
Comparison of Scientific Temperament of Secondary School Students with Respect to Subject Stream and Demographical Variable

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Abstract: The present study was presented Comparison of Scientific Temperament of Secondary School Students with respect to Subject Stream and Demographical Variable of Secondary School Students of Jabalpur city Madhya Pradesh. Study focused on the Scientific Temper of Secondary School Students with reference to some Demographic variables such as gender, locality, different subject groups and level of temperament. The main reason for conducting the research is that the researcher wants to know the level of scientific temper among the science students in secondary level. Survey research method was taken for fulfillment of this purpose. 73 Secondary School Students were selected as sample using convenient sampling method. A strategy of selecting students from various schools in the city of Jabalpur was suggested. Research measured scientific temper through using Dr. K. K. Dubey Scientific temper scale. To do statistical analysis Mean, SD and t-test were utilized. To examine the data, an Independent samples t-test was used. Researcher at the 0.05 level of significance there are substantial differences between the scientific temperaments of male and female secondary school students. In comparison to female pupils, male students exhibit a higher level of scientific temper. The study revealed there was no significant difference of scientific temper between the urban and rural students in each group.

Keywords: Scientific Temperament, Demographical Variable, Secondary School Students

1. Introduction

Science is part of our life not only to day but from the ancient time. Since when our Ancestors lived in forest, used so many scientific methods in their daily life [5]. Now in Modern life style science changes our comfort, health, living style, entertainment, education and countless things which we can imagine. Science also changes human nature and thinking style [9]. Science is an infinite chain of experience based on observation it works for the preparation of theorems and principles. As a science student's has been certainly originated with the origin of human with help of science [1]. Students make decisions in their daily lives using a scientific approach. The level of scientific rigor of various subjects' streams and some demographic factors are known in this paper. In order for students in all subjects to benefit from scientific thinking, secondary school students must

understand how much their subject encourages it [8].

The term scientific temper is broadly defined as "a modest open-minded *temper*—a *temper* ever ready to welcome new light, new knowledge, new experiments, even when their results are unfavorable to preconceived opinions and long-cherished theories [3]. Scientific temperament is important for: progressive society because they constrict themselves of superstitions and ridiculous customs [17]. It helps for developing the nation in all areas like, political, economic and social groups. It can promote tolerance among the people to oppose thoughts and ideas [12]. Scientific temper can refer to an attitude of logical, rational and scientific thinking [6]. An individual is considered to have a scientific temper if he employs a scientific method of decision-making in everyday life [7]. This is best for childhood while the child is learning how to respond to the vagaries of everyday life [13]. School curriculum should respond adequately to this important need.

This demands inculcation of values like spirit of inquiry, courage (to question), objectivity, honesty and truthfulness, which are precursors to the development of various traits characterizing scientific temper [3]. This study proposed to find out the level of scientific temper in Secondary School Students, so that they can create a healthy learning environment in their classroom.

1.1. Review of Literature

There are many studies related to scientific temper but related to the researcher’s topic and variables some studies have found. A. Andrabi found that the tribal and non-tribal adolescents differ significantly on the measure of scientific temper [3]. S. Kour found that there exists no significant difference between high and low achieving adolescent girl on Open-mindedness and Aversion to superstition dimension of scientific temper [14]. Andrabi & Jabeen found that Non-tribal adolescents showed a higher level of scientific temper than tribal students [4]. Yadav found that secondary school students possessed an average level of scientific temper [16]. Kour found that there was no difference in scientific temper among secondary school students with respect to gender [4]. Yadav and Thakur and Bhan (2019) found the contrast result that difference existed in scientific temper between boys and girls [16]. P. Rajendran found that B. Ed. Trainees have an average Scientific Attitude [10]. S. K. Kataria. & Rashmi Singh found that scientific temper is essentially not related with the studies of science because the higher spread of COVID-19 in Science faculty is an evidence of routine human negligence [11]. A. Biswal & A. Pandey found that an above average level of scientific temper among secondary school students as a whole and in all the eight components of scientific temper with high deviation [2]. V. Kumar found that the gap between how science is presently taught in schools and how it should actually be taught [15].

1.2. Rational

Mixed results showed Review by all these studies showed with respect to the status of the scientific temper of Secondary School Students and the effect of gender on it. These studies were reported from a specific demographic region. Therefore, to find out the status of scientific temper among Secondary School Students of Jabalpur city in M. P. state and to see the effect of Demographic variables such as gender, locality, and types of subject groups and level of temperament on it. It is clearly interpreted that very few

research work were done in this area. There were a huge gap exists in terms of school level, college or university, place and pedagogy, etc. the different variables taken to gather for studying the scientific temper of students. In the present study school students were taken belong to different subject stream, Locality and gender.

