RELATIONSHIP BETWEEN CLASSROOM ENVIRONMENT AND ACHIEVEMENT IN SCIENCE OF NINTH GRADE SCHOOL STUDENTS

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ABSTRACT

The present study was undertaken with a view to understand the relationship of various classroom dimensions with achievement of students in science. The study was conducted on a sample of 200 students (boys and girls) of ninth grade taken from different schools of Amritsar City. Results revealed that there exists a significant relationship between classroom environment and achievement of students in science. Moreover, out of different dimensions of classroom environment, personal development dimension and system maintenance dimension were found out to be significantly related with the achievement of students in science.

KEYWORDS: Classroom Environment, Achievement, Science, Ninth Grade Students.

INTRODUCTION

Today is the age of science and technology. Today science has become integral part of human life. It is hard reality that science has revolutionalised our way of living to the extent that is now termed as 'modern living'. Our thinking, our attitudes, our interests, our outlook etc. have undergone tremendous change. Man's material environment has been radically transformed by the magic wand of science. The average span of human life has been doubled. The release of nuclear energy and 'green revolution' has far reaching benefits. The word 'Science' has been derived from the Latin word "Scientia", which means knowledge. Such observations about the unique importance of science led John Woodburn and E.O. Obourn to remark as under:

"Science is that human endeavour that seeks to describe with even increasing accuracy, the events and circumstances that occur or exist within our natural environment". The fore-going discussion reveals that man's future is stubbornly linked to scientific advances and the development of productive activity. Obviously, therefore, science must find a respectable place in school curriculum. The entire world over, this feeling is being generated.

 In India, through the efforts of National Council of Educational Research and Training (NCERT), science has been made a compulsory subject throughout the school stage. The

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views of Kothari Commission and UNESCO's International Commission on the Development of Education, in this connection are worth considering.

Kothari Commission (1964-66) stated that: "We lay great emphasis on making science an important element in the school curriculum. We, therefore, recommend that science and mathematics should be taught on a compulsory basis to all pupils as a part of general education during the first ten years of schooling. In addition, there should be provision of real courses in these subjects at the secondary stage, for students of more than average ability".

UNESCO's International Education Commission(1972) recommended that: "Science and Technology must become essential components in any educational enterprise; they must be incorporated into all educational activity intended for children, young people and adults, in order to help the individual to control social energies as well as natural and productive ones- thereby achieving mastery over himself, his choices and actions- and, finally, they must help man to acquire a scientific turn of mind so that he becomes able to promote science without being enslaved by it". Science is a systematic and methodical study of any branch of knowledge. There are six essential elements that make science a utilitarian subject. Science makes use of systematic and organised scientific method. Science is the study of facts, it searches for true facts. Scientific laws are universal. Scientific laws are valid at all times and at all places. Science studies the cause and effect relationship. On the basis of such relationship, it creates universal and valid laws which help in making prediction.

But there are various factors, which are responsible for the non-accomplishment of above objectives: our lack of clear-cut aims, over-crowded classes, unhygienic physical condition, lack of competent teachers, faulty approaches to teaching, apathy to new techniques and procedures, inadequate provisions of teaching aids etc. The above said factors are responsible for the downfall in achievement of student in science. Efficiency of teaching as in any other subject is measured in terms of academic achievement. The term academic achievement consists of two terms: Academic and Achievement. The word academic is related to scholastic or mental ability of an individual, which is usually expressed in terms of knowledge, understanding, application, analysis, synthesis and evaluation in relation to particular subject of study. In general terms achievement refers to the academic or scholastic achievement on the student at the end of educational programme. To maximize the achievement within a given set up is therefore, the goal of every educationist. Like achievement in any other subject, science achievement is of two types:

Over-achievement and under- achievement. Theoretically, if one's performance is superior to the expected standard of performance then one may be regarded as over-achiever, whereas when one's performance is inferior then one may be regarded as under-achiever. Achievement, especially in science in this competitive world is the key instrument which helps the students in making better adjustments. Achievement in science has a great significance in a person's life. As far as achievement in science is concerned, it is a multidimensional phenomenon, so it is affected by a number of factors like student related factors, teacher related factors, classroom related factors etc. Classroom related factors includes class-size, classroom environment which includes teacher-student and student-student relationships and the type of organisational structure of a classroom, availability of resource materials, length of class period and type of instruction.

Classroom Environment

For the purpose of present study four dimensions of classroom environment have been taken into consideration viz;

1) **Relationship dimension**

- Involvement – It measures the extent to which students have attentive interest in class activities and participate in discussions.

- Affiliation – It assesses the level of friendship students feel for each other i.e., the extent to which they help each other with homework, get to know each other easily and enjoy working together.

- Teacher-support – It measures the amount of help, concern and friendship the teacher directs towards students.

2) **Personal development dimensions**

   It includes task orientation and competition.

- Task orientation – it measures the extent to which it is important to complete the activities that have been planned.

