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Whether Gender and Subject of Study Affect the Scientific Temperament Among Prospective Teacher Educators?

Rini E. Stephen* and Dr. M.N. Mohamedunni Alias Musthafa**

Abstract

Education aims to develop a rational society. Scientific attitude and scientific temperament are the prime variants that catalyses the accomplishment of this vision. The aspirants for teaching profession are expected to have scientific temperament or else it is to be cultivated. The present study was conducted to assess the level of scientific temperament among prospective teacher educator sand to inquire whether there is any significant difference exists in the level of scientific temperament of the sample regarding their gender and subject studied. A sample of 100 prospective teacher educators was chosen using stratified random sampling method from different gender and subjects. From the results of the study it was observed that all the students possess above average level of scientific temperament and science student's score was comparatively higher than others. It was seen that there is no significant difference in scientific temperament regarding gender but there exist a significant difference in the level of scientific temperament regarding their basic subject. The findings of the study stress the need for a thorough editing related to formulation and curricular transaction in the present teacher preparatory programmes.

Keywords: Scientific Temperament, Prospective teacher educators

INTRODUCTION

The world we are living today is more or less perplexing and many complicated situations have been faced by individuals in their daily life. There exist distress between many countries, organizations, societies and individuals on the basis of beliefs, culture, nationality etc. All these conflicts are due to the lack of tolerance, open mindedness, mutual respect, rational thinking and positive attitude. Scientific temperament includes all such positive traits essential to make our earth a better place to live. Scientific temperament is a state of mind where individuals makes decisions, think and acts according to a rational belief system. It is a metaphysical view of the world that enables us to critically analyze the social and individual behavior. It is felt that there is a need to develop scientific temperament among the future citizens, so that they can think and act rationally. Many researchers observed that Scientific Temperament is an essential attitude to be developed among citizens. This objective is fulfilled effectively through education system–by the teachers and policy makers. To develop scientific temperament is very essential to lead a successful life. There is no need to study the scientific theories to develop scientific temperament and it is not the trait of scientists alone but the basic awareness in science may help individual to think and act in a systematic manner. Scientific temperament helps to handle scientific and non- scientific issues of

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the society. It is an attitude that wants the people to inculcate so that they use ways and methods of science in every sphere of their life.

NEED AND SIGNIFICANCE OF THE STUDY

'To develop Scientific Temper' is the most neglected fundamental duties of Indian citizens. Scientific temperament refers to the ability of an individual to reason logically about all the day to day activities and a positive outlook towards the entire Universe. Sidhartha (2017) opined that it is very important to develop scientific temperament in individuals from childhood itself and education system is the most effective way to achieve this. In the world all the problems, agitations, wars, dispute etc. are happening due to the lack of Scientific Temperament. Since education system is the most appropriate channel to foster scientific temperament in young minds, the programmes meant for molding the future teachers should concentrate more regarding this. Aezum and Wani (2013) investigated the scientific temperament of adolescent students of Jammu and Kashmir with the same insight. In the present study the scientific temperament of prospective teacher educators is analysed using appropriate research techniques. The intention to select the prospective teacher educators as the sample is that they are responsible to mould the next generation teachers. With this objective in mind the researcher made an attempt to study the scientific temperament among the prospective teacher educators. So the present study is entitled as "**Whether gender and subject of study affect the scientific temperament among prospective teacher educators?**" with the following objectives.

OBJECTIVES

1. To find out the level of scientific temperament of prospective teacher educators
2. To find out whether there is any difference in the level of scientific temperament among prospective teacher educators regarding gender
3. To find out whether there is any difference in the level of scientific temperament among prospective teacher educators based on subject

HYPOTHESIS

The following hypothesis have been formulated for verification

1. The level of Scientific Temperament of prospective teacher educators is high
2. There exist no significant difference in the level of Scientific Temperament of prospective teacher educators regarding gender
3. There exist no significant difference in the level of Scientific Temperament of prospective teacher educators based on Subject
4. There is no significant difference in the level of Scientific Temperament of prospective teacher educators of science and literature subjects
5. There is no significant difference in the level of Scientific Temperament of prospective teacher educators of literature and social studies subjects
6. There is no significant difference in the level of Scientific Temperament of prospective teacher educators of science and social studies subjects

METHODOLOGY

The research design adopted for the study was normative survey method.

SAMPLE

The sample of the study comprised of Prospective teacher educators of Kerala. Random sampling technique was used to select samples. A sample of 100 students was selected from different subject and gender among which 47 female and 53 male students and 43 science, 36 literature, 21 social studies students were included. Students with 80% and above score were considered as high achievers while those with less than 50% marks were taken as low achievers.

TOOL

The tool used for achieving the objectives of the study was the Scientific Temperament Scale prepared and standardized by Musthafa and Stephen (2017). This tool is a 5 point Likert scale consists of 30 statements on scientific temperament of prospective teacher educators. The responses are rated from strongly disagree to strongly agree. The maximum score of the scale is 150 and minimum score is 30. The reliability of the tool was 0.674.

STATISTICAL TECHNIQUES USED

Analysis was done for extracting meaningful interpretation of results from raw data using mean, S.D, t-test and ANOVA in SPSS

RESULT AND ANALYSIS

Hypothesis 1

When the scores of the sample calculated for verification of first hypotheses *i.e.*, the level of Scientific Temperament of prospective teacher educators is high, it was found that all the participants possess above average level of scientific temperament and the science students tend to possess higher score than other students. The scores are represented in Table-1.