1.3. Objective

The following objectives were made:

- 1) To compare the mean scores of scientific temper of male and female student.
- 2) To compare the mean scores of scientific temper belongs to rural and urban residential background.
- 3) To compare the mean scores of scientific temper or science, and humanity subject group.
- 4) To compare the mean scores of scientific temper belonging to high and low levels.

1.4. Hypothesis

- 1) There is no significant mean difference of scientific temper of male and female students.
- 2) There is no significant mean difference of scientific temper belongs to rural and urban residential background.
- 3) There is no significant mean difference of scientific temper or science, and humanity subject group.
- 4) There is no significant mean difference of scientific temper belonging to high and low levels.

2. Methodology

Survey research method was taken for the present study. The population comprised of Secondary School situated in Jabalpur city Madhya Pradesh. 73 Secondary School Students were selected as sample using convenient sampling method. Scientific Temper Scale has been used for the collection of data in the present research work. Scientific temper scale constructed by Dr. K. K. Dubey. Reliability coefficient by test-retest method was. 62 and the content validity coefficient were. 59 [6]. Statistical techniques like, Mean, SD and t-test were used to analyze data.

3. Analysis and Interpretation

Objectives and Hypotheses vise data analysis are as follows:

Table 1. Comparison of Scientific Temper of Male and Female Students.

Variable	Category (Gender)	N	Mean	SD	t	df
ScientificTemper	Male	36	69.97	11.54	0.266	71
	Female	37	67.05	10.70		

It is clear from table 1, the value of t is 0.266 at df=71, which is less than critical value=2.37, hence it is significant at 0.01 level of significance. Therefore the null hypothesis 1

is not rejected. By observing the table it is clear that mean of Male is greater than mean of Female. It indicates that male students infatuated high scientific temper as compared to

female students. So it can be said that Male score are significant higher than Female scores.

Table 2. Comparison of Scientific Temper belongs to Rural and Urban Residential Background.

Variable	Category (Locality)	N	Mean	SD	t	df
Scientific Temper	Urban	29	70.17	12.27	0.250	71
	Rural	44	67	10.75		

It is clear from table 2, the value of t is 0.250 at df=71, which is less than critical value= 2.37, hence it is significant at 0.01 level of significance. Therefore the null hypothesis is 2 is not rejected. By observing the table it is clear that mean

of Urban is greater than mean of Rural. It showed that urban students infatuated high scientific temper as compared to rural students. So it can be said that the scores of Urban are significant higher than the scores of Rural.

Table 3. Comparison of Scientific Temper or Science and Humanity Subject Stream.

Variable	Category (Subject)	N	Mean	SD	t	df
Scientific Temper	Science	33	74.48	9.23	0.0001	71
	Humanity	40	65.4	10.00		

It is clear from table 3, the value of t is 0.0001 at df= 71, which is less than critical value=2.37, hence it is significant at 0.01 level of significance. Therefore the null hypothesis 3 is not rejected. By observing the table it is clear that mean of Science is greater than mean of Humanity. It showed that

Science students infatuated high scientific temper as compared to Humanity students. So it can be said that the scores of Science are significant higher than the scores of Humanity.

Table 4. Comparison of Scientific Temper belonging to High and Low Levels.

Variable	Level of scientific temper	N	Mean	SD	t	Df
Scientific Temper	High	40	76.35	5.78	1.282	71
	Low	33	56.15	5.70		

It is clear from table 4, the value of t is 1.282 at df=71, which is less than critical value=2.37, hence it is significant at 0.01 level of significance. Therefore the null hypothesis 4 is not rejected. By observing the table it is clear that mean of belonging High Scientific Temper is greater than mean of belonging Low Scientific Temper. It showed that students possessed belonging High Scientific Temper as compared to Low Scientific Temper. So it can be said that the scores of belonging High Scientific Temper are significant higher than the scores of Low Scientific Temper.

4. Finding of the Study

The findings of the present study are as follows:

- 1) Male students are the significantly higher level of scientific temper than the female students.
- 2) Urban students are the significantly higher level of scientific temper than the rural students.
- 3) Science subject students are the significantly higher level of scientific temper than the humanity subject students.
- 4) Levels of high scientific temper students are having a higher scientific temper.

