

**RELATIONSHIP BETWEEN STUDENTS' ATTITUDE  
TOWARD AND ACHIEVEMENT IN SCIENCE**

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**September, 2011**

## DECLARATION

It is certified that this PhD dissertation titled "Relationship between Students' Attitude toward an Achievement in Science" is an original research. Its content was not already submitted as a whole or in parts for the requirement of any other degree and is not currently being submitted for any other degree or qualification. To the best of my knowledge, the thesis does not contain any material published or written previously by another author, except where due references were made to the source in the text of the thesis.

It is further certified that help received in developing the thesis, and all resources used for the purpose, have been duly acknowledged at the appropriate places.

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## CERTIFICATE

It is to certify that the research work described in the PhD dissertation is an original work of the author. It has been carried out under my direct supervision. I have personally gone through all its data, contents and results reported in the manuscript and certify its correctness and authenticity.

I further certify that the material included in the thesis has not been used partially or fully, in any manuscript already submitted or is in the process of submission in partial or complete fulfillment of the award of any other degree from any other institution. I also certify that the thesis has been developed under my supervision according to the prescribed format. I therefore, endorse its worth for the award of PhD degree in accordance with the prescribed procedure of the university.

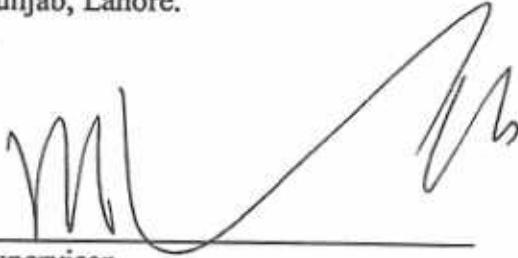


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## APPROVAL SHEET

The thesis titled, "Relationship between Students' Attitude toward and Achievement in Science" is accepted in the fulfillment for the Degree of Doctor of Philosophy in Education at the Institute of Education and Research, University of the Punjab, Lahore.

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke, positioned above a solid horizontal line.

Supervisor  
Prof. Dr. Hafiz Muhammad Iqbal  
Professor & Dean  
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University of the Punjab, Lahore

# DEDICATED

To

My  
*Parents*  
and  
*Teachers*

## ABSTRACT

Attitudes have been considered as an important component of science education and researchers in the field have been focusing on attitude towards science since last 30-40 years. It was evident from reported literature that development of favourable attitudes toward science has been viewed as an important aim of science education. Science related attitudes not only affect the students' choice of and participation in science subjects but also affect their motivation and achievement in science

This study explored the students' attitude toward science, relationship between different factors of TOSRA and achievement of students' in science subjects and effect of attitude toward science on students' achievement in science. The population of the study was distributed in 36 districts and these districts were divided into four groups on the bases of literacy. Two districts were selected conveniently from each group. Sample of the study comprised of 3526 science students of 10<sup>th</sup> grade selected from eight districts of Punjab

Attitude towards science was measured by the instrument test of science related attitudes (TOSRA). This adapted instrument in URDU (National Language) consisted of 52 Likert type statements having six sub-scales. The achievement scores of students were collected from the result Gazette for the secondary schools annual examination 2010 of concerned boards of intermediate and secondary education Punjab. The whole data was personally collected by the researcher. The respondent's attitude toward science was measured and relationship between attitude and achievement was also explored. It was concluded that students attitude toward science was positive. The male and female respondents reflected similar attitude towards science. Similarly, in the urban locality, again male and female showed similar attitude towards science. But in case of rural locality, females reflected significantly higher attitude towards science than

their male counterparts. In comparison between rural and urban area respondents and male and female students from the two localities separately, there was no significant variation in their attitude towards science.

Students' attitude toward science and their achievement in science were found positively and significantly correlated and similar pattern can be seen for male students and locale separately. The findings of the study depicts that significant and positive correlation exists between all sub scales of TOSRA and students achievement in science except Social Implications of Science and Career Interest in Science scales. Results also showed that students with higher level of attitude reflected higher achievement in science and students with lower level of attitude toward science scored lower marks in science.

It was recommended that further investigations should identify other factors like self efficacy, motivation and anxiety which can influence the attitude toward science. It was also suggested that for understanding, interpretation and implications of this study, more evidence is needed by conducting studies which incorporate qualitative data collection methods such as observations and interviews from students and teachers.



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## LIST OF ABBREVIATION

AAAS	American Association for the advancement of Science
ASST	Attitude Scale for Science and Technology
HDI	Human Develop Index
OECD	Organization for Economic Co-operation and Development
QOCRA	Questionnaire on Chemistry-Related Attitude
ROSE	Relevance of Science Education
TIMSS	Third International Math and Science Study
TOCRA	Test of Computer-Related Attitude
TOMRA	Test of Mathematics-Related Attitude
TOSRA	Test of Science-Related Attitude

## Chapter 1

### Introduction

We are living in an age of science. Science has revolutionized the society and has affected every aspect of life. In 21<sup>st</sup> century, scientific independence has been considered as important as political and economic independence, especially for the developing countries if they want to enjoy true national independence in the contemporary society. The major challenges of shortage of food, water, energy and epidemics which the third world countries are facing, can only be solved by the progress and development in science and science education. It is a recognized fact that advancements in science and technology are precursors for the progress and prosperity of any country. It has become much important for the countries like Pakistan to advance in each and every field of science and technology to maintain its national survival in terms of economy and defense. Tobin, and Fraser (1988), are of the view that the developing countries are facing difficulties in recruiting the suitable persons with necessary knowledge of science to fulfil the requirements of business and industry. The American Association for the advancement of Science (AAAS) (1990) acknowledged that “without a science literate population, the outlook for a better world is not possible”.

Science, as an important area of education, remained and served as basic requirement of every society. The study and exploration of science has and will continue to be an important component for our global future. It is advocated by science educators that attention must also be directed towards preparing people to fiddle with the changes taking place in the world (Rana, 2002). Science provides not only the important explanations of the material world, but at secondary level it provides the foundational knowledge for the future scientists and engineers. Simpson,