SJIF 2014 = 3.189
ISSN: 2348-3083
An International Peer Reviewed & Referred
SCHOLARLY RESEARCH JOURNAL FOR HUMANITY SCIENCE & ENGLISH LANGUAGE

SCIENTIFIC TEMPER AND ACADEMIC ACHIEVEMENT OF RURAL AND URBAN SECONDARY SCHOOL STUDENTS

Nighat Basu[1] Ph.D, Sabahat Aslam[2]

[1]Head, Department of Education, BGSBU, Rajouri

[2]Research Scholar, Faculty of Education University of Kashmir

Abstract

The present research was taken up with broad objective to study the scientific temper and academic achievement of rural and urban secondary school students in Kashmir valley. The sample comprised of 400 secondary school students (200 Rural and 200 Urban students). The sample for the study was selected randomly from the different schools of Srinagar (as urban district) and Bandipora (as rural district). The sample was selected in such a way to ensure that every unit of the population could get equal chance to be selected in the sample. Scientific Temper Scale developed by Prof. Nadeem's and Showkat's Scientific was administered for the present sample and Academic Achievement was obtained from the previous two years performance records of the sample subjects. Result findings suggest insignificant difference between rural and urban secondary school student`s on Scientific Temper. The results also suggest significant mean difference between rural and urban students on their Academic Achievement and urban student`s have higher Academic Achievement as compared to rural secondary school students.

Keywords: *Scientific temper, academic achievement, rural, urban, secondary school students*

Introduction

The most outstanding feature of today's society is its science based technology. We live in an exciting century, which is complex in its entirety: physically, philosophically, psychologically, scientifically and technologically. The global outlook is changing fast when one sees the present in the light of the past cumulative achievements of human race: the traditional epoch comprising several generations is breaking up fast. Metamorphically speaking, within our own generation, it has experienced in a traumatic manner three explosions popularly called explosions of knowledge; population explosion and explosion of aspirations. If we throw a bridge between Science and Education, using psychology, we arrive at the concept of science education, which bluntly speaking is an integrated concept. If so, it is then within the realm of possibility to link the most powerful concepts of science and the growing minds of children through active experimental pedagogy.

Science has several rewards, but the greatest, is the most interesting, difficult pitiless, exciting and beautiful pursuit that mankind has devised so far. In fact, if one were to consider the best art produced in the last century it can be termed as "Science". Science education has an important role to play in the all-round cultural and societal development of human kind and for evolving a civilized society. The essence of scientific spirit is to think globally and act locally, since scientific knowledge is universal in nature while the fruit of science have some site specificity. Science untangles the threads that create the tapestry of our living world. It tries to work out how the threads merge in the overall ecological networks creating and maintaining the human kind and also contributes to the thought process of human beings. Probably, it can also be the spirit that can possibly reverse the steady downward trend of our world`s health and wealth.

Scientific Temper describes an attitude which involves the application of logic and the avoidance of bias and preconceived notion. As already mentioned, science and technology have become an inseparable part of our daily life, hence creation of scientific awareness and inculcation of Scientific Temper has now a day`s become the need of the hour. The concept of Scientific Temper was articulated first by Pt. Nehru in 1946 in his book "Discovery of India", referring, to it as "a way of life, a process of thinking, a method of acting and associating with our fellowmen".

Scientific Temper is essentially a world-view, an outlook, enabling ordinary citizens to choose efficient and reliable knowledge while making decisions in their individual and social domains.

