

Study Of Academic Achievement In Mathematics In Relation With Study-Habits And Home-Environment

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Abstract: Study habits are an individual ability. Some children like to read alone, some in a group, some read aloud and some silently; there is no strict yardstick to measure the type of study habits. Many students are unsuccessful in their examinations not because they are short of knowledge or ability, but because they do not have adequate study habits and study skills. Home as the first socialization unit which the child has continuous contact and it is also most powerful medium by which our value system develops. In this paper effort has been made to find that is there a significant relationship between academic achievement in mathematics with study-habits, home-environment and their combined effect.

Introduction

Our universe is made up of galaxies, mountains, creatures, vehicles and many more of other things, each seemingly unique. It is a chaotic affair in which all things intrude on one another in all sorts of ways. But appreciations to mathematics so that people are able to think about the world of objects and happenings to start communicate in ways that reveal unity and order. The numbers, lines, angles, shapes, dimensions, averages, probabilities, ratios, operations, cycles, correlations etc that make up the world of mathematics, enable the people to make sense of the universe which seem to be desperately complicated. Mathematical patterns and relationships have been developed and refined over the centuries and the process is as vigorous and productive now as at any time in history. Perhaps that is because today mathematics is used in more fields of human enterprise than ever before and has also become more essential in everyday life.

Mathematics is the science of patterns and relationships. As a theoretical discipline it explores the possible relationships among abstractions without apprehension for whether those abstractions have counterparts in the real world. The central theme of investigation in theoretical mathematics is identification, which includes diagnosis of a small set of basic rules and ideas from which all other interesting ideas and rules in that field can be logically deduced. As the subject makes progress, more and more relationships have been found between parts of it that have developed separately, such as between the symbolic representations of algebra and the spatial representation of geometry. These cross connections facilitate insight to be developed into various parts.

For the purpose of general scientific literacy, it is important for a student

- (a) To understand in what sense mathematics is the study of patterns and relationships,
- (b) To become familiar with some of those patterns and relationships and
- (c) To learn to use them in daily life.

In practice of mathematics some concepts and statements are taken as given, they may be applied or serve as the foundation for the development of further mathematics. Additional concepts can be defined carefully in terms of the given one. Conjectures can be developed on the basis of experience with examples. Further statements can be proved deductively based on what has been supposed. This process has been repeated extensively, resulting in mathematics having its own complicated structure, with concept and areas of specialization. It requires considerable time and study to take hold of the subject.

Importance of Mathematics

The literal meaning of mathematics is "things which can be counted" now you can think that counting has vital role in our daily life, just imagine that there were no mathematics at all, how would it be possible for us to count days, months and years? One who is ignorant of mathematics cannot know other things of the world. In this regard Kant states that "A natural science is a science if so far it is mathematical." And mathematics has played very important role in building up of modern civilization by perfecting all sciences. It is the queen of all sciences and language of the nature.

Mathematics is a creation of human mind concerned primarily with ideas, processes and reasoning. It is much more than Arithmetic, more than Algebra, more than Geometry. It is also much more than Trigonometry, Statistics and Calculus. It is a way of thinking, a way of organizing logical proofs. It gives an insight into the power of human mind. So this forms a very valuable discipline of teaching learning programmes of school subjects everywhere in the world of inquisitive children. So the pedagogy of mathematics should be very carefully built in different levels of school education.

The study of mathematics will form the habit of clarity, brevity, accuracy, precision and certainty in expression amongst the students and this will go-a long way in giving us much-needed unity in this nation. The success in any argument in everyday life depends upon logical persuading and there is nothing more persuasive than a logical argument. The

idea of logic, where the validity of conclusions rests upon the validity and consistency of the assumptions and definitions upon which the conclusions are based upon, will help to eliminate frequency of conflicts in our society. According to Osofechinti in Odili (2006), the importance of mathematics to individuals in their daily undertaking is so vast that the knowledge of mathematics is an indispensable tool for a successful and balanced human existence on earth.

Study Habits

It is rightly said that character is the bundle of habits. This reveals the importance of habits in character. Education helps the learner in development of self-concepts and the attainment of knowledge by ways of good study habits. Every student have different kinds of study habits, some study regularly, some study when examinations approaches nearly. Some study while listening music while some study in complete silence and calm. No matter how dull or bright a student is he can, make most of his ability only if his study habits are superior and effective and he devote plenty of his time towards his studies.

