

ACHIEVEMENT OF ADOLESCENTS IN MATHEMATICS IN RELATION TO FAMILY ENVIRONMENT

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ABSTRACT

The present study was conducted on 100 senior secondary school students of Ludhiana district of Punjab. Standardized questionnaires were used to measure the level of academic achievement as well as family environment. Collected data was interpreted through mean, standard deviation and t-test. The results of the study revealed that family environment (authoritative parenting style) is positively associated to the achievement in mathematics at school.

Keywords: Family Environment, Achievement, Mathematics, Adolescents.

INTRODUCTION

Today's student has to excel in every field in order to be ahead of others in the race of success. This is especially true in the academic field. One's academic achievement decides what type of recognition and respect he/she will get from his/her family, teachers, friends and society as a whole. Hence, student has to maintain academic record because of the competitive world. **According to Crow and Crow (1969)** "Academic achievement as the extent to which a learner is profiting from instructions in a given area of learning i.e., achievement is reflected by the extent to which skill or knowledge has been imparted to him". **Wolman views (1989)** "Academic achievement is the degree or level of proficiency attained in scholastic or academic work". Family environment means an interpersonal relationship between the parents and the child. It includes the parents' attitude towards the child and he/she can express all his emotions freely which affects the various spheres of child's life. i.e. intelligence, personality, learning, ability, behaviour, life style, emotion and academic achievement. It is also influenced by number of factors like nature of family constellation, number of children in the family, marital relationship between husband and wife, parental employment, socio-economic and religious background of family. **Hurlock says (1963)** "Ideal family environment is one in which all members are happy, contented and harmonious in which each individual is respected and given rights, privileges and responsibilities suited to his age in which there is no dominance by either one or both parents or by elder children who are permitted to boss over younger ones." Mathematics has been recognized as one of the central strings of human intellectual activity throughout the centuries. It has its roots in every day's activities and forms the basic structure of our highly advanced technological development. It exhibits connections between things which can be visualized only through

the agency of human reason .It has attained its present status through a long and interesting period of evaluation. It helps the men to give exact interpretation of ideas and conclusions. It is necessary to determine with the greatest accuracy which of the constituents of instruction is fit for each age of child. **Carl Friedrich Gauss** (1777-1855) referred to Mathematics as "the Queen of the Sciences".

REVIEW RELATED TO ACADEMIC ACHIEVEMANT IN RELATION TO FAMILY, PERSONAL FACTORS AND MATHEMATICS SUBJECT

Radha (1998) concluded in their study that there is no significant difference in academic achievement between boys and girls in mid- term assessment of learning achievement of primary school students.

Chand (2002) found family related factors such as parental education and occupation to be significantly and positively related with learning achievement at elementary stage. However, no gender differences were found in achievement lends either in Hindi or Mathematics.

Ahuja and Sharma (2009) conducted study to investigate academic achievement of adolescents in relation to parental involvement and Aspiration. The results of the investigation revealed that high levels of occupational aspirations of parents result in higher achievement of +2 studies.

Kaur, Rana and Kaur (2009) have studied, "Home Environment and Academic Achievement as Correlates of Self-concept among Adolescents." This study was to explore academic achievement and home environment as correlation of self-concept in a sample of 300 adolescents. The results of the study revealed that self-concept to be positively correlated with academic achievement.

Farhanakazmi, Muhammad and TahirPerver (2011) has studied parental style and academic achievement among the students. This study was conducted to explore and evaluate the impact of father's style of dealing with children at home and their academic achievement at school. The results of this study were found in the favor of the fathers' involvement for the academic achievement.

