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A STUDY OF SCIENTIFIC ATTITUDE AMONG THE SCHOOL STUDENTS

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Introduction :

Value is belief about what is desirable and undesirable value reflects the culture of Society and it's character. The aim of value Education is to introduce students to democratic values, social, political & economic equality & respect for all religions. A System of education, which helps students to live a life of ideal citizen with peace & understanding, is value education.

Need of Value Development:-

- . For personality development
- . To give right direction to human behavior
- . To establish philosophical base for human behavior
- . To take proper decision at the time of emotional struggle
- . To minimize social struggle
- . To develop social hygiene
- . To create integrity in cultural diversity

According to National Policy on Education 1986; 10 values introduced in the school curriculum.

1. Patriotism.
2. National Integration
3. Religious Tolerance.
4. Equality of Gender.
5. Dignity of Labour.
6. Scientific Attitude.
7. Modesty
8. Sensitivity
9. Neatness

Meaning Of Scientific Attitude:-**Conceptual Definition :-**

A set of emotionally toned ideas about science & scientific method & related directly or indirectly to a course of action in the literature of science education , the term implies such qualities of mind as intellectual curiosity , passion for truth , respect for evidence & an appreciation of the necessity for free commutation of science.

C.V.Good Dictionary of edu.(1973)

Operational Definition :-

Scientific Attitude is a score obtained by a student on standardized scientific attitude scale which comprises of critical thinking , open mindedness , to be ready to change the decision , to be curious , not to believe in superstition , to suspend the judgment until suitable support is obtained , to be intellectually honest , seeking to adopt different planned procedures in solving the problems & to have respect for scientific experiments.

Scientific attitude is a broad concept consisting of many components. The components which will be studied in this particular research are as follows.

Critical Thinking:-

Critical thinking involves logical thinking & reasoning including skills such as comparison , classification , sequencing , cause / effect , pattering webbing , deductive & inductive reasoning forecasting , planning , hypothesizing & critiquing.“Thinking that proceeds on the basis of careful evaluation of premises & evidence & comes to conclusions cautiously

through the consideration of all pertinent factors”.

It is a type of directive thinking in which main purpose is an appraisal or evaluation. A person is likely to commit errors in critical thinking if he ignores the opposite point of view and does not consider all the available data. It is followed by irrelevant argument.

Open Mindedness :-

“ It is characteristic willingness to think through a situation without prejudice.”

Open mindedness consists of keeping oneself alive to a wide variety of stimuli & of remaining sensitive to all of the suggestions that a situation may contain , rather than thinking only along the lines most readily suggested. Another important component of open mindedness is thinking without one of prejudice. Open mindedness is one of the characteristics of an extrovert person (Jung’s classification).

The open minded person is frank, likes to part in discussions, likes to mix in society, is able to admit his own mistakes. Thus he is a broad minded person.

3.To be ready to change the decision :-

The individual has to take certain decisions while solving different problems of life. Due to the change in the circumstances, the decision taken may prove to be wrong in the future. Sometimes a second thought on decision may show some inadequacy in the data on which the decision is based. In such cases the individual has to change the decision. He must be ready to change the decision to avoid future loss.

4. To Be Curious:-

Curiosity has been defined as “Is any natural inquisitive behaviour, evident by observation in any animal species & is the emotional aspect of living beings that engenders exploration , investigation & learning.” It’s meaning has been given in differ wording as follows

“Curiosity means a tendency to wonder, to inquire or to investigate, frequently expressed in exploratory or manipulative activities.”

The curious individual is sensitive to all the aspects of particular evidence. The questions like ‘Why’ , ‘ What’ , ‘Where’ , ‘ When’ , ‘How’ etc. vex to his mind .He wants to know more about the things around him. While gaining knowledge he may show exploratory or manipulative activities.

5. Not to believe in superstitions:-

Superstitions are an irrational belief or practice resulting from ignorance or fear of the unknown. The validity of superstitions is based on belief in the power of magic & witchcraft & in such invisible forces as sprits & demons. The person with scientific attitude does not believe in such irrational beliefs. He wants evidence as a proof to believe in any thing.

6. To suspend the Judgment until the suitable support is obtained:-

Judgment means the capacity to assess situations or circumstances shrewdly & to draw sound conclusions. It also means the cognitive process of reaching a decision or drawing conclusions.

For the proper judgment under any circumstances, related supportive evidence must be found. The process of critical thinking is involved here, in searching for the support & evaluation of the same.

7. To be intellectually honest:-

Honesty implies a refusal to lie, steal or deceive in any way the term intellectual is related to intellect, which is power of reasoning , judging comprehending & understanding.

