

Scientific Temper among Junior High School Students of Balasore District, Odisha

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ABSTRACT

Scientific temper is an essential skill of 21st century youth. The New Education Policy (NEP 2020) in its recommendation clearly mentioned Specific skills and abilities, such as scientific temper, creativity, communication, fitness and wellness, teamwork, problem-solving, digital literacy, ethics, and so on, will be emphasized in school. In this context each and every individual should process scientific temper for holistic development. Recently it was conducted to find out the scientific temper of high school students in relation to their gender and locality. The current study used a descriptive survey method. The sample for the present study consisted of 112 students of 10th standard studying in government schools of Sadar block and Remuna block of Balasore District of Odisha were got as the example through stratified random sampling method. Data was collected by using scientific temper test constructed by Elizabeth Joshua of Mahatma Gandhi University Kottayam. Statistical techniques like Mean, Median, S.D. and t-test to examine the data. The results of the study stated that Girls have high level of Scientific Temper compared to that of Boys, and students studying in school urban area are having high level of Scientific Temper compared to the students studying in rural area.

KEYWORDS

Scientific temper; secondary school students; gender; locality

INTRODUCTION

Scientific research resembles that power generation in the growth of 21st-century India, with the ability to speed up the progress of any region and state (*PM Inaugurates Centre-State Science Conclave in Ahmedabad via Video Conferencing/ Department Of Science & Technology*, n.d.). Science is not just the source of energy in the twenty-first century, but it is also the driving force behind human civilization. Science is inextricably linked to the collection and organization of experiences gained during the struggle for survival that enabled ancestors to elevate mankind to its current position among the other living beings that inhabit the Earth. (Aaserud, 2005). Science must address societal needs as well as global challenges. People's awareness and involvement with science, as well as social inclusion, including through science rising popularity, are critical for empowering citizens to make informed personal and professional decisions. (<https://plus.google.com/+UNESCO>, 2013).

By considering the nature and methods of science, science education has been assigned for an important role of developing scientific temper. The national focus paper on teaching of science, one of the aims of science teaching is to develop scientific temper (ST) in students. "Aim of science education is to cultivate 'scientific temper'- objectivity, critical thinking and freedom from fear and prejudice" (*National Institute of Educational Planning and Administration: Position Paper. National Focus Group on Teaching of Science*, n.d.).

To have a scientific temper, one does not necessarily need to go through science education. But science education can help to inculcate scientific temper as the process of science education helps in internalizing the methods and value of science (Sharma, 2018). In India firstly Pandit Jawahar Lal Nehru introduced the term 'Scientific Temper' in 1946 in his book 'Discovery of India'. He referred to scientific temper as "a way of life, process of thinking, a method of acting and associating with fellow men". Nehru also believed that if India wants to develop strong and vibrant societies like European societies then it had to learn and behave scientifically. He mentioned scientific temper as one of the national goals. By scientific temper, Nehru meant "fostering the empirical and rational way of thought and life" (Parekh, 1991). In 1976, India became the first country to include in its Constitution 'Scientific Temper with humanism' as a fundamental duty of all citizens of the country [Article 51-A(h)]. Recently the New Education Policy NEP 2020 in its recommendation clearly mentioned that specific skills and capacities, such as scientific temper, creativity, communication, fitness and wellness, teamwork, problem-solving, digital literacy, ethics, and so on, will be emphasized in school (Ministry of Education [@eduminofindia], 2020).

Our knowledge failed us because, although it provided us with the weapon, it never taught us how to use it. Science is simply the discovery and pursuit of methods to prove what is either read or heard. Despite our high regard for science, we fail to apply it in our daily lives. (Aditri, 2021). To know the status of science temper, there are a numbers of studies have been carried out on scientific temper in relation to academic achievement, gender, locality, Tribal and non-tribal students, first and second generation learners When compared to first generation learners, non-first generation learners demonstrated superior scientific temper and academic achievement (Bhat & Netragaonkar, 2014). There were no significant differences in the mean scores of boys and girls in scientific temper (Andrabi, 2015), (Kapri, 2017), (Pandey & Biswal, 2021), (Singh & shukla, 2022), (Bhatnagar, 2021). In contrary to that, findings of the study showed a significant difference on Scientific Temper with respect to Gender. They revealed that Male Students have high scientific Temper than female students (Thakur & Bhan, 2018), (Aezum & Wani, 2013) oppositely female students are having high level of scientific temper than the male students (Selvendiran et.al., 2018) . Similarly, in some of the studies, it was found that, there is no significant difference between mean score of scientific temper of Rural and Urban students (Aslam, 2016). There is a significant difference between rural and urban (Jahanger & Dar, 2019). Urban students have higher scientific temper than rural students (Jahanger & Dar, 2019), (Acharya, 2021), (Singh & Shukla, 2022), (Aezum & Wani, 2013), (Bhatnagar, 2021) . In opposition to that, it was revealed that rural Junior High School Students displayed better scientific temper than urban Junior High School Students (Mehraj, 2018). The tribal and non-tribal differ significantly on the measure of scientific temper. Non-tribal adolescents showed a higher level of scientific temper than tribal students (Bhat & Netragaonkar, 2014), (Andrabi & Jabeen, 2018). Studies also revealed that there is a significant relationship between academic achievement and scientific temper (Andrabi & Jabeen, 2018), (Thakur & Bhan, 2018). Can a society survive without a scientific temper? We certainly can. We can keep accepting what other parts of the world have developed and learned without necessarily contributing to the process of discovery and development. The main question is whether we can survive as a society without scientific temperance (Kang, 2021)?