Study habit as a research variable in Indian researches, has been investigated in two ways. One group of studies treated it as the dependent variable –measured it and also studied several other variables as its correlates. Hardly ever, any researcher predicted study habits by another set of variables. The second and the major group of researchers studied study habits as a correlate or predictor of certain other criterion variables, academic achievement is the most common among them. In fact the study habits are very important characteristic of all human being who are ‘being educated’ and ‘are educated’. As much study habit is significant for higher academic achievement of the students, so much it is important for their rewarding use of leisure time. The latter aspect is also important for adults who are now in the profession particularly for the teachers. Thus ‘study habits’ as a habit is generic rather than specific in terms of its importance. It has very long reaching effects deep into the life of the individuals, and by cumulative and interactive effects in the society.

Study habits are an individual ability. Some children like to read alone, some in a group, some read aloud and some silently; there is no strict yardstick to measure the type of study habits. It may be innate or acquired. The child can formulate its own study habits by itself. According to Webster’s new world dictionary (fifth edition, 2014) “study is the act or

process of applying the mind in order to acquire knowledge, as is reading, investigation etc.” According to William et al: (2014) “Study is the total of all habits, determined purposes and enforced practices that the individual uses in order to learn.”

Study habits and Academic Achievement

Many students are unsuccessful in their examinations not because they are short of knowledge or ability, but because they do not have adequate study habits and study skills (Menzal, 1982). Good students are not born but are made by regular and deliberate practice of fine study habits for which there is no alternative. Thus in order to improve student’s academic achievement in different aspects of education it is essential to improve their good study habits. According to (Kizlik 2001) development of good study habits in children depends upon the collective efforts of parents and teachers. Study habits are the pattern of behavior adopted by students in the pursuit of their studies which serves as the vehicle of learning. It is the measure to which the students engages themselves in regular act of studying that are characterized by appropriate study routines occurring in an environment that is conducive to study. Good study habits are associated with an encouraging attitude towards learning in general.

Different Types of study Behaviors

While one can and frequently does presume a delta point in the life of an individual whereby the study habits get fixed by certain age. M. Mukhopadhyaya and D.N.Sansanswal (2005) gives the most important nine different kinds of the study behaviors that are Comprehension, Concentration, Task orientation, Study sets, Interaction, Drilling, Support, Recording and Language.

Home Environment

Home is the first school of a child where the ‘Humanization’ of an individual starts. It teaches the culture of the society and norms of a community that how to live and grow in a group of people and that how to live and grow in a certain civilization. Harlock (1976) maintains that “from contacts with family member’s children lay foundation for interests and attitudes towards people, things, and life in general. As social horizons of an individual broaden and he came to contact with others outside his home he may change and modify his behavior.”

Frank (1948) stated that “it is the family, which is essential agency for the development of the morality among children and introduces them to the culture in which they grow.” Udry (1966) state that “Family is the basic social institution for two reasons i.e. it may be the prime mover in determining the nature of the life in a given society and the primary determinant of the life chances of an individual born here.”

Bhardwaj (2001) consider home as the first socialization unit which the child has continuous contact and it is also most powerful medium by which our value system develops. According to Johnson and Medinus (1969) “Home is the socio biological unit that exerts the greatest influence on the development and perpetuation of the individual’s behavior. The psychological atmosphere of a home may fall into any of the four quadrants, each of which represents one of the four general combinations i.e. acceptance-autonomy, acceptance-control, rejection-autonomy and rejection control.”

Dimensions of home environment

Dr. K.S. Mishra (1989) has given ten dimensions of home environment. Operational definitions of these dimensions are as follows:

Control: It indicates “autocratic atmosphere in which many restrictions are imposed on children by the parents in order to discipline them”.

Protectiveness: It implies “Prevention of independent behavior and prolongation of infantile care”.

Punishment: It includes “Physical as well as affective punishment to avoid the occurrence of undesirable behavior”.

Conformity: It indicates “Parent’s directions, commands or orders with which child is expected to comply by action”. It refers to “Demands to work according to parent’s desires and expectations”.

Social isolation: It indicates “Use of isolation from beloved persons except family members for negative sanctions”.