Intellectual honesty therefore, can be defined as the behaviour according to the directions given by one's own power of reasoning judging comprehending & understanding for refusal to lie , steal or deceive in any way.

8. Seeking to adopt different planned procedures in solving the problem:-

There are many approaches to problem solving, depending on the nature of problem & n the people involved in the problem.

When a problem is faced by an individual he has to think over the different ways of solving that problem. The person with scientific attitude thinks on many different ways of solving that problem & select the best suitable one. He makes the systematic plan for solving the problem and applies it.

9. To have respect for scientific experiments:-

In scientific experiments the facts and principles are developed through the collection, interpretation and verification of the data. The individual with scientific attitude seeks for evidence, which can be obtained by performing scientific experiments. Hence he respects the

scientific experiments.

Paul Binker , Jensen & Kreklau (1990) have developed a list of 35 dimensions of critical thoughts which include developing intellectual humility and suspending judgment , developing intellectual courage , developing good faith of integrity , developing intellectual perseverance , clarifying issues ,conclusions or beliefs , reading critically , making interdisciplinary connections , practicing Socratic discussion , comparing & contrasting ideals with actual practice , noting significant similarities & differences , distinguishing relevant from irrelevant facts.

Shrivastav . M. (1988) found significant relationship between scores on scientific attitude & achievement in science.

S.Sundararajan (1992) found that girls have higher level of superstition than boys.

According to the study by Patil G.S. (1998) in rural areas girls have low level of scientific attitude than that of boys.

Anne Kite(2005) prepared developing children's thinking programme which teachers found easy to use. it can be used with children of all abilities & social backgrounds . Perhaps the urgent need for such programme is best summed up by Steven & 11 years old pupil who at the end of the program said: ' Thanks , nobody told me I could think . '

Significance of the Study:-

The directorate of Extension Programmers For Secondary Education , Government Of India , in its brochures on evaluation in general science states one of the objective as ' pupil should adopt the scientific attitude in making statements , accepting information & forming beliefs.

Almost all the commissions & committees on School education which were formed after independence have stated the importance of development of scientific attitude in the students. National Policy on Education (1986) has identified scientific temper as one of the ten core areas. Accordingly development of scientific attitude of mind has been given an important place in school education. However constituents of scientific attitude may not be automatically develop in the outlook of the learner. The teacher will have to make efforts to point out these aspects. Scientific attitude is warranted not only in pursuit of scientific problem but also in solving at home & in the society.

Students in the 8th , 9th & 10th std. are in the age between 13 to 15 years. This age is

important as for as curiosity, critical thinking decision making etc. are concerned.

Objectives of Study:-

The main purpose of the study was to investigate in to the scientific attitude of the school students studying in a private coaching class. The objectives of study were as follows-

1. To measure the scientific attitude of 8th, 9th, & 10th std. students.
2. To compare the levels of scientific attitude in boys & girls.
3. To compare the levels of scientific attitude in 8th & 9th std. students.
4. To compare the levels of scientific attitude in 9th, & 10th std. students.
5. To compare the levels of scientific attitude in 8th & 10th std. students.
6. To find out the components in which the students are low.

Assumptions of the Study:-

1. Scientific attitude can be measured by standardized scientific attitude scale.

Hypotheses:-

Research Hypotheses:-

1. There is a significant difference in the level of scientific attitude of boys & that of girls.
2. There is a significant difference in the level of scientific attitude of 8th std. students & that of 9th std. students.
3. There is a significant difference in the level of scientific attitude of 9th std. students & that of 10th std. students.
4. There is a significant difference in the level of scientific attitude of 8th std. students & that of 10th std. students.

Null Hypotheses:-

1. There is no significant difference in the level of scientific attitude of boys & that of girls.
2. There is no significant difference in the level of scientific attitude of 8th std. students & that of 9th std. students.
3. There is no significant difference in the level of scientific attitude of 9th std. students & that of 10th std. students.
4. There is no significant difference in the level of scientific attitude of 8th std. students

& that of 10th std. students.

Scope & the Delimitations of the Study:-

Scope:-

The study included 8th, 9th & 10th std. students.

Delimitations:-

To study the level of scientific attitude 90 students studying in 8th, 9th & 10th std. of 8 out of 64 Grantable Marathi medium Secondary school in Kolhapur city.

Research Methodology:-

a) **Method:** - Survey method was adopted to collect the related information.

b) **Sample:** - Ninety students studying in 8th, 9th & 10th std. of 8 out of 64 Grantable

Marathi medium Secondary school in Kolhapur city was selected. Twenty percent of the student studying in a coaching class in Kolhapur city was randomly selected.

