science educators

Variable	Comparison group		Mean score	S.D	t	P
		N				
Academic qualifications	Male	40	1.90	1.008	0.664	0.508
	Female	40	2.05	1.011		
Professional qualifications	Male	40	0.725	0.506	1.028	0.307
	Female	40	0.850	0.580		
Experience	Male	40	1.425	0.636	0.000	1.000
	Female	40	1.425	0.712		
Social implication of science	Male	40	41.80	3.553	0.910	0.366
	Female	40	41.025	4.048		
Attitude towards scientific inquiry	Male	40	42.050	3.312	1.293	0.200
	Female	40	40.975	4.086		
Adoption of scientific attitude	Male	40	41.825	3.558	0.983	0.329
	Female	40	42.675	4.153		
Enjoyment in science learning	Male	40	41.750	4.727	1.957	0.055
	Female	40	43.475	2.952		
Career interest in science	Male	40	42.950	3.485	1.696	0.094
	Female	40	41.325	4.958		
Students' academic achievement	Male	40	50.268	6.638	0.126	0.900
	Female	40	50.486	8.671		

Table 2 indicates as at significance level (0.05) $p > 0.05$ that means no significant difference is found between academic qualification mean values of male (1.90) as well as female (2.05) educators, mean values for professional qualification of male (0.725) and female (0.850) educators, mean values of educators' experience of male (1.425) and female (1.425), mean values regarding 'social implication of science' of male (41.80) and female (41.025) educators, mean values regarding 'attitude towards scientific inquiry' of male (42.050) and female (40.975) educators, adoption of scientific attitude mean scores of male (41.825) and female (42.675) teachers, enjoyment in science learning mean scores of male (41.750) and female (43.475) teachers, career interest in science mean scores of male (42.950) and female (41.325) teachers and students' academic achievement, mean scores of male (50.268) and female (50.486) teachers of the required field respectively..”

Table 3
“Social implication of science”

Range	Frequency	Percentage
26—40	25	31.2 %
41	10	12.5 %
42—47	45	56.2 %
Mean = 41.41	Median = 42	Mode = 44

Table 3 with histogram shows the attitude factor as “social implication of science” of the educators with numerical values (mean = 41.41, median = 42, mode = 44, std.dev = 3.804 and N = 80 respectively).

The histogram and values of mean, frequency as well as percentage reflects that higher numbers of educators have score above the mean score. Consequently, most of science educators have positive attitude concerning social implication of science.”

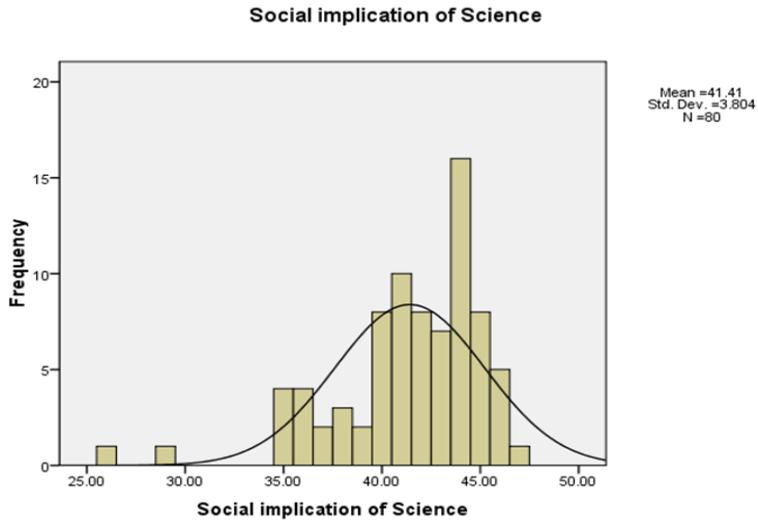
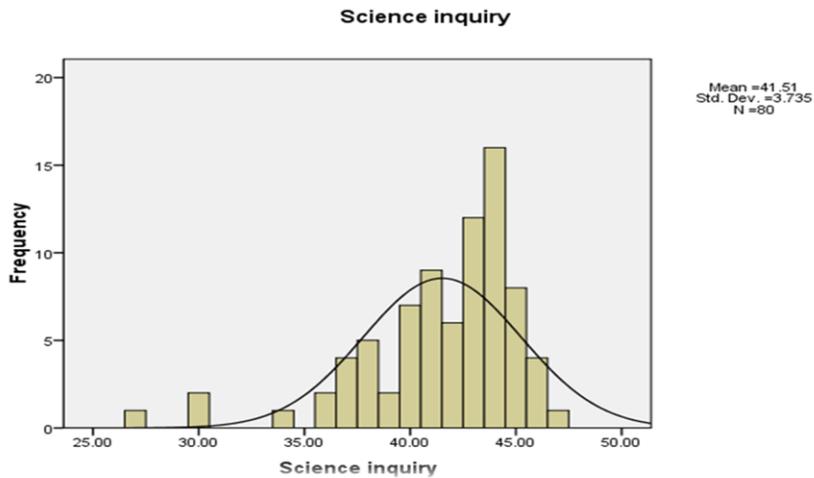