5. Discussion of the Study

There was significant difference between scores on the scientific temper of Secondary School Students concerning their gender, locality, subject stream and level of scientific

temper. The findings of male students were having the significantly higher level of scientific temper than the female students. These findings were similar to the findings of Kour [14], Azad Ahmad Andrabi [3, 4], Vishal Kumar [15]. The score on the scientific temperament of Secondary School Students in relation to their region of are very significantly. According to the research, urban students score higher on the scientific temperament scale than rural students do on average. As a result, urban students are more scientifically inclined than their rural counterparts. Similar to the findings of A. Biswal & A. Pandey [2] who found those secondary school pupils generally had an above average degree of scientific temper and that all eight of its components had substantial variation.

6. Conclusion

This study has looked at the scientific mind-set of Secondary School Students demographical variable It has been found that the male and female students no significantly difference on the measure of scientific temper. The survey also found that there was no significantly difference between urban and rural pupils for each group on the scale of scientific temper. In order to improve remedial measures for those who fall short in this area and support those who have a high level of Scientific Temper, the Investigator hopes that the current study will help to better understand students. Such a temper would help these learners solve problems in their daily lives in a scientific manner.

References

- [1] Adi Pramuda, Effect of Real-time Physics Organizer Based Smartphone and Indigenous Technology to Students' Scientific Literacy Viewed from Gender Differences, *International Journal of Instruction* July 2019, Vol. 12, No. 3, July 2019, Vol. 12, No. 3, pp. 253-270.
- [2] Biswal, Ashutosh, Aditi Pandey, Scientific Temper among Secondary School Students, *Journal of Scientific Temper*, Vol 9 (3&4), July-Dec 2021, pp. 149-163.
- [3] Azad Ahmad Andrabi (2015). A comparative study of scientific temper among tribal and non-tribal adolescents of Kashmir, *Scholarly Research Journals for Interdisciplinary Studies*, Mar-Apr, 2015, Vol. iii/xvii, pp. 2854-2859.
- [4] Azad Ahmad Andrabi & Nayyar Jabeen (2017). Scientific Temper and Academic Achievement among Tribal and Non-Tribal Students, *The International Journal of Indian Psychology*, Volume 4, Issue 3, pp. 5-12.
- [5] Chaochao Jia, Tao Yang, Yu Qian, Xinye Wu, The Gender Differences in Science Achievement, Interest, Habit, and Creativity, *Science Education International*, Volume 31, Issue 2, pp-202.
- [6] Dubey, K. K. (1992). A study of scientific temper and its measurement, *Fifth survey of Educational Research*, Vol. 2.
- [7] Filiz Bezci, Semra Sungur How is Middle School Students' Scientific Reasoning Ability Associated with Gender and Learning Environment? *Science Education International* 32 (2), 96-106.
- [8] Minsu Ha, Yustika Sya'bandari, & et. al, comprehensive analysis of the fort instrument: using distract or analysis to explore students' scientific reasoning based on academic level an gender difference, *Journal of Baltic Science Education*, Vol. 20, No. 6, 2021, pp 906-926.
- [9] Ocak, G., Dogruel, A. B., & Tepe, M. E. (2021). An analysis of the relationship between problem solving skills and scientific attitudes of secondary school students. *International Journal of Contemporary Educational Research*, 8 (1), 72-83.
- [10] Rajendran, P. Study on Scientific Attitude of B. Ed., Trainees in Perambalur District, *International Journal of Education*, Volume: 8, Issue: 4, Month: September, Year: 2020, pp 105-110.
- [11] Kataria, S. K., Singh, Rashmi (2021) Scientific Temper in Urbanites: AKAP Study on COVID-19.
- [12] Kataria, S. K., Role of Youth in Developing Scientific Temperament, Souvenir of South Asian Universities Festival, Mohanlal Sukhadia University, Udaipur, 2015, p. 6.
- [13] Subodh Mahanti, A Perspective on Scientific Temper in India, *Journal of Scientific Temper*, Vol. 1, January 2013, pp. 46-62.
- [14] Kour, Sunmeet, Scientific Temper among Academically High and Low Achieving Adolescent Girls, *Journal of Education and Practice*, ISSN: 2222-1735 (Paper) Vol. 6, No. 34, 2015, pp 219-225.
- [15] Vishal Kumar, Science Teaching in Schools and Scientific Temper, *International Conference on Best Innovative Teaching Strategies (ICON-BITS)*, 29-31 July 2021, Pilani, Rajasthan, India.
- [16] Yadav, K. Study of scientific temper of secondary school students, *Journal of Education and Practice*, Vol. 9, 2018, pp 321-326.
- [17] Wani, S. R., & Nadeem, N. A. (2010). *Manual for Scientific Temper Scale*, University of Kashmir.