A analysis of all of these research showed contradictory findings regarding the condition of secondary students' scientific temper and the effects of gender, locality, first and non-first generation learners, tribal and non-tribal students, and first and non-first generation learners on it. Some studies found relationship between scientific temper and academic achievement. Despite the fact that a large number of studies have been reported from various demographic regions of India and abroad, studies on the scientific temper of Junior High School

Students in Odisha are scarce. As a result, the current study is an attempt in this direction to determine the status of scientific temper among Junior High School Students in Odisha's Balasore district, as well as the effect of gender and locality on it.

Objectives of the Study

1. To analysis the scientific temper among high school students in relation to their Gender.
2. To analysis the scientific temper among high school students in relation to their Locality.

Delimitation

- The study was delimited to Balasore Sadar and Remuna block only.
- The study was delimited to class X Students of secondary level.
- The study was delimited to Odia medium school following BSE (O) (Board of Secondary Education, Odisha) syllabus in Balasore District.

RESEARCH METHODS

The current study used a descriptive survey method. The population of the study included all Junior High School Students in Balasore district. From the population, total 112 students of call 10th studying in government schools of Balasore Sadar block and Remuna block of Balasore District were as a sample through a convenient sampling method. In the recent study, Data was gathered using the scientific temper test developed by Elizabeth Joshua of Mahatma Gandhi University Kottayam, which assesses six dimensions of scientific temper i.e. Scientific Literacy, Scientific Attitude, Scientific Thinking, Scientific Method, Scientific Perception and Scientific Habit and the tool was translated by the researcher with the help of experts in language.

RESULTS AND DISCUSSION

Analysis and Interpretation

The objective was to secondary school students' scientific temper in relation to their Gender. Gender was divided into two categories: boys and girls. The data was analyzed using the t-test, and the results are shown in table 1.

Table 1. Gender wise M, SD, N and t –Values of scientific Temper of Secondary School Students

Gender	N	M	SD	t-value	Remark
Boys	55	69.74	6.88	2.7713	p>0.05
Girls	57	73.19	6.29		

From the table 1, the t-value is clearly significant is 2.7713 which is very statistically significant at 0.05 level with df=110. It shows that the scientific temper of Boys and Girls of Junior High School Students differ significantly. Thus the null hypothesis that there is no significant difference in mean score of scientific temper of boys and girls secondary students of Balasore districts have been refused. Furthermore, the mean rating of scientific temper of girls is 73.19 which is statistically higher than that of boys whose mean score of scientific temper is 69.74. it may, therefore, be said that the changing attitude of stakeholder towards science education of girls children and various initiatives taken by state as well as central government to reduce the gender difference in participation in science and related activities.

Further, the objective was to instill a scientific mindset in students in high school. in relation to their locality. They were two types of locality: rural and urban. The data was analyzed using the t-test, and the findings are shown in table 2.

Table 2. Locality wise M, SD, N and t –Values of scientific Temper of Secondary School Students

Locality	N	M	t-value	Remark
Urban	74	72.64	3.0443	p>0.05
Rural	38	68.65		

From the table 1.2, that is proof that the t-value is 3.0443 that is very statistically certain at 0.05 level with df=110. It looks that the scientific temper of rural and urban Junior High School Students differ significantly. As a result, the negligible supposition, which states that there is no significant difference in the mean score of scientific temper between rural and urban secondary students in the Balasore districts, is rejected. Further mean score of scientific temper of urban Junior High School Students is 72.64 which is statistically higher than that of rural Junior High School Students whose mean score of scientific temper is 68.65. It may, therefore, be said that urban educational institutions given their sincere effort to improve scientific temper among the students.

The present study finding reveals that, scientific temper of boys and girls of Junior High School Students differ significantly and scientific temper of girls is statistically higher than that of boys. The findings of the present study supported by previous study like (Selvendiran et.al., 2018). In contrary to this study (Thakur & Bhan, 2018), (Aezum & Wani, 2013) found that boys have higher scientific temper than girls.

Further, scientific temper of rural and urban Junior High School Students differ significantly and urban Junior High School Students is statistically higher than that of rural secondary school students. Results of this study is supported by previous studies like (Jahanger & Dar, 2019), (Acharya, 2021), (Singh & Shukla, 2022), (Aezum & Wani, 2013), (Bhatnagar, 2021). In contradiction to the present study (Mehraj, 2018) found that rural students have higher scientific temper than that of urban students.

CONCLUSION

Contemporary society demands higher scientific temper among its citizens. Our education system must try to inculcate higher scientific temper to cater the demands and aspiration of 21st century. Recently NEP- 2020 in its recommendations emphasized on improving scientific temper among the youth of our country. Hence, specific programs should be launched for secondary and higher secondary level students for enhancing scientific temper. Government should improve the infrastructural and instructional facilities along with technological innovation for increasing scientific temper. So, there is a need of wholesome effort by the stakeholders to change the recent scenario and to improve better scientific temper among the future citizens of our country.

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