Table 4 and histogram shows the attitude towards scientific inquiry of the science educators. The numerical values (mean = 41.51, median = 43, mode = 44, std.dev = 3.735 and N = 80 indicates as larger number of educators have higher scores in comparison to mean score which reflects that most of educators have positive attitude towards science concerning attitude towards scientific inquiry.”

Table 4
 “Attitude towards scientific inquiry”

Range	Frequency	Percentage
27—40	24	30 %
41	09	11.2 %
42—47	47	58.8 %
Mean = 41.51	Median = 43	Mode = 44



Both table 5 as well as histogram shows “adoption of scientific attitude” of educators and values of attitude score with percentage/frequency. “Most of science educators have high scores in comparison to mean = 42.25, that indicates the greater number of educators have positive adoption of scientific attitude.”

Table 5

“Adoption of scientific attitude”

Range	Frequency	Percentage
30—41	31	38.8 %
42	07	8.8 %
43—50	42	52.5 %
Mean = 42.25	Median = 43	Mode = 45

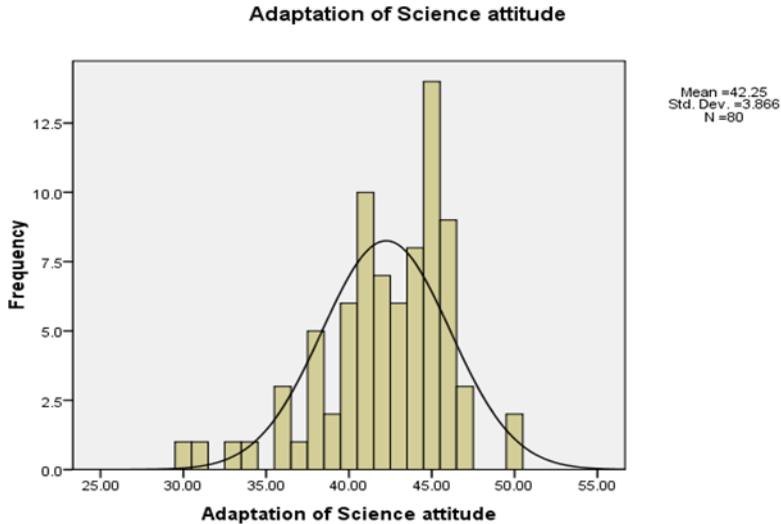


Table 6
“Enjoyment in science learning”

Range	Frequency	Percentage
27—41	20	25 %
42	15	18.8 %
43—50	45	56.2 %
Mean = 42.61	Median = 43	Mode = 42

Above table 6 with arithmetic values as mean (42.61), median (43) and mode (42) indicate that “the educators’ attitude factor as the enjoyment in science learning. Mean values, percentage and frequency shows that higher number of educators has scores more than mean score; thus, most of the educators have enjoyment in science learning”.

