

# A Comparative Study of Scientific Attitude of High and Low Achievers of Secondary Schools

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## Abstract

*The objective of the present investigation is to compare the scientific attitude and its dimensions among high & low Achievers boys and girls secondary school students. The sample of the study consisted of 100 senior secondary school students of whom 50 boys and 50 girl's students were selected by randomly sampling technique from sonipat district. It was found that the scientific attitude of low achiever of some dimensions show the favorable attitude and some of the value of dimensions show the not favorable side of the scale, and further resulted that the scientific attitude of girl's of some dimensions show the favorable attitude and some of the value of dimensions show the not favorable side of the scale.*

## Keywords:

*Scientific Attitude, Secondary Schools, Low Achievers, education, Training*

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The emphasis on the method of science does not imply that science and technology have solution to all human problems at any given time. Indeed, Scientific Attitude warns one against the simplistic view that through the introduction and pursuit of science and technology, most social

problems and contradictions will automatically get resolved. The role of reason is to apply scientific knowledge to problems, to grapple with them through the method of scientific inquiry and to work for social transformation inspired by Scientific Attitude. Teaching of science at school stage help in development of scientific literacy. It also helps in the formation of scientific which is essential to dispel social evils and helps in development of open mindedness, decision-taking ability. Training in scientific method thus improves the quality of thinking and consequently it affects academic achievement of students.

National Policy of Education (NPE) 1986 had recommended that science education will be stronger to develop in the child well defined abilities and value such as spirit of enquiry, creativity, objectivity and courage to question. In other words efforts will be made to develop scientific temper or attitude among the children.

Over the past decade there has been a renewed emphasis on the importance of developing scientific attitude in public and most modern science curricula have expressed this emphasis by listing such things as objectivity. Skepticism and open mindedness as personal characteristic, which pupils should develop in the classroom.

The importance of the scientific attitude in education is based on the behavior of scholars in general. Moreover it is substantially motivated by this attitude and a large amount of research in the science education. The literature has been reviewed to derive a concept of the scientific attitude from the writing of scientists, philosophers and educators.

At the heart of this nation of the scientific attitude to be a particular view of evidence and how it should be treated in making decision. Evidence should be collected and evaluated impartially so that, idiosyncratic prejudices do not distort it. Relevant information is actively sought and no source of such information is rejected before it is fully evaluated. All relevant information so collected is carefully weighed before a decision is made. No idea, conclusion, decision or solution is accepted or rejected just because a particular person makes a claim but it is treated skeptically and critically until its soundness can be judged according to the weight of evidence, which is relevant to it. However there is consistent evidence that scientists do not reflect the characteristics outlined above and consequently are not motivated by the scientific attitude promoted in the education, literature. (GAULD 1982)

In fact there is universal need for scientific literacy. First is the need for technically trained labor force. Second is the requirement that citizens at large pass judgment or promises and action of their governments and on the claims of advertisers of consumer goods. So development of scientific attitude should

start from the very beginning of the formal education. Kahle examined data from the National Assessment of Educational Progress (NAEP) and found that girls described their science classes as “facts to memorize,” and “boring” (Kahle & Lakes, 1983). By middle school, girls’ attitudes toward science tend to decline and this decline may persist through high school (Sullins, Hernandez, Fuller, & Tashiro, 1995). Kotte (1992) reported that, for students from ten countries, the differences between males and females’ attitudes toward science widens as students move from elementary to secondary school. Furthermore, Kotte reported that the sharpest increase in gender differences in attitudes takes place between the ages of 10 and 14 years. In an examination of data from 19,000 eighth grade students who participated in the National Educational Longitudinal Study, Catsambis (1995) found that males were more likely to look forward to science class and to think science would be useful to their future, and were less afraid to ask questions in science classes than their female peers. Girls’ less positive attitudes, according to Catsambis, existed even though they performed as well or better than boys, receiving better grades in science classes. In addition, Catsambis found that over twice as many middle school boys as girls are interested in a future career in science.

### **Objectives:**

1. To study the scientific attitude of high and low achievers
2. To compare the scientific attitude and its dimensions among high & low achievers secondary school students
3. To study the scientific attitude of Boys and Girls.
4. To compare the scientific attitude and its dimensions among boys & Girls of secondary school students

### Hypotheses

1. There is no significant difference in scientific attitude between high and low achievers of secondary school students.