The selection was done as follows:-

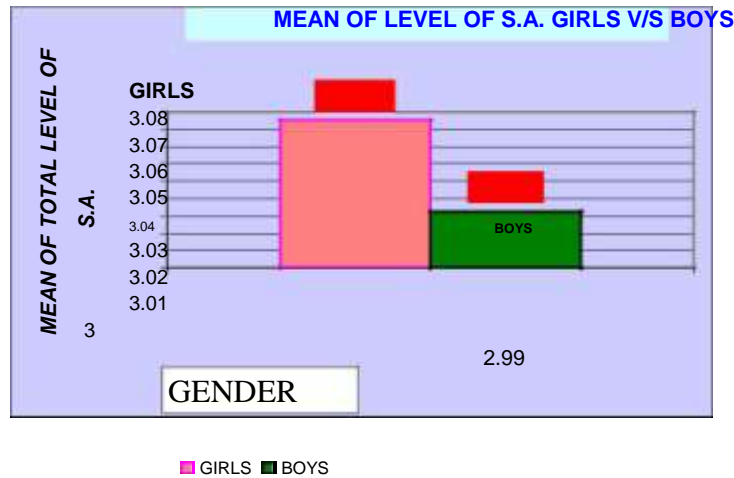
Std.	Boys	Girls	Total
8 th	15	15	30
9 th	15	15	30
10 th	15	15	30
Total	45	45	90

c) **Tool:** - A standardized scientific attitude scale prepared by Dr. G. S. Patil Kolhapur was used. This scale comprises of statements related to following components of scientific attitude.

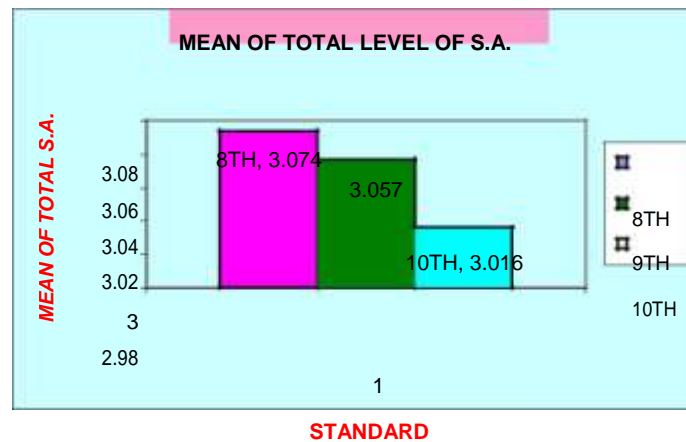
1. Critical Thinking:-
2. Open Mindedness:-
3. To be ready to change the decision
4. To Be Curious:-
5. Not to believe in superstitions:-
6. To suspend the Judgment until the suitable support is obtained:-
7. To be intellectually honest:-
8. Seeking to adopt different planned procedures in solving the problem:-
9. To have respect for scientific experiments:-

Findings:-

1. The scientific attitude of 8th, 9th & 10th std. students is at average.



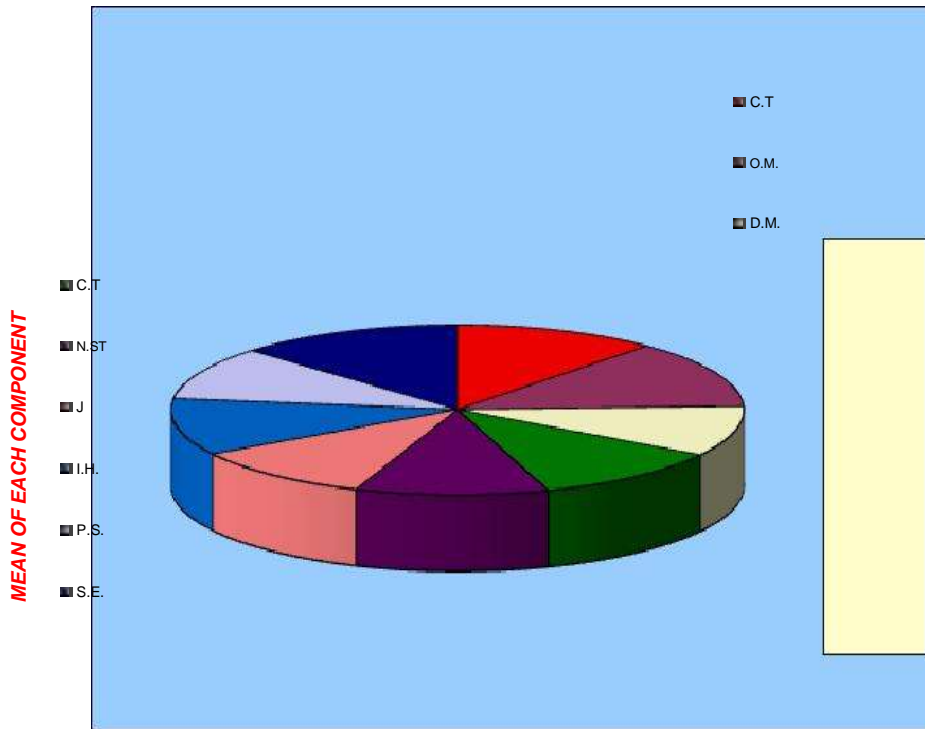
There is no significant difference in the level of scientific attitude of boys & that of girls.