Table-1. Scores of Scientific temperament among Prospective teacher educators

Level of Scientific Temper	Range of Scores	No. of Respondents	Percentage
High	120–150	47	47
Above Average	90–119	52	52
Below Average	75–89	1	1
Poor	Below 75	Nil	0

Hypothesis 2

For verification of first hypotheses *i.e.*, there exist no significant difference in the level of scientific temperament of Prospective teacher educators regarding gender the t-test was applied to compare means and standard deviations. The analysis is present in Table-2.

Table-2: T-Test Analysis of male and female Prospective teacher educators in their Scientific Temperament.

Variable	Gender	N	Df	Mean	S D	t value	Significance(0.05 level)
Scientific Temperament	Male	53	98	117.25	11.995	0.180	Not significant
	Female	47	96.808	117.64	9.495		

The results of the analysis from table 1 revealed that the calculated t-value (0.180) is less than the tabulated value (1.974) at 0.05 level of significance. Hence, the null hypothesis accepted concluding that there is no significant difference in the level of Scientific Temperament of Prospective teacher educators regarding gender.

Hypothesis 3

For verification of second hypotheses *i.e.*, there exist no significant difference in the level of Scientific Temperament of prospective teacher educators based on subject,ANOVA was applied to compare the mean score. The analysis is present in Table-3.

Table-3: ANOVA result of level of Scientific Temperament regarding subject of Prospective teacher educators.

	Sum of Squares	Df	Mean Square	F	P	Significance (at 0.05 level)
Between Groups	3936.010	2	1968.005	24.803	0.000	Significant
Within group	7696.500	97	79.345			
Total	11632.51	99				

The results from the Table-2 can be analysed as the obtained P value (0.00) is less than 0.05 so the null hypothesis is rejected and there exist a significant difference in the Scientific Temperament of Prospective teacher educators regarding their subject

Hypothesis 4

To analyse the hypothesis 3 i.e. there is no significant difference in the level of Scientific Temperament of prospective teacher educators of science and literature subjects, independent sample t test was applied. The result is shown in Table-4.

Table-4-Independent sample t test to compare the level of Scientific Temperament of science and literature students.

Variable	Subject	N	Mean	Std. Deviation	T	Significance (at 0.05 level)
Scientific Temperament	Science	43	123.81	9.171	4.454	Significant
	Literature	36	115.58	6.805		

The results in Table-3. can be interpreted as there exist a significant difference in the level of Scientific Temperament of Prospective teacher educators of Science and literature subjects since the obtained t value(4.454) is greater than 1.96 (at 0.05 level). From the statistical result, while comparing the mean values it may conclude that students studied science (Mean 121.81) showed higher-level of Scientific Temperament than literature students(Mean 115.58).

Hypothesis 5

For verification of fourth hypotheses *i.e.*, there is no significant difference in the level of Scientific Temperament of prospective teacher educators of literature and social studies subjects, the t-test was applied to compare means and standard deviations. The analysis is present in table-5

Table-5: Independent sample t test to compare the level of Scientific Temperament of literature and social studies students.

Variable	Subject	N	Mean	Std. Deviation	T	Significance (at 0.05 level)
Scientific Temperament	Literature	36	115.58	6.805	3.373	Significant
	Social studies	43	107.52	11.277		

From the result it is analysed as the obtained t value (3.373) is greater than 1.96 (at 0.05 level) so the null hypothesis is rejected and there is significant difference in the level of Scientific Temperament of literature and social studies students. Literature students found to possess higher level of scientific temperament than social studies students when comparing their mean score.

Hypothesis 6

To analyse the hypothesis 5 *i.e.*, there is no significant difference in the level of Scientific Temperament of prospective teacher educators of science and social studies subjects' independent sample t test was used. The results is presented in table 6

Table-6: Independent sample t test to compare the level of Scientific Temperament of science and social studies students.

Variable	Subject	N	Mean	Std. Deviation	T	Significance (at 0.05 level)
Scientific Temperament	Science	21	123.81	9.171	6.181	Significant
	Social studies	43	107.52	11.277		

The statistical result is interpreted as the t value obtained (6.181) is greater than 1.96 (at 0.05 level) so the null hypothesis is rejected *i.e.*, there is significant difference in the level of Scientific Temperament of Science and Social studies students. Science students (Mean 123.81) found to have more scientific temperament than social studies (Mean 107.52) students when compare their means.

FINDINGS AND DISCUSSIONS

From the present study it was found that there is above average level of Scientific Temperament among prospective teacher educators and the scientific temperament of male and female do not differ significantly. While comparing the scientific temperament regarding subject, there is significant difference. Among three subject group considered, Science students tend to possess higher level of scientific temperament and Social studies students scored lesser than science and literature students. As mentioned earlier scientific temperament is an essential element which helps the individual to lead a successful life by respecting and cooperating with other people. This rational reasoning easily can be inculcated in early years or in school level. For achieving this, first of all the teachers should possess higher level of scientific temperament and through academic and non-academic contexts students can assimilate this from the teachers. So the teachers, teacher educators and educational policy-makers have to think about the importance of developing scientific temperament among students who are the future citizens.

CONCLUSION

The present study was aimed to assess and compare the level of scientific temperament of prospective teacher educators. The statistical results indicates that all the students participated in the study have above average level of scientific temperament and there is no significant difference in the level of scientific temperament regarding gender but there is significant difference regarding the subject studied. Scientific Temperament is essentially a world vision, an outlook, enabling individuals to choose reliable knowledge and for making intelligent decisions in their individual and social domains. Rational enquiry and insatiable curiosity of mind to engage in the acquisition of knowledge are the hallmark of scientific temperament. It is an essential attitude which makes this world a better place to live. So the teachers and policy makers should ensure the development of this positive attitude in students as well as the society.

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