### Methodology

- **Method:** In order to achieve the objectives of the study, the school survey method was used by researchers.
- **Sample:** The sample of the study was consisted of 100 senior secondary school students of whom 50 boys and 50 girls students were selected by randomly sampling technique from sonipat district.
- **Tools:** The selection of tools for a particular study depends upon various considerations as objectives of the study, Availability of the suitable tools and Personal competence of the investigation to administrator score and interpret the result.
- **Statistical Techniques:** Mean, S. D., and t- value

**TABLE-1**  
**Analysis of scientific attitude of high & low academic achievers of secondary school students**

**N=100**

S.NO.	DIMENSIONS SCIENTIFIC ATTITUDE	HIGH ACADEMIC ACHIEVER		LOW ACADEMIC ACHIEVER		t- VALUE	LEVEL OF SIGNIFICANCE
		SCALE VALUE	S.D.	SCALE VALUE	S.D.		
1	Curiosity	2.56	.34	2.27	.74	2.41	.05
2	Open-Mindedness	2.5	.28	2.34	.40	2.25	.05
3	Faith in scientific Attitude	2.69	.34	2.39	.49	3.33	.01
4	Cause and Effect Relationship	1.94	.30	1.88	.40	.75	Not significant
5	Critical Mindedness	1.92	.52	1.90	.66	.17	Not significant
6	Seeks Evidence	2.17	.30	2.04	.47	1.55	Not significant
7	Objectivity	2.6	.27	2.49	.56	1.22	Not significant
8	Suspended Judgment	1.84	.45	1.65	.63	1.54	Not significant
9	Aversion to Superstition	1.76	.48	1.68	.42	0.89	Not significant

FIGURE: 1

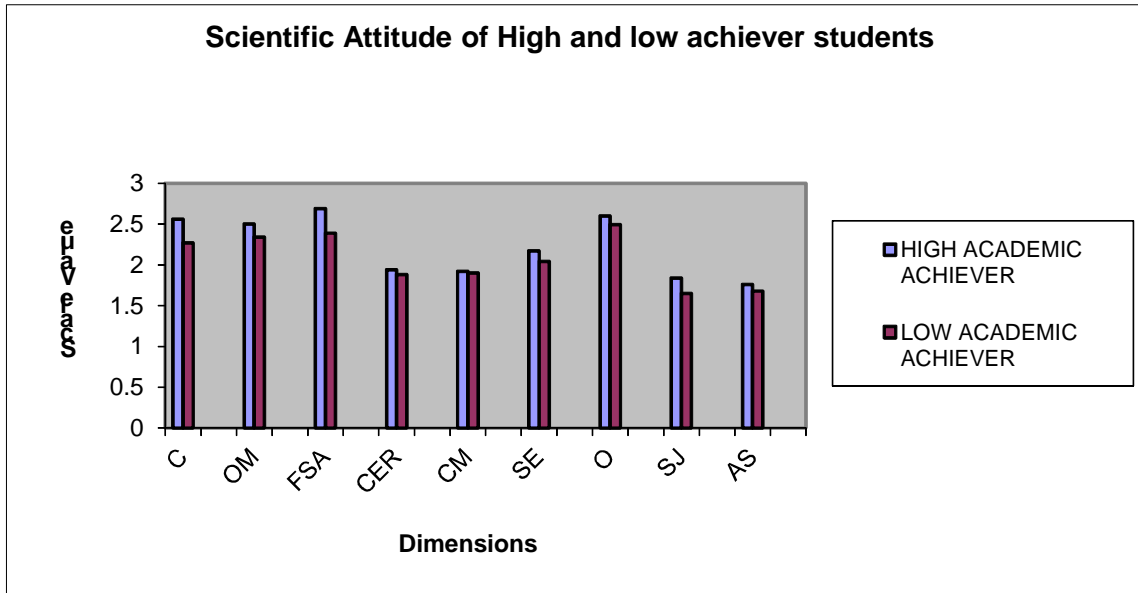


Table 1.1 reveal that Curiosity, open mindedness, faith in scientific attitude dimension of scientific attitude is significant at 05 & .01 level as calculated value is greater than table value. It reveals that high and low achievers differ significantly on these dimensions. Where as

other dimensions such as cause and effect relationship, critical mindedness seeks evidence, objectivity; suspended judgment and Aversion to superstition are not significant at any level meaning thereby that high and low achievers do not differ significantly on these dimensions.