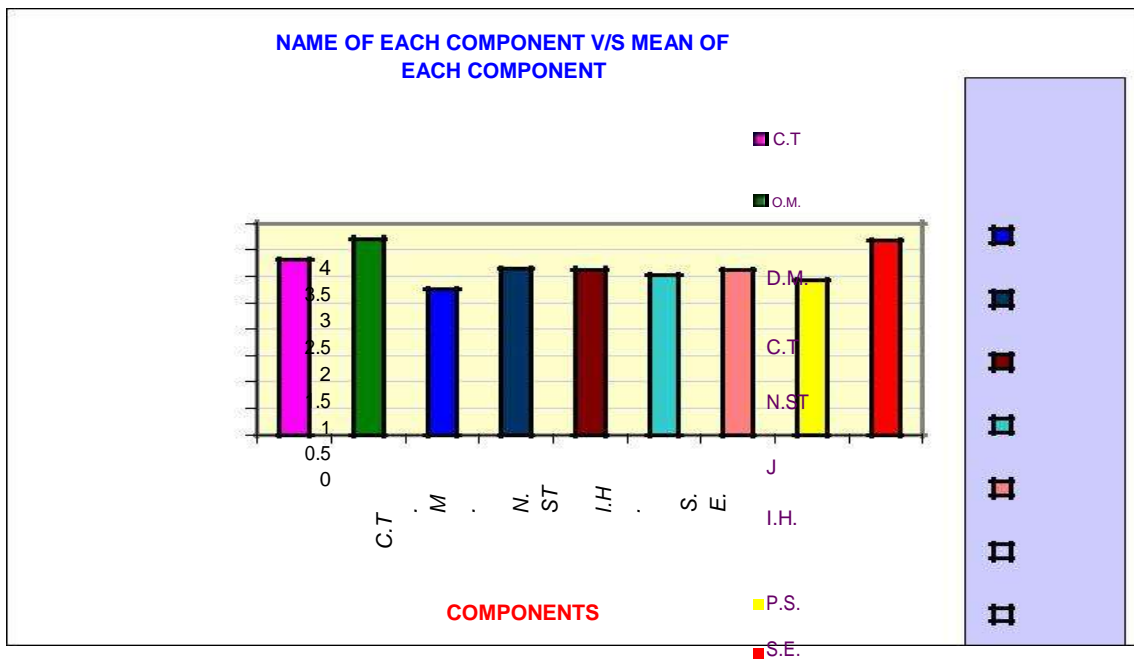
There is no significant difference in the level of scientific attitude of 8th & 9th std. students.

4. There is no significant difference in the level of scientific attitude of 9th & 10th std. students.
5. There is no significant difference in the level of scientific attitude of 8th & 10th std. students.

NAME OF EACH COMPONENT V/S MEAN OF EACH COMPONENT



NAME OF EACH COMPONENT V/S MEAN OF EACH COMPONENT



The students got below average scores in readiness to change the decision & seeking to adopt different planned procedures in solving the problems.

In rest of the seven components (i.e. Critical thinking , Open mindedness , Curiosity , Not to believe in superstitions , To suspend The Judgment until the suitable support is obtained , To be intellectually honest , To Have Respect for Scientific experiments) the students were at above average level.

Recommendations:-

The following recommendations were for the selected coaching class.

1. The programs for developing scientific attitude among the school student should be prepared and implemented as given below.
 - Selected reading, question & answers, experimentations, demonstrations, group discussion, role-play, dramatization, interactions with experts in the field, CD show & discussion and audio presentation & discussion.
2. More attention should be given to the development of readiness to change the decision and to adopt different planned procedure in solving the problems.

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