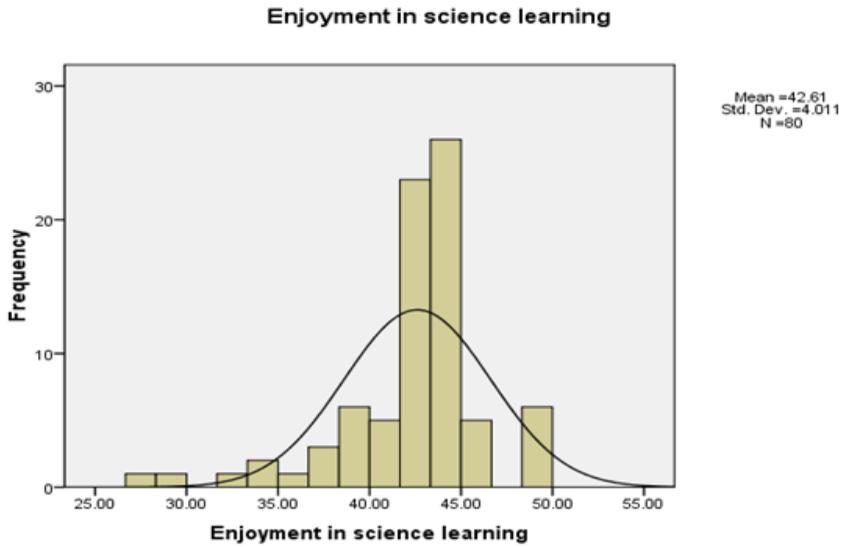


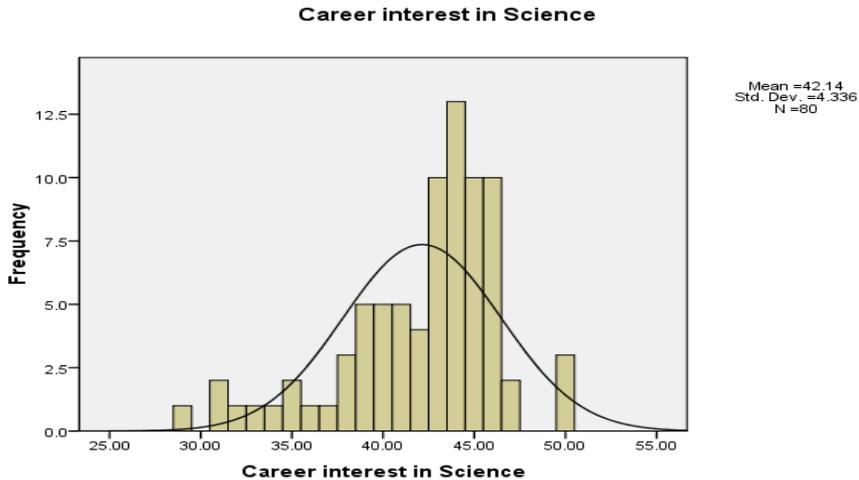
Table 7

“Career interest in science”

Range	Frequency	Percentage
29--41	28	35 %
42	04	5 %
43--50	48	60 %
Mean = 42.13	Median = 43	Mode = 44

Table 7 as well as the histogram indicates the educators’ attitude regarding ‘career interest in science’. Statistical scores reflect (mean = 42.14, median = 43, mode =44,

std.dev = 4.336 and N = 80) that most of educators have higher scores as compared to mean values which reflects the positive attitude of educators towards science career.



“ Table 8

“ANOVA showing significance of correlation of various factors with students’ academic achievement scores”

Model	Sum of squares	df	Mean square	F	P
Regression	1111.175	5	222.235	4.644	0.001
Residual	3541.300	74	47.855		
Total	4652.475	79			
Predictors (Constant)	Total Attitude Score, Gender, Professional Qualification, Experience, Academic Qualification				
Dependent Variable	Students Academic Scores				

Table 8 shows that “ $p = 0.001$ and F value = 4.644. Consequently, it is clear that there is a significant relationship of constant variables (predictors) with dependent variable (academic scores of students). More details of the said relationship are given in below table.”