Reward: It includes “Material as well as symbolic rewards to strengthen or increase the probability of desired behavior”.

Deprivation of Privileges: It implies “Controlling children’s behavior by depriving them or their rights to seek love respect and childcare from parents”.

Nurturance: It indicates “Existence of excessive unconditional physical and emotional attachment of parents with the child. Parents have a keen interest in and love for the child”.

Rejection: It implies “Conditional love recognizing that the child has no rights as a person, no right to express his feelings, no right to uniqueness and no right to become an autonomous individual”.

Permissiveness: It includes “Provision of opportunities to child to express his views freely and act according to his desires with no interference from parents.”

Since the effect of environment influence starts from parental stage of the child. So home is the most important ingredient in the process of growth and development. It is the social institution which develops the finest and most fundamental qualities in cognitive, effective and psychomotor fields in the Child’s formative years.

According to Makstrot (1989) “Home is a microcosm where children can experience their effectiveness and power to make a difference through problem solving service and cooperation. When parents engender respect for the range of people’s needs and life styles, children develops a sense, a purpose, and uses their ability for the benefit of the people of the world as well as themselves. Home is the first school of a child where the ‘Humanization’ of an individual starts. It teaches the culture of the society and norms of a community that how to live and grow in a group of people and that how to live and grow in a certain civilization. Harlock (1976) maintains that “from contacts with family member’s children lay foundation for interests and attitudes towards people, things, and life in general. As social horizons of an individual broadens and he came to contact with others outside his home he may change and modify his behavior, though some are never be completely eradicated from him throughout his or her life.”

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Review of Related Literature

Khurshid (2012) designed a study to explore the relationship between study habits and academic achievement of day scholars and hostel living male and female university students. On the basis of data collected, study revealed that there was a positive relationship between the study habits and the academic achievements and day scholars have better study habits as than that of hostel living students. Study further indicates that female students have better concentration on their studies and higher academic achievement than male students.

Saini (2012) Study revealed that there was no significant relationship between study habits and academic achievement of scheduled caste students and there was a significant relationship between home environment and school environment with its different dimensions.

Choudhary (2013) conducted a study to find out the relationship between study habits and attitude with academic achievement among general and scheduled caste students. Study revealed that there was no significant difference between the study habits and attitude between general and scheduled castes students. Study further revealed that there was no significant difference of academic achievement between general categories and scheduled caste students.

Kumar (2013) made an attempt to find out the effect of home environment, school environment and study habits on academic achievement of students. Study indicates that there was no significant relationship between study habits and academic achievement. Home environment had significant effect on academic achievement but school environment does not play a significant role in academic achievement.

Ojimba (2013) focused on the relationship between home background and student's achievement in mathematics in senior secondary level in Rivers State Nigeria and study reveals that there was a significant relationship between home support for mathematics and home environment had positive significant effect on mathematics achievement of the students.

Mahanta (2014) studied the effect of home environment upon the formulation of attitude of the students towards mathematics. It was found that there was a positive relationship between home environment and academic achievement.

Viji (2013) conducted a study on study habits, attitude towards mathematics and achievement in mathematics of secondary schools of Kanchipuram district and reveals that there was no significant difference in study habits of a student based on gender & there was a significant difference between study habits and medium of instruction. There was positive significant relationship between home environment and achievement in mathematics

Onoshakpokaiyee (2015) examined the relationship between study habits of students and their achievement in mathematics and find that there was a significant relationship between students' study habits and achievement in mathematics. There was a significant difference in achievement in mathematics and between good study habits and poor study habits.

Objectives of the study

The present study was undertaken by keeping in view the following objectives

1. To study the relationship between academic achievement in mathematics and study-habits of the students.
2. To study the relationship between academic achievement in mathematics and home-environment of the students.
3. To study the interactional effect of study-habits with academic achievement in mathematics.

Hypotheses of the study

From above mentioned objectives the following null hypotheses have been framed

H1: There is no significant relationship between academic achievement in mathematics and study-habits of the students.

H2: There is no significant relationship between academic achievement in mathematics and home-environment of the students.

H3: There is no significant interactional effect of study habits and home-environment of a student on academic achievement in mathematics.