It is not the content or extent of knowledge base of one or other domain of scientific corpus that a citizen acquires, but rather the pursuit of rational enquiry, which is the hallmark of Scientific Temper. Social phenomena do not easily lend to experimentation or verification. Thus, if Scientific Temper were to be diffused to 'solve mundane problems' of ordinary citizens, the methods of science would have to be enlarged and re-defined in inter-disciplinary perspectives. The understanding of the social phenomena and human behavior, knowledge about the social process and its determinants, are essential for designing policies to promote social change and to produce a dynamic society capable of absorbing and utilizing the scientific and technological developments for the welfare of human beings. Modern education is the strongest determinant of scientific information, knowledge and attitude. It is true that over the years scientific information base in the country has enlarged, but it will be far from reality to assume that this information is getting transformed into knowledge and thereby bringing a change in attitude. Unfortunately, our education system is still not sufficiently evolved to inculcate Scientific Temper in young minds. Looking deeply into the nature of science, two aspects of education and its aims of teaching at school, it becomes quite clear that, as far as possible, teaching of science to the students should be included in proposing problems, refining and defining them more productively, setting up hypotheses and their testing with the help of controlled experiments, thinking out new solutions, discarding personal opinion in the light of new evidence and suspending judgement in case of conflicting evidence, discarding even the principle of authority, if found necessary, and in short, distinguishing among scientific information, popular information and beliefs etc. These initiations and expectations should be brought down to the children`s level of experience, comprehension and followed up later on to promote the quality of reasoning as the children go up the school ladder. These visualized and expected behavioural changes among the children are referred to as the outcomes of science teaching or education.

Thus, principle goal of science education is to create a man who is capable of thinking for himself and the world in which he is living. Further, science as a subject has three very important virtues peculiar to it. The study of science imparts training in scientific method and develops Scientific Temper, scientific aptitude & creative thinking. These qualities viz. Scientific Temper, scientific aptitude & scientific creativity are the major aspects of an individual to live as an efficient citizen in the present day of scientific society.

According to National Policy of Education, 1986:

"*Science education will be strengthened, so as to develop in the child, well developed abilities and values such as the spirit of inquiry, creativity, the courage to questioning and our aesthetic sensibility. Science education programmes will be designed to enable the learner to acquire problem solving and decision-making skills and to discover the relationship of science with health, agriculture, industry and other aspect of daily life."*

Academic Achievement or academic performance is the outcome of education- the extent to which a student, teacher or institution has achieved their educational goals. Academic Achievement is commonly measured by examinations or continuous assessment but there is no general agreement on how it is best tested or which aspects are most important – procedural knowledge such as skills or declarative knowledge such as facts. Beyond any doubts, Academic Achievement is important for the successful development of young people.

Objectives Of Study

The following objectives were formulated for the present Investigation:

1. To study the Scientific Temper of Rural and Urban Secondary School Students.
2. To study the Academic Achievement of Rural and Urban Secondary School Students.
3. To compare Rural and Urban Secondary School Students on Scientific Temper.
4. To compare Rural and Urban Secondary School Students on Academic Achievement.

Hypotheses

The following hypotheses were formulated for the present study:

1. Rural and Urban Secondary School Students differ significantly on Scientific Temper.
2. Rural and Urban secondary school students differ significantly on Academic Achievement.

Operational Definition Of Variables

1. **Scientific Temper:** For the purpose of present study, Scientific Temper has been operationally defined as the score which the investigator was got by administering Prof. Nadeem's and Showkat's Scientific Temper Scale.
2. **Academic Achievement:** For the purpose of present study, Academic Achievement has been operationally defined as the score which was obtained from the previous two years performance records of the sample subjects.

Sample

The sample for the study consisted of 400 secondary school students (200 Rural and 200 Urban students). The sample for the study was selected randomly from the different schools of Srinagar

(as Urban district) and Bandipora (as rural district). The sample was selected in such a way to ensure that every unit of the population could get equal chance to be selected in the sample.

Selection And Description Of Tools

The tools for the present study were selected in a manner to achieve an optimum level of confidence by the investigator for the objectives of the study. Since the study principally contained two variables namely scientific temper and academic achievement, therefore, such tools were decided to be chosen as could validly and reliably measure these variables. The investigator after screening a number of available tests finally selected the following tools to collect the data:

1. Scientific Temper Scale developed by Prof. N.A Nadeem and Showkat Rashid Wani.
2. Academic Achievement of rural and urban secondary school students were collected from the official records of the respective schools.

Analysis And Interpretation

Section-A (Descriptive Analysis)

The following tables reveal the descriptive analysis of the sample of secondary school students on Scientific Temper and Academic Achievement.