The table 9 below, reflects that genders of educators has no significant ($b = 0.879$, $p = 0.575 > 0.05$) correlation with “independent variable” i.e. very low positive correlation indicates that gender is not a significant contributor to the academic achievements. Similarly, “variable academic qualification’ of science educators is not significantly ($b = -0.972$, $p > 0.05$) correlated with students’ academic achievements”. On the other hand, negative scores indicate that educators’ higher academic qualification reflects lower achievements of their pupils. The aspect as professional qualification’ is not a significant ($b = -2.392$, $p = 0.124 > 0.05$) contributor for academic achievements of students. Yet the value of “b” indicates its negative correlation with academic scores of students. Educators’ teaching experience ($b = 0.164$, $p = 0.894 > 0.05$) has no significant relation with academic scores of their students. The aspect as “educators’ total attitude” towards their respective subject is a significant ($b = 0.240$, $p = 0.001 < 0.05$) contributor in favor of achievements of students. The positive value of coefficient “b” indicates that higher attitude of educators towards science reflects good academic results of students.

Table 9

Regression analysis showing relationship of independent variables with dependent variable

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	p
	B	Std. Error			
Constant	2.636	15.457		0.171	0.865
Gender	0.879	1.560	0.058	0.563	0.575
Academic Qualification	- 0.972	0.833	0.127	- 1.167	0.247
Professional Qualification	- 2.392	1.539	-0.170	- 1.555	0.124
Experience	- 0.164	1.223	- 0.014	- 0.134	0.894
Total Attitude Score	0.240	0.069	0.369	3.486	0.001
Dependent Variable	Students Academic Achievements				

Discussion

This was a descriptive type research and was done to observe the relationship between science educators' attitude and academic achievements of their students. Results as well as the numerical values of the research have been discussed below:

HO 1: The data regarding the attitude of science educators towards their respective subject was reflected by tables 3, 4, 5, 6 and 7 as well as with relevant histograms i.e. attitude factors as 'social implication of science' (mean = 41.41, median = 42, mode = 44, std.dev = 3.804), 'attitude towards scientific inquiry' (mean = 41.51, median = 43, mode = 44, std.dev = 3.735), 'adoption of scientific attitude' (mean = 42.25, median = 43, mode = 45, std.dev = 3.866), 'enjoyment in science learning' (mean = 42.61, median = 43, mode = 42, std.dev = 4.011) and 'career interest in science' (mean = 42.14, median = 43, mode = 44, std.dev = 4.336) which shows that higher number of science teachers had positive attitude towards their respective subject i.e. science." So in the light of the above results the hypothesis "The attitude of science teachers is negative towards science" was rejected. Consequently "these results as well as findings were in line with the results and findings of the studies conducted by Demir, Pekel and Yildiz (2006), and Josephw, Majanga, Nasongo and Vundi (2009)."

HO 2: The statistical dimensions (table 2) showed the outcomes for the significance of difference between the attitudes of 'genders' of teachers. "Social implication of science' mean score of male, (41.80) and female (41.025) teachers with $p > 0.05$ indicated that difference between 'social implication of science' mean score of gender of teachers was not significant. The difference in 'attitude to scientific inquiry' mean scores of male (42.050) and female (40.975) teachers with $p = 0.200 > 0.05$ was not significant. As well the 'adoption of scientific attitude' means scores

of male (41.825) and female (42.675) educators with $p = 0.329 > 0.05$ showed no significant difference for the teachers of specific grade. In the same way no significant difference ($p > 0.05$) was found between ‘enjoyment in science learning’ mean scores of male (41.750) and female (43.475) educators. Results (table 2) reflected ‘career interest in science’ mean scores of ‘gender’ of educators with $p > 0.05$, which indicated that the difference between ‘career interest in science’ mean scores of male (42.950) and female (41.325) teachers was not significant. Thus in the light of these findings the hypothesis “There is no significant comparison between the attitude of male and female teachers towards science” was accepted. As a result, these outcomes as well as findings were in line with results and findings of studies carried out by Bahar, Cavas, Pinar and Tarik (2009), and Emine selcen (2011).”