EMERGENCE OF THE PROBLEM

Education should be started with Mathematics. For it forms well designed brains that are able to reason right. It is even admitted that those who have studied Mathematics during their childhood should be trusted, for they have acquired solid bases for arguing which become to them a sort of second nature. Mathematics is considered as dull, dry, and boring subject and Students are generally afraid of Mathematics. It is hard to understand for students because of trigonometry, algebra, Geometry, Probability and lot of difficult formulas which are to be remember. The status of Mathematics in our society is so far from satisfaction. Therefore the attitude of the students towards Mathematics is not favorable. The backwardness of students in Mathematics is increasing day by day. Most often it is being heard from the teachers as well as parents that

a particular boy or girl is very weak, poor in Mathematics. In saying so they generally mean that the boy or girl is seriously lagging behind in knowledge and experience to the other boys or girls. So we can say, educators and parents have been plagued by the problem of students' low achievement in schools. Many have frustrating experience of watching an adolescent child who is underachiever just because he/she is not trying his best. For these students, the attention, patience, and encouragement of teachers and family can be extremely important factors for success. Such situations motivated the researcher to study the adolescents' achievement in Mathematics.

STATEMENT OF THE PROBLEM

ACHIEVEMENT OF ADOLESCENTS IN MATHEMATICS IN RELATION TO FAMILY ENVIRONMENT

OBJECTIVES OF THE STUDY

- To study gender difference in learning achievement of adolescent students in Mathematics.
- To study learning achievement of adolescent students in Mathematics in relation to their parental education.
- To study learning achievement of adolescent students in Mathematics in relation to their family income.

HYPOTHESES

- There will be significant gender difference in learning achievement of adolescent students in Mathematics.
- Adolescent students with different level of parental education will differ significantly in their achievement in Mathematics.
- Adolescent students with different level of family income will differ significantly in their learning achievement in Mathematics.

DESIGN OF THE STUDY

The present study was descriptive survey which was conducted on 100 senior secondary school students of Ludhiana district of Punjab. The scope of this study was limited to rural/urban schools situated in Ludhiana district of Punjab.

RESEARCH TOOLS

Following research tools were used in the conduct of present study –

- (i) Personal data sheet
- (ii) Mathematical Achievement Test by L.N. Dubey.

ANALYSIS AND INTERPRETATION OF DATA

The major purpose of any piece of work is not mere collection of facts and figure; but the drawing of some variable and useful inferences.

Table 1

Mean, standard deviations, t-test of post scores of Mathematical Achievement in terms of Gender

Gender	N	M	S.D	t-value
Boys	50	10.20	4.48	1.303 NS
Girls	50	11.20	4.57	

NS: Non-Significant

Table-1 shows that mean scores of Mathematical achievement of adolescents in terms of gender came out to be 10.20 and 11.20 for boys and girls respectively and S.D. scores of Mathematical achievement of adolescents boys and girls are 4.48 and 4.57 respectively. The t-value testing significance of mean difference turned out to be 1.303. The gender difference has no significant difference at both levels 0.05 and 0.01. Thus there is no effect of gender on Mathematical achievement.

Hence hypothesis "There will be significant gender difference in learning achievement of adolescent students in mathematics" is rejected.

TABLE 2

Mean, standard deviations, t-test of post scores of Mathematical Achievement in terms of Parental Education

Educational level Grouping	N	M	S.D.	t-value
(i) Below matric +2	35 23	7.82 9.95	3.07 4.27	2.08*
(ii) Below matric Graduation	35 29	7.82 12.37	3.07 3.32	5.68**
(iii) Below Matric PG& above	35 13	7.82 15.43	3.07 15.43	5.11**
(iv) +2 Graduation	23 29	9.95 12.37	4.27 3.32	2.24*
(v) +2 PG & above	23 13	9.95 15.43	4.27 15.43	3.23**
(vi) Graduation PG & above	29 13	12.37 15.43	3.32 15.43	2.04*

****:** Significant at both the levels of confidence i.e. 0.05 and 0.01

***:** Significant at 0.05 level.

Table-2 shows that Mathematical achievement of adolescents with parent's education being 'below matric' have a mean score of 7.82, which is lowest as compared to their counterparts having paternal education upto '+2 level'(mean score is 9.95), 'graduation level' (mean score is 12.37) and 'post-graduation and above level'(mean score is 15.43). The results of t-value show that: -

