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Scientific Attitude of Teacher Trainees

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Key words: *attitude of mind, tactics, strategies and appreciation etc.*

Introduction

Today science learning is everybody's concern. Learning Science as a subject is comparatively a complex process due to its abstract nature. Students cannot form a structure by listening to the information provided by the teacher in the class. Science learning needs to focus more on the process aspect. Science learning involves interest, activity and attitude.

Scientific attitude is the most important outcome of science teaching. Though some of the learned persons view scientific attitude as a byproduct of science teaching, yet majority consider scientific attitude equally important as knowledge. Science should be taught through a proper systematic approach as scientific attitude needs to be developed from a number of characteristics which differentiate it from the other knowledge. "**Knowledge alone is not power but the knowledge how to use knowledge is!**" Students should have the knowledge of process of science namely the modes of thought, the attitude of mind, tactics, strategies and appreciation.

1.2 Concept of Scientific Attitude

Scientific attitude can be defined as "**Open mindedness, a desire for accurate knowledge, confidence in procedure for seeking knowledge and the expectation that the solution of the problem will come through the use of verified knowledge!**" Rethinking Science Education (1975)

1.3 Review of Related Literature

Golwalkar, S. (1980)–

(*A Study of Scientific Attitude of Higher Secondary Students offering different Optional*).

He suggested the following ten components of the scientific attitude for the preparation of the tool:

- (i) Examines statement critically.
- (ii) Has a strong desire for the explanation of factor.
- (iii) Is open minded.
- (iv) Is sceptic in nature?
- (v) Is flexible in approach.
- (vi) Is objective in approach?
- (vii) Is precise.
- (viii) Neglect the immediate values of things.
- (ix) Perceive inconsistencies in view.

Methodology used for the study

A sample of 150 students, which consists of same number of science, arts and commerce students, was taken and data were collected.

The findings were:

- (i) There was no significant difference between the performances of the students of science, arts and commerce in seven out of ten components.
- (ii) There was a significant difference in rest of three components (flexibility, objectivity and sceptic in nature) which shows that science and commerce students were better than arts students.

Vyas, T.N. (1980)

(Effectiveness of Science Programmes in Developing Scientific Attitudes at the Secondary Level)

He suggested the following ten components of scientific attitude for the preparation of the tool:

- (i) Acceptance of probabilities.
- (ii) A liking of new things.
- (iii) Aversion to superstitions.
- (iv) Faith in the possibility of solving problems.
- (v) Humility and suspended judgement.

- (vi) Liking of scientific explanations.
- (vii) Loyalty of truth.
- (viii) Precision
- (ix) Scepticism.
- (x) Willingness to change opinion.

His findings were

- (i) The scientific attitude of the optional science students was higher than that of compulsory science students.
- (ii) There was no significant difference between scientific attitude of boys and girls.

Goyal, K. M. (1982)

(Summative Evaluation of Science Curricula)

Methodology used for the study

The study regarding scientific attitude was done on different groups of students.

His findings were:

- (i) There was no significant difference between non-science oriented students (N = 100) of Central Board of Secondary Education and non-science oriented students of (N = 100) of Board of Secondary Education, Rajasthan, concerning their attitude towards science teaching. t test was applied in this study.
- (ii) There was a significant difference between science oriented students (N = 250) of Central Board of Secondary Education and Board of Secondary Education, Rajasthan concerning their attitude towards science teaching.
- (iii) There was a significant difference between total science oriented students (N = 500) and total non-science oriented students (N = 200) of Central Board of Secondary Education and those of Board of Secondary Education, Rajasthan regarding their attitude towards science teaching.

1.4 Justification of Study

Science teacher is mainly responsible for developing scientific attitude among the students. He should provide opportunities and situations for independent and realistic learning of science process and products.

As the teacher trainees are bound to mould the future generation, therefore, to develop scientific attitude is essential for them. So, the researcher took up a study to find out the scientific attitude and its characteristics among teacher trainees.

1.5 Statement of the Problem

"A study of scientific attitude of teacher trainees offering Science and Humanities streams".

1.6 Objectives

- (1) To find the scientific attitude of teacher trainees.
- (2) To find the scientific attitude of science stream offering teacher trainees.
- (3) To find the scientific attitude of Humanities stream offering teacher trainees.
- (4) To compare scientific attitude of Science and Humanities offering teacher trainees.

1.7 Hypothesis

- (1) There is no significant difference in the scientific attitude of Science and Humanities stream offering teacher trainees.

1.8 Methodology employed -

- (1) **Research methods** - Survey method was used for the study.
- (2) **Samples** - The sample of study composed of 100 teacher trainees of B.Ed. colleges.
- (3) **Tools** - Scientific Attitude Scale developed by Dr. J. S. Negi (1985) was used for data collection.
- (4) **Statistics** - The Statistical Techniques used for the study were mean, standard deviation and t- test.

1.9 Analysis of Scores

The t value was calculated to find the significant difference in mean and standard deviation of scores of scientific attitude of teacher's trainee

Table 1

Scientific Attitude of Teacher's Trainee

S.No.	Group	Mean	S.D.	t test	Significance
1.	Science Stream	150.20	12.90	1.15	Not Significant
2.	Humanities Stream	147.30	12.30		

At 0.05 level of significance table value is 1.98.

$$df = N1 + N2 = 50 + 50 = 98$$

Degree of freedom is 98.

1.10 Major findings

- (1) The scientific attitude of teacher trainees is more than average as per the norms of the Scientific Attitude Scale.
- (2) The mean and standard deviation of scientific attitude of science stream offering teachers trainee was 150.20 and 12.90 respectively.
- (3) The mean and standard deviation of scientific attitude of Humanities stream offering teachers trainee was 147.30 and 12.30 respectively.
- (4) The mean score of scientific attitude of science stream offering teachers trainees is more than Humanities counterparts.
- (5) From the Analysis of data, it was found that there was no significant difference in the scientific attitude of Science and Humanities stream offering teachers trainees.

The dimensions of scientific attitude:

- (1) Teacher trainees does not believe in any superstitions.
- (2) Teachers trainees stick to correctness, truth and avoid exaggerations.
- (3) Teachers trainees are systematic in their work.
- (4) Teachers trainees believe in truth, truth never changes.
- (5) Teachers trainees have burning desire for acquisition of knowledge.
- (6) Teachers trainees adopt open minded approach towards problems.
- (7) Teachers trainees possess scientific temper and emotional stability.
- (8) Teachers trainees show intellectual honesty.
- (9) Teachers trainees are precise in measuring and show accuracy in experimental results.
- (10) They have faith in cause and effect relationship.
- (11) Teachers trainees verify prevalent beliefs on the basis of logic and truth.
- (12) Teachers trainees avoid exaggerations in experiments.
- (13) Teachers trainees take interest in reading magazines and newspapers.
- (14) Teachers trainees show power of forbearance.
- (15) They possess willingness for seeking knowledge.
- (16) Teachers trainees show curiosity and desire to acquire new knowledge.

The study shows that there was no significant difference in scientific attitude among prospective teachers trainees of B.Ed. colleges.

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