- Competition – It assesses the emphasis placed on students competing with each other for grades and recognition.

3) **System maintenance dimensions**

   It includes order and organisation, rule clarity and teacher control.

- Order and organisation – It assesses the emphasis on students behaving in an orderly and polite manner and on the overall organisation of assignments and classroom activities.

- Rule clarity – It assesses the emphasis on establishing and following a clear set of rules and on students knowing what consequences will be if they do not follow them.

- Teacher control – It measures how strict the teacher is in enforcing the rules and the severity of the punishment for rule infractions.

4) **System change dimension**

It involves Innovation that measures how much students contribute to planning classroom activities, and the amount of unusual and varying activities and assignments planned by the teacher.

Definition of the terms:-

Achievement in science: - According to Dictionary of Education, "Achievement is the accomplishment or proficiency in a given skill or body of knowledge". In this study, it is an achievement of an individual up to a desired level in the subject of science.

Classroom environment: - in the present study, classroom environment means the teacher-student and student-student relationship and organisational structure of the classroom. The various dimensions of the classroom environment which will be taken in the present study are:-

A. Relationship Dimension: - which includes involvement, affiliation and teacher support.
B. Personal development dimensions: - which included task orientation and competition.
C. System maintenance dimension: - that included order and organisation, rule clarity and teacher control.
D. System change dimension: - that included innovative activities on the part teacher and students.

Objectives of the study

1. To study the relationship between classroom environment and achievement of students in science.
2. To study the correlation of relationship dimension with achievement of students in science.
3. To study the relationship of personal development dimension with achievement of students in science.

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4. To study the relationship of system maintenance dimension with achievement of students in science.

5. To study the correlation of system change dimension with achievement of students in science.

Hypotheses

1) A significant relationship exists between classroom environment and achievement of students in science.

2) Relationship dimension is significantly related to achievement of students in science.

3) Personal development dimension is related to the achievement of students in science.

4) There exists no significant relationship between system maintenance dimensions with achievement of students in science.

5) A significant relationship exists between system change dimensions with achievement of students in science.

Methodology

Design of the study: - The present study falls under descriptive research completed with survey approach as it intended to study the achievement of students in science in relation to classroom environment.

Sample: - A sample of 200 students (boys and girls) of ninth grade from different schools of Amritsar city was selected randomly for the purpose of the study.

Tools:-

1) **Classroom Environment Scale by Rudolf H. Moos and Edison J. Trickett.**

The classroom environment scale (CES) assesses the social climates of the junior high school and high school classrooms. It focuses on the measurement and description and on the type of organisational structure of classroom. The basic assumption is that the consensus of individual when characterising their environment constitutes a measure of environmental climate and that this climate exerts a direct influence on the behaviour. There are 90 items in the scale which are in the form of statements. These statements are about high school and junior high school classrooms. The students are to decide which of these statements are true of their classroom and which are false. The students are to mark their responses on the separate answer sheet. If the students says that a statement is true or mostly true of their class,

they are to mark a 'X' in the box labelled 'T' (True) and if it is mostly false, they are to mark a 'X' in the box labelled 'F' (False).

2) Achievement in Science: -

Marks obtained by students in the final board examination for class eighth were taken as achievement of students in science.

Statistical Analysis: -

In order to test the hypotheses advanced in the present in the present study, descriptive statistic like mean and standard deviation were calculated. 't' test was applied to compare the results obtained through descriptive statistics. Correlation between different variables was calculated.

Analysis and Discussion of Results:-

Hypotheses wise analysis and interpretation of results is as follows:-

Hypotheses-I: - A significant relationship exists between Classroom Environment and Achievements of students in science.

This hypothesis was tested by calculating product moment correlation between these two variables. The results of analysis are being reported in table 1.1

Table 1.1

Showing correlation (r) between achievement in science and classroom environment (N=200).

Variables	Coefficient of Correlation (r)
Achievement in science and classroom environment	0.17*

*Significant at 0.05 level (df=198)

A close look at Table 1.1 shows positive correlation between classroom environment and achievement of student in science. It shows a significant relationship exists between classroom environment and achievement of students in science. Hence, our first hypotheses stands accepted.

Hypotheses - II: - Relationship Dimension is significantly related to Achievement of students in Science.

This hypothesis was tested by calculating product moment correlation between scores of Relationship dimension of classroom environment and achievement of students in science. The results of analysis are being reported in table 1.2

Table 1.2

Showing correlation(r) between Relationship Dimension and Achievement in Science (N=200)

Variables	Coefficient of Correlation
Relationship Dimension and Achievement of students in Science.	0.09

A close examination of table 1.2 shows that the value of 'r' for relationship dimension and achievement has come out to be 0.09 which is insignificant (N=200, df=198). It shows that the relationship dimension is not significantly related to achievement of students in science. Thus, our second hypotheses stands rejected.

Hypotheses-III: - Personal Development Dimension is significantly related to Achievement of students in Science.