Table 1: Showing the percentage-wise classification of Secondary School Students (Rural and Urban) on Scientific Temper (N=400)

Classification	N	%age
High scientific temper	41	10.25
Above average Scientific temper	307	76.75
Average Scientific temper	52	13.0
Below average Scientific temper	0	0
Poor Scientific temper	0	0
Total	**400**	**100**

The above table shows the classification of rural and urban secondary school students on scientific temper. The table revealed that 10.25% were high scientific temper, 76.75% were above average scientific temper, 13.0% were average scientific temper and 0% were below average and poor scientific temper in rural and urban secondary school students.

Table 2: Showing the percentage-wise distribution of Secondary School Students (Rural and Urban) on Performance Standards of Academic Achievement (N=400)

Category	N	%age
Distinction	62	15.50
1st Division	248	62.0
2nd Division	88	22.0
3rd Division	2	0.5
Total	400	100

The above table shows the percentage-wise distribution of secondary school students (rural and urban) on performance standards of academic achievement. The table depicts that 15.50% were distinction holders, 62.0% were 1st division holders, 22.0% were 2nd division holders and only 0.5% were 3rd division holders.

Section B (Comparative Analysis)

The following tables reveal the comparative analysis of the sample of secondary school students on Scientific Temper and Academic Achievement.

Table 3: Showing the percentage-wise classification of Rural Secondary School Students and Urban Secondary School Students on Scientific Temper (N=200 each)

Classification	Rural		Urban	
	N	%age	N	%age
High scientific temper	19	9.50	22	11.0
Above average Scientific temper	153	76.5	154	77.0
Average Scientific temper	28	14.0	24	12.0
Below average Scientific temper	0	0.00	0	0.00
Poor Scientific temper	0	0.00	0	0.00
Total	**200**	**100**	**200**	**100**

The above table shows that only 9.50% of rural secondary school students showed high scientific temper while 76.5% of students depicted above average scientific temper, 14% students showed average scientific temper and 0% of students fall in below average and poor scientific temper.

In case of urban students, the table revealed that 11% of urban secondary school students fall under high scientific temper, 77% of urban students fall in above average scientific temper, 12%

urban students fall in the average scientific temper and 0% urban students fall in below average and poor scientific temper.

Table 4: Significance of difference between Means of Urban and Rural Secondary School students on Curiosity Dimension of Scientific Temper

Group	N	Mean	S.D	t-value	Significant
Rural	200	7.98	0.97	1.08	Insignificant
Urban	200	7.87	1.06		

The above table shows the mean difference between Rural and Urban secondary school students on curiosity dimension of scientific temper. The table reveals that there is no significant mean difference between Rural and Urban Secondary school students on Curiosity dimension.

As there was no significant mean difference found between Rural and Urban secondary school students on Curiosity dimension which confirms that Rural and Urban students are equally curious to learn the things.

Table 5: Significance of difference between Means of Rural and Urban Secondary School Students on Open Mindedness dimension of Scientific Temper

Group	N	Mean	S.D	t-value	Level of significant
Rural	200	7.10	1.13	0.84	Insignificant
Urban	200	6.99	1.26		

The above table shows the mean difference between Rural and Urban Secondary school students on open mindedness dimension of scientific temper. It was found that there is no significant mean difference between Rural and Urban secondary school students on open mindedness dimension of scientific temper which confirms that both Rural and Urban secondary students are equally Open minded.

Table 6: Significance of difference between Means of Rural and Urban Secondary School Student's on Objectivity dimension of Scientific Temper

Group	N	Mean	S.D	t-value	Level of significance
Rural	200	8.97	0.85	0.62	Insignificant
Urban	200	9.02	0.92		

The above table shows that the mean difference between Rural and Urban secondary students on Objectivity dimension of Scientific temper. The above table reveals that there is no significant mean difference between Rural and Urban secondary school student on Objectivity dimension. As there is no mean difference between rural and urban secondary students on objectivity dimension, hence both the groups are equally objective.