Tool used

The following Research tools were used to collect data for the present study

1. Study-Habit Inventory (Mukhopadhaya and Sansanwal, 2005).
2. Home-environment Inventory (K.S. Mishra, 1989).
3. Achievement test in Mathematics (Developed by the Investigator).

Sample

In the present study researcher had selected a sample of 600 students of class XI and XII from the Government and Non-Government senior secondary Schools of Hoshiarpur, Jalandhar and Nawanshahar districts. From each of these districts namely Hoshiarpur, Jalandhar and Nawanshahar 200 students were selected for sample out of which 100 are boys and 100 are girls.

Results and Discussion

Hypothesis H1

Table 1.1 ANOVA Analysis of Academic Achievement of the Students Categorized on Basis of Their Study Habit Scores

Category	N	Mean	SD	F Test
High study habits	1	68.00	.	1.975 p = 0.281 Significant
Above Average study habits	1	83.00	.	
Moderate study habits	23	82.43	14.352	
Below Average study habits	108	75.16	16.120	
Poor study habits	219	53.03	14.669	
Very Poor study habits	248	51.35	13.536	
Total	600	74.33	14.534	

From the table 1.1 it was observed that the students having high study habits have 68.00 mean score on academic achievement in mathematics, with above average study habits mean score was 83.00, with moderate study habits mean score was 82.43 with standard deviation

of 14.352, with below average study habits mean score was 75.16 with standard deviation of 16.120, with poor study habits mean score was 53.03 with standard deviation of 14.669 and with very poor study habits mean score was 51.35 with standard deviation of 13.536. F value of the test was 1.975 and p value was 0.281 which is significant thus the null hypothesis assumed H1 was rejected as there is significant relationship reported among the different study habits of the students with their academic achievement scores in mathematics.

Hypothesis H2

Table: 1.2 ANOVA Analysis of Academic Achievement of the Students Categorized on Basis of Their Home Environment Scores

Category	N	Mean	SD	F Test
Very High Home Environment	60	67.83	8.73	2.983 P=3.124 Significant
High Home Environment	86	87.98	9.69	
Above Average Home Environment	142	73.24	10.13	
Average Home Environment	156	72.41	11.24	
Low Home Environment	96	52.57	8.44	
Very Low Home Environment	60	49.87	7.37	
Total	600	76.45	13.87	

From the table 1.2 it was elucidated that the mean score with very high home environment was 67.83 with standard deviation of 8.73, with high home environment mean score was 87.98 with standard deviation of 9.69, with above average home environment mean score was 73.24 with standard deviation of 10.13, with average home environment mean score was 72.41 with standard deviation of 11.24, with low home environment mean score was 52.57 with standard deviation of 8.44 and with very low home environment mean score was 49.87 with standard deviation of 7.37. As F value of

the test was 2.983 and p value is 3.124 which is significant at .01 level of significance therefore null hypothesis assumed H2 was rejected and study shows that there is significant relationship reported among the different levels of home environment of the students with their academic achievement scores in mathematics.

Hypothesis H3

Table 1.3 ANOVA Analysis of the Combined Effect of Home Environment And Study Habits on Academic Achievement in Mathematics

Source	Type III Sum of Squares	df	Mean Square	F	P value
Corrected Model	10375.505 ^a	25	415.020	2.052	0.002
Intercept	207823.069	1	207823.069	1.02723	0.000
Study Habits	3312.342	5	662.468	3.275	0.006
Home Environment	443.383	5	88.677	0.438	0.822
Study Habits * Home Environment	5644.821	15	376.321	1.860	0.025
Error	115093.588	569	202.273		
Total	3412613.000	595			
Corrected Total	125469.092	594			

Table 1.3 shows that the null hypothesis assumed H3 had been rejected as there significant interactional effect ($p = 0.025 < 0.05$) of the home environment and study habits was revealed for the academic achievement in mathematics scores of the students. Thus it is concluded that combined effect of the home environment and study habits has been strong association with academic achievement in mathematics.

Conclusions

The study revealed that

- There is significant relationship among the different categories of study-habits of the students with their academic achievement in mathematics.
- There is significant relationship among the different categories of the-home-environment of

the students with their academic achievement in mathematics.

- There is significant relationship between academic achievement in mathematics and combined effect of study-habits and home-environment.

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