This hypothesis was tested by calculating product moment correlation between scores of personal development dimension and achievement of students in science. The results of analysis are being reported in table 1.3

Table 1.3

Variables	Coefficient of Correlation
Personal Development Dimension and Achievement of students in Science.	0.15*

*significant at 0.05 level (df=198)

A close examination of results entered in table 1.3 shows that the value of 'r' for personal development dimension and achievement of students in science has come out to be 0.15 which is significant at 0.05 level (df=198). It shows that personal development dimension is significantly related to achievement of students in science. Thus, our third hypotheses stands accepted.

Hypotheses – IV: - There exists no significant relationship between System Maintenance Dimension and Achievements of students in Science.

This hypothesis was tested by calculating product moment correlation between scores of system maintenance dimension and achievements of students in science. The results of analysis are being reported in table 1.4

Table 1.4

Showing correlation (r) between System Maintenance Dimension and Achievement of students in Science (N=200, df=198)

Variables	Coefficient of Correlation
System Maintenance Dimension and Achievement in Science	0.28*

*Significant at 0.01 level (df=198)

A close examination of results entered in table 1.4 shows that the value of 'r' for system maintenance dimension and achievement of students in science has come out to be 0.28 which is significant at 0.01 level (N=200, df=198). It shows that system maintenance dimension is significantly related to achievements of students in science. Hence, our fourth hypotheses stands rejected.

Hypotheses- V: - A significant relationship exists between System Change Dimension and Achievement of students in Science.

This hypothesis was tested by calculating product moment correlation. The results of analysis are being reported in table 1.5

Table 1.5

Showing correlation (r) between System Change Dimension and Achievement of students in Science.

Variables	Coefficient of Correlation
System Change Dimension and Achievement in Science.	0.02

The results entered in table 1.5 show positive correlation between System Change Dimension and Achievement of students in Science of magnitude 0.02 which is insignificant (N=200, df=198). It means that there exists insignificant relationship between system change dimension and achievement of students in science. Though the correlation is statistically insignificant yet the low but positive correlation is indicative of the trend that both move in the same direction. Hence, our fifth hypotheses stands rejected.

Interpretation of Results

Hypotheses –I A significant relationship exists between Classroom Environment and Achievements of students in science.

After analysing the scores of hypotheses-I, the results showed that correlation between classroom environment and achievement of students in science came out to be 0.17 which was found significant at 0.05 level. It means that more congenial the classroom environment,

higher will be achievement of students in science. Moreover, better the teacher-student relationship and student-student relationship i.e. the organisational structure of the classroom, better will be the achievement of students in science. Hence, there must be congenial classroom environment in the classroom to enhance the achievement of students in science.

Hypotheses-II Relationship dimension of classroom environment is significantly related to achievements of students in science.

This hypothesis was tested by applying product moment correlation. The results showed that correlation between scores of relationship dimension and achievement of students in science came out to be 0.09 which was found insignificant. The results showed that although the relationship dimension of classroom environment including teacher-student interaction, student-student interaction and involvement of students does not bear a significant relation with achievement of students in science yet positive correlation indicates that with increase in teacher-student interaction, student-student interaction is accompanied by corresponding increase in the achievements of students in science. As interactions provide opportunities to students to clarify their doubts and problems so, it positively affects their achievement in science.

Hypotheses- III: - Personal development dimension is closely related to the achievements of students in science.

This hypotheses was tested by applying product moment correlation which showed that correlation between scores of personal development dimension and achievement of students in science was of the order 0.15 which was found to be significant at 0.05 level which means if the students complete the activities assigned to them in time and if teacher places more emphasis on subject matter he teaches and finally if students have a spirit of healthy competition with each other then it would lead to higher achievement of students in science. So, the results showed that personal development dimension including task orientation and competition of classroom environment bears a significant and positive relationship with achievement of students in science.

Hypotheses-IV: - There exists no significant relation between system maintenance dimension and achievement of students in science.

This hypothesis was tested by applying product moment correlation. The results showed that correlation between scores of system maintenance dimension of classroom environment and achievement of students in science came out to be 0.28 which was found to be significant at 0.01 level. The results showed that when classroom functions in an orderly, organised, clear and coherent manner, it bears significant and a positive relationship with achievement of students in science. Moreover, if teacher is consistent in dealing with students who break rules and he is also strict in enforcing the rules, this will positively affect achievement of students in science. Thus, there is a significant relationship between system maintenance dimension including order and organisation, rule clarity and teacher control of classroom environment and achievement of students in science.

Hypotheses-V: - A significant relationship exists between system change dimension and achievement of students in science.

This hypothesis was tested by applying product moment correlation. After analysing the scores, the results showed that correlation between system change dimension of classroom environment and achievement of students in science came out to be 0.02 which was found to be insignificant. The results lead us to conclude that system change dimension i.e. the extent to which students carry on unusual and varying activities does not necessarily affect the achievement of students in science.

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