Table 7: Significance of difference between Means of Rural and Urban secondary school students on Rationality dimension of Scientific Temper

Group	N	Mean	S.D	t-value	Significant
Rural	200	6.87	1.18	6.20	Significant at 0.01 level
Urban	200	7.57	1.09		

The above table shows that the mean difference between Rural and Urban secondary school students on Rationality dimension of Scientific temper. The above table reveals that there is significant mean difference between Rural and Urban students on Rationality dimension and difference was found to be significant at 0.01 level. As the mean difference favoured urban secondary students which confirms that urban students were found to be more Rational than Rural secondary level students.

Table 8: Significance of difference between Means of Rural and Urban Secondary School Students on Aversion to Superstition dimension of Scientific Temper

Group	N	Mean	S.D	t- value	Level of significance
Rural	200	4.92	1.49	2.85	Significant at 0.01 level
Urban	200	4.46	1.73		

The perusal of above table shows the mean difference between Rural and Urban secondary school students on Aversion to superstition dimension of Scientific temper. The above table reveals that there is significant mean difference between Rural and Urban students on Aversion to Superstition dimension and difference was found to be significant at 0.01 level. As the mean

difference favoured rural secondary students which confirms that rural students were found to be more averted to superstitious thoughts than urban secondary students.

Table 9: Significance of difference between Means of Rural and Urban Secondary school students on Composite Score of Scientific Temper

Group	N	Mean	S.D	t-value	Level of significance
Rural	200	35.79	3.13	0.45	Insignificant
Urban	200	35.92	3.09		

The perusal of above table shows the mean difference rural and urban secondary school students on composite score of scientific temper. The table revealed that there is a insignificant difference between rural and urban secondary school students on composite score of scientific temper.

Table 10: Showing the percentage-wise distribution of Rural Secondary School Students and Urban Secondary School Students on Performance Standards of Academic Achievement (N=200 each)

Category	Rural		Urban	
	N	%age	N	%age
Distinction	10	5.00	52	25.00
1st Division	117	58.50	131	65.50
2nd Division	71	35.50	17	8.50
3rd Division	2	1.00	0	0.00
Total	200	100	200	100

The above table shows the percentage wise distribution of rural and urban secondary school students on performance standards of academic achievement. in case of rural secondary school students, the table revealed that 5% were distinction holders, 58.50% were 1st division holders, 35.50 were 2nd division holders and 1.0% were 3rd division holders. In case of Urban secondary school students the table revealed that 25% were distinction holders, 65.50% were 1st division holders, 8.50 were 2nd division holders and 0% were 3rd division holders.

Table 11: Showing the mean comparison between rural and urban secondary school students on their academic achievement

Groups	N	Mean	S.D	t-value	Level of Significance
Rural	200	62.40	7.43	10.14	Significant at 0.01 level
Urban	200	69.61	6.90		

The above table shows that there is significant difference between rural and urban secondary school students on their academic achievements. The above table reveals that there is significant mean difference between rural and urban students on their academic achievement and difference was found to be significant at 0.01level. As the mean difference favoured urban secondary school students which confirms that urban students have higher academic achievement as compared to rural secondary school students.

Conclusions

On the basis of the data analyzed, the following conclusions have been drawn out from the present study:

1. It was found that 10.25% were having high Scientific Temper, 76.75% were above average Scientific Temper, 13.0% were average Scientific Temper and 0% was below average and poor Scientific Temper in rural and urban secondary school students. It was found that only 9.50% of rural secondary school students showed high Scientific Temper while 76.5% of students depicted above average Scientific Temper, 14% student`s showed average Scientific Temper and 0% of student`s fall in below average and poor Scientific Temper. In case of urban student`s.
2. It was found that 11% of urban secondary school student`s fall high Scientific Temper, 77% of urban student`s fall in above average Scientific Temper, 12% urban student`s fall in the average Scientific Temper and 0% urban student`s fall in below average and poor.
3. It was found that on performance standards of Academic Achievement of rural and urban secondary school students, 15.50% were distinction holders, 62.0% were 1st division holders, 22.0% were 2nd division holders and only 0.5% were 3rd division holders.
4. It was found that on performance standards of Academic Achievement of rural secondary school students, 5% were distinction holders, 58.50% were 1st division holders, 35.50 were

2nd division holders and 1.0% were 3rd division holders. In case of urban secondary school student`s the table revealed that 25% were distinction holders, 65.50% were 1st division holders, 8.50 were 2nd division holders and 0% were 3rd division holders.