HO 3: The numerical information reflected that no significant association was found between educators’ qualifications and achievements of their pupils. Results (table 9) reflected that “the variable academic qualification of educators was not significantly correlated ($b = -0.972$, $p = 0.247$ i.e. $p > 0.05$) with their ‘students’ academic achievements”. Equally the statistical results in favor of “professional qualification’ of the educators ($b = -2.392$, $p = 0.124 > 0.05$) reflected, as there is no significant relationship between the ‘professional qualification’ of teachers and ‘academic achievements’ of their students”. Moreover, the mathematical value ($b = -0.164$, $p = 0.894 > 0.05$) in favor of “teaching experience” of educators indicated no significant relationship between educators’ “teaching experience” and academic achievements of their students. In these results there is negative correlation between dependent variable and independent variable, but the correlation is not significant. Conversely, coefficient ‘b’

has negative value which reflects that high academic qualification of science educators gives low academic achievement of students. So, the above results showed that the hypothesis "There is no significant relationship between the science teachers' qualifications and academic achievements of their students" was accepted. So "these outcomes as well as findings were same as the results and findings of studies accomplished by Abell, Chual, Musikul, Pareja and Ritzka (2008), and Callahan, Mackin and Wenning (2009)."

HO 4: Further results (table 9) indicated "the variable 'attitude' of educators towards their respective subject; which was significantly correlated ($b = 0.240$, $p = 0.001 < 0.05$) with their 'students' scores. It showed a significant relationship between educators' attitude and students' achievements. As 'attitude' of the science educators is positively correlated with students' achievements; which means greater academic results depends on the higher attitude of the educators for their respective subjects. Hence the above results indicated that the hypothesis "There is no significant relationship between attitude of science teachers towards science and their students' academic achievements" was rejected. Therefore "these findings were also in line with the results as well as findings of study conducted by Josephw, Majanga, Nasongo and Vundi (2009)."

- **Findings**

The main findings of the study have been reflected below.

Regarding the academic qualification 51.2 % educators were B. A/B.Sc. and 48.8 were M. A/M.Sc., while considering the professional qualification 27.5 % educators were untrained, 66.2 % with B.Ed. degree and 6.2 % M.Ed. Finding the teaching experience 65 % of the science educators had 1-5 years' experience, 30 % educators had 6-10 years'

experience while only 2.5 % educators had teaching experience either 11-15 years or 15-20 years. Majority of the science educators (53.8 %) had positive attitude towards science while 43.8 % educators had below average attitude towards science. No significant difference ($p > 0.05$) was found between academic qualification mean scores of male (1.90) and female (2.05) science educators of the target area.

Similarly no significant difference ($t = 1.293, p > 0.05$) was found between the mean scores of male (42.050) and female (40.975) science educators with respect to attitude towards scientific inquiry, and also no significant difference ($p > 0.05$) was found between the mean scores of male (50.268) and female (50.486) science educators with respect to students' academic achievement. The histogram (Total attitude score) indicated that majority of the science educators (53.8 %) had positive attitude towards science while 43.8 % had below average attitude towards science. The variable gender had very low positive correlation ($b = 0.879, p > 0.05$) with students' academic achievements. The variable of total attitude of the science educators ($b = 0.240, p < 0.05$) was significantly correlated with students' academic achievements and the correlation between dependent and independent variable was positive with large value.

- **Conclusions and Recommendations**

Study outcomes indicated that majority of science educators of preferred group have their academic/professional qualifications as B.Sc./B.Ed. respectively which means a large number of science educators were well qualified. A bulk of the science educators was bright with least experience of their profession. Further it was concluded that the gender of science teachers of specific area has equivalent grade of qualification. Science educators have positive attitude towards their respective subjects and also concluded that the educational achievements of the students are improved by raising the attitude of science educators towards their respective subjects. A negative correlation was found between science teachers' academic as well as professional qualifications, respective experience and academic achievements of their students.”

It is suggested that further research may be carried out to investigate the causes of a negative correlation between science teachers' education/qualification, teaching experience and academic achievements of their pupils. Students' performance may be improved by putting into practice fresh science lessons and guidance with rationalizing the positive attitude of science teachers for their subjects; for the reason that the educational accomplishment of science students signifies a nation's success in area of science. Further it is recommended that a thorough qualitative study may be done to expose definite variables disturbing the attitude of science teachers towards science. There should be equal opportunities for gender of science teachers to learn and improve their science comprehensions and knowledge; especially female science educators should be encouraged to participate in science related activities.

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