

SCIENTIFIC ATTITUDE AMONG MORE AND LESS INTELLIGENT STUDENTS

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Introduction:

Intelligence is related to many important school outcomes. Neivert (1955) reported that intelligence is paramount in the life of superior science students. Researchers have tried to establish the relationship between intelligence and scientific attitude. Scientific attitude is positively related to intelligence (Shukla, 2010; Kumari, 2000; Fraser, 1977). Students with superior intelligence tend to have high scientific attitude (Shukla, 2010; Srivastava, 2000; Moore, 1930) but Pandey (2006) found that more and less intelligent students do not differ from one another in their scientific attitude. Shukla (2010) studied the relationship between intelligence and various dimensions of scientific attitude as manifested in students' intent and action. It was found that scientific attitude- intent was positively related to intelligence, scientific attitude- action was not related to intelligence, respect for evidence dimension of scientific attitude (intent and action both) was positively related to intelligence, intent for critical- mindedness, suspended judgement, open- mindedness and questioning attitude was positively related to intelligence; intent for objectivity and willingness to change opinion was not related to intelligence; action for objectivity, critical- mindedness, willingness to change opinion, suspended judgement, open- mindedness and questioning attitude was not related to intelligence, students with high intelligence did not differ from students with low intelligence on their scientific attitude- intent and action. Students with high intelligence exhibited more respect for evidence in intent; students with high intelligence did not differ from students with low intelligence on objectivity, willingness to change opinion, critical-mindedness, suspended judgement and questioning attitude in their intent and action both. Students with high intelligence exhibited more open- mindedness in their intent and action both.

Objectives

The objectives of the study are as follows-

1. To study the relationship between scientific attitude and intelligence.
2. To find out whether more and less intelligent students differ from one another on scientific attitude.

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Hypotheses

To achieve the above mentioned objectives, the following hypotheses were formulated and tested-

1. There is no significant relationship between scientific attitude and intelligence.
2. More and less intelligent students do not differ from one another in scientific attitude.

Methodology

The sample for the study comprised of 600 students of class 9th. It included 300 male students and 300 female students of ten schools situated in Allahabad city. 'Scientific Attitude Questionnaire' and 'Verbal General Mental Ability Test' prepared by K. S. Misra were used as a tool for the study. Groups of more intelligent and less intelligent were formed on the basis of median split of total number of students score on mental ability test. Product- moment coefficient of correlation and t- ratios were calculated for the analysis of data.

Results

Table 1: Value of correlation between scientific attitude and intelligence

S. No.	Scientific attitudes	Intelligence
1.	Overall scientific attitude	.069
2.	Respect for evidence	.036
3.	Objectivity	-.046
4.	Critical- mindedness	.085
5.	Suspended judgement	.092
6.	Questioning attitude	.092
7.	Willingness to change opinion	.080
8.	Open- mindedness	.059

Observation of the table 1 shows that the value of coefficient of correlation between scientific attitude and intelligence is not significant at .05 level. It means that scientific attitude is not related to intelligence. This finding corroborates the findings of Shukla (2010) and Pandey (2006). Pandey also found that scientific attitude is not related to intelligence. Shukla reported that students with high intelligence did not differ from students with low intelligence on their scientific attitude. However, contrary are the findings of Srivastava (2000), Kumari (2000), Moore (1930) who reported that subjects with superior intelligence tend to have high scientific attitude. Still nothing definite can be said about the role of intelligence in the development of scientific attitude.

Observation of the table 1 further reveals that the value of coefficient of correlation between critical- mindedness, suspended judgement and questioning attitude are positively related to intelligence. It means that scientific attitudes such as critical- mindedness; tendency to suspend judgement reaching conclusions when adequate information is lacking, willingness to change opinion when it is observed by the student that new evidence do not support their viewpoint are positively influenced by intelligence.

Table 2: Mean, S. D. and t- ratio showing the difference in scientific attitude of more and less intelligent students

Scientific attitudes	More intelligent			Less intelligent			t- ratio
	N	Mean	S. D.	N	Mean	S. D.	
Overall Scientific attitude	290	76.37	16.59	310	74.91	18.92	1.00
Respect for evidence	290	11.40	3.05	310	11.10	3.33	1.15
Objectivity	290	8.54	3.07	310	8.99	3.02	1.80
Critical- mindedness	290	11.05	2.99	310	10.55	3.15	1.98*
Suspended judgement	290	11.55	2.57	310	11.21	3.02	1.47
Questioning attitude	290	12.69	2.78	310	12.21	3.23	1.91
Willingness to change opinion	290	9.01	3.22	310	8.88	3.52	.45
Open- mindedness	290	12.11	3.09	310	11.93	3.06	.69

*Significant at .05 level

Observation of the table 2 shows that value of t-ratio for critical-mindedness (= 1.98) is significant at .05 level. It means that more intelligent students exhibit more critical- mindedness than their less intelligent counterparts. The findings are contrary to the findings of Shukla (2010) who found that students with high intelligence did not differ from students with low intelligence on critical- mindedness. Table 2 further shows that value of t- ratios for scientific attitude and its six dimensions namely open mindedness, willingness to change opinion, respect for evidence, suspended judgement, objectivity and questioning attitude are not significant at .05 level. It means that more and less intelligent students have similar scientific attitude with open- mindedness, willingness to change opinion, respect for evidence, suspended judgement, objectivity and questioning attitude dimensions. The findings of the study implies that effort should be made on the part of science teachers to encourage the development of scientific attitude among less intelligent students by providing more favourable learning environment to them and not to blame their low scientific attitudes as the development of scientific attitude is desirable goal of science education for all students to have.

References:

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