5. It was found that there is no significant mean difference between rural and urban secondary school student`s on curiosity, open mindedness objectivity dimension of Scientific Temper.
6. It was found that there is significant mean difference between rural and urban student`s on rationality dimension of Scientific Temper and urban student`s were found to be more rational than rural secondary level student`s
7. It was found that there is significant mean difference between rural and urban student`s on aversion to superstition dimension of Scientific Temper and difference was found to be significant and rural student`s were found to be more averted to superstitions thoughts than urban secondary student`s.
8. It was found that there is a insignificant difference between rural and urban secondary school student`s on Scientific Temper.
9. It was found that there is significant mean difference between rural and urban students on their Academic Achievement and urban student`s have higher Academic Achievement as compared to rural secondary school students.

References

Aasiya Maqbool, Hafiz Mudasir, Andleep Zehta (2014) Scientific Temper of Government and Private Secondary School Students - A Comparative Study. *Reports and Opinion* 6(1):18-20.

Agarwal A., (2002) A study of relationship of academic achievement of boys and girls with intelligence, socio-economic status, size of the family and birth order of the child. *Indian Journal of Educational*, vol. 5(6): 43-46.

Arbona, C. (2000). The Development of Academic Achievement in School Aged Children: Precursors to Career Development. Handbook of counseling Psychology (3rd ed.), pp.270-309).New York: Wiley

Dubey, K. (2000) A Study of the scientific temper and its measurement .*Fifth Survey of Educational Research* vol.2 pp-1240-1241

Hau Jen Tsung (2008) Influences on the academic self concept on academic achievement from a perspective of learning motivation. *Contemporary Educational Psychology*.

Ismail hakki Erten (2009) Differences in academic achievement among Turkish respective teachers of English as a foreign language. *European Journal Teacher Education, vol 32(1): 75-91.*

Kobal, Darja and Musek Janek (2001) Self-concept and academic achievement. *Ph.D thesis, University of Ljublana, Europe.*

Krishnendu Baghi (2004) A study of scholastic achievement in life science in relation to cognitive style social disadvantages and interest of secondary students in Trupura. *Journal of Indian education,* vol. 29-(2): 656-67.

Nadeem, N. A. & Saima. (2013). Scientific Temper, Emotional Intelligence and Academic achievement of Kashmiri and Dogri Adolescent girls. *Unpublished M.Phil Dissertation, Deptt. of Education, University of Kashmir.*

Nadeem, N. A. & Syed, Nowsheen (2013). Emotional Intelligence, Learning Styles and Academic Achievement of Adolescent Students of 10th grade. *Unpublished Dissertation, Deptt. of Education. University of Kashmir.*

Nadeem, N.A. (2007). Education for Beginners. *Dilpreet Publishing House. New Delhi*

Nadeem, N.A. (2010). An Introduction to Education. *Full Bright Publishing Company Kadi Kadal Karanagar Srinagar.*

Qadir, F. (2010) Study of scientific temper and academic achievement of rural and urban adolescent girls. Unpublished M.Phil dissertation. Kashmir University, Hazratbal.

Rao, D.B (1990) Comparative study of scientific attitude, scientific aptitude and achievement in biology at secondary level. Fifth survey of Educational Research vol.2 pp (1258-1259).

Salvi, D.M.(1999) Inculcating scientific temper among school children through popular science books. School science, vol.xxxvii No.1 March 99,p.20.

Vaidya N. (1988) Science Education, cited in M.B. Buch, *Fifth Survey of Educational Research,* Delhi, NCERT, Vol.I pp 354.

Yashpal D., Netragaonkar (2014) Scientific Temper and Academic Achievement of First and Non-First Generation Learners in Kashmir, *Scholarly Research Journal for Humanity Science and English Language,* vol. I (v).