**Table: 2**  
**Analysis of Scientific Attitude of Boys & Girls Secondary School Students**

Sr. No.	Dimensions scientific Attitude	Boys		Girls		't'-value	Level Of Significance
		Scale Value	S.D.	Scale Value	S.D.		
1	Curiosity	2.59	.51	2.32	.58	2.45	.05
2	Open-Mindedness	2.54	.31	2.35	.36	3.17	.01
3	Faith in scientific Attitude	2.72	.35	2.44	.46	3.5	.01
4	Cause and Effect Relationship	1.96	.32	1.87	.37	1.5	Not significant
5	Critical Mindedness	1.98	.49	1.86	.64	1.1	Not significant
6	Seeks Evidence	2.16	.36	2.08	.40	1	Not significant
7	Objectivity	2.64	.43	2.49	.41	1.9	Not significant
8	Suspended Judgment	1.78	.56	1.74	.52	.4	Not significant
9	Aversion to Superstition	1.81	.41	1.66	.48	1.67	Not significant

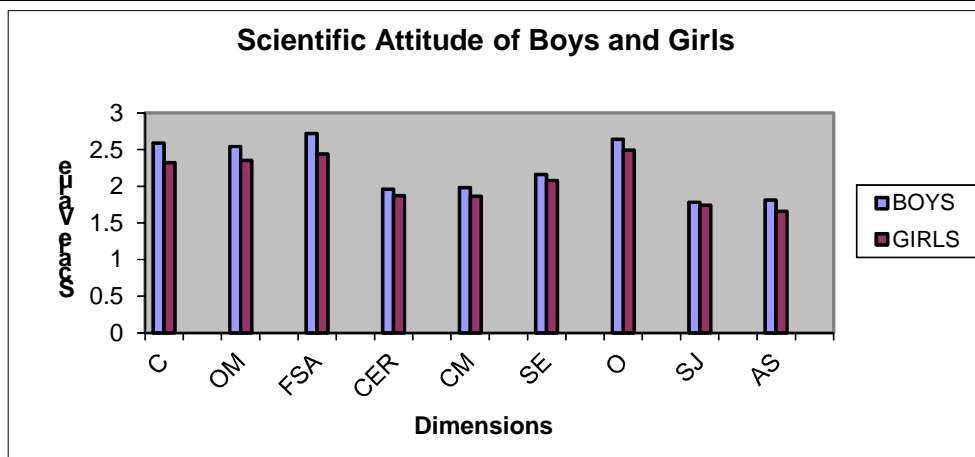


Table 1.2 reveal that Curiosity, open mindedness, faith in scientific attitude dimension of scientific attitude is significant at 05 & .01 level as calculated value is greater than table value. It reveals that boys and girls differ significantly on these dimensions. Where as other dimensions such as cause and effect relationship, critical mindedness seeks evidence, objectivity; suspended judgment and Aversion to superstition are not significant at any level meaning thereby that high and low achievers do not differ significantly on these dimensions.

### Conclusions:

On the basis of finding, interpretation and discussion following conclusion may be

drawn: -

- 1.The scientific attitude of high and low achievers for Curiosity, open mindedness & faith in scientific attitude dimension of scientific attitude shows that high and low achievers differ significantly on these dimension where as there is no such difference on other dimensions of the scale.
- 2.The Scientific attitude of boys and girls for the curiosity, open mindedness & faith in scientific attitude shows that boys and girls differ significantly on these dimension where as there is no such difference on other dimensions of the scale.

### EDUCATIONAL IMPLICATION:-

- 1.The study will help the teacher to teach the students according to their scientific attitude.
- 2.The study will help the teacher to select various teaching aids and different methodologies for judge the curiosity and improving open-mindedness of the children.
- 3.The study will help the curriculum framers to make provisions for developing scientific attitude and logical thinking.
- 4.The study will help the education policy makers to suggest such methodology to develop logical thinking.
- 5.The study will help the evaluators to put such objective questions in the examination so those scientific attitudes judge.

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