- (i) Students with parental education being 'below matric' have lower mean than their counterparts having parental education level upto +2 and t-value is 2.08. So it has significant difference at only 0.05 level.
- (ii) Students with parental education being 'below matric' have lower mean than their counterparts having parental education level upto 'graduation' and t-value is 5.68. So it has significant difference at both levels i.e. 0.05 and 0.01.
- (iii) Similarly, Students with parental education being 'below matric' have lower mean than their counterparts having parental education level upto 'post-graduation & above' and t-value is 5.11. So it has significant difference at both levels i.e. 0.05 and 0.01.
- (iv) Students with parental education being +2 have lower mean than their counterparts having parental education level upto 'graduation' and t-value is 2.24. So it has significant difference at only 0.05 level.
- (v) Students with parental education being +2 have lower mean than their counterparts having parental education level upto 'post-graduation & above' and t-value is 3.23. So it has significant difference at both levels i.e. 0.05 and 0.01.
- (vi) Students with parental education being 'graduation' have lower mean than their counterparts having paternal education level upto 'post-graduation & above' and t-value is 2.04. So it has significant difference at only 0.05 level.

Thus adolescent's Mathematical achievement is effected with different level of parental education (i.e. below matric, +2, graduation and post-graduation & above). This may be due to the fact that educated parents can easily understand as well as solve adolescent's problems better than illiterate parents and the parents with low education.

Hence Hypothesis 2 stating "Adolescent students with different level of parental education will differ significantly in their achievement in Mathematics" is accepted.

Table-3**Mean, standard deviations, t-test of post scores of Mathematical Achievement in terms of Family income**

Comparison		N	M	S.D.	t-value
(i)	Low	34	8.35	4.13	3.23**
	Average	45	11.13	3.40	
(ii)	Low	34	8.35	4.13	3.95**
	High	21	13.61	5.21	
(iii)	Average	45	11.13	3.40	2.00*
	High	21	13.61	5.21	

** : Significant at both the levels of confidence i.e. 0.05 and 0.01

* : Significant at 0.05 level.

The table-3 shows that the mean performance of adolescents belonging to low, average and high. Family income group came out to be 8.35, 11.13 and 13.61 respectively. Though there is a tendency of increase in achievement level with increase in family income, the mean difference between 'low and average income groups' (t-value is 3.23), 'low and high income groups' (t-value is 3.95) turn out to be significant at both levels (i.e. 0.01 and 0.05) and the mean difference between 'average and high income groups' (t-value is 2.00) turn out to be significant at only 0.05 level. Thus adolescent's mathematical achievement is effected with different level of family income. This may be due to the fact that parents having high monthly income can provide good and more educational / physical facilities to their child as compared to parents having low monthly income.

Hence Hypothesis 3stating "Adolescent students with different level of family income will differ significantly in their learning achievement in Mathematics" is accepted.

DELIMITATIONS OF THE STUDY

The study was delimited in its scope in the following manners:-

- The study was delimited to only adolescent students selected from Middle/Elementary schools of dist. Ludhiana.
- The study was delimited to some selected family related factors and no psychological variables or school variables were considered.
- Adolescent students' performance in Mathematics on achievement test by L.N. Dubey was taken as achievement.

STATISTICAL TECHNIQUES USED

1. Descriptive statistics namely Mean, SD and t- ratio were calculated

CONCLUSIONS

On the basis of the findings of the present study following conclusions may be drawn:-

1. There exists no significant difference in the Mathematical achievement of boys and girls.
2. There exists significant difference in the mean scores of Mathematical achievement of adolescents with different levels of parental education (i.e. below matric, +2, graduation and post-graduation & above).
3. There exists significant difference in the mean score of Mathematical achievement of adolescents at different levels of their family income (i.e. low, average and high).
4. There exists significant difference in the mean score of Mathematical achievement of adolescents in peer / non-peer support.
5. There exists significant difference in the mean score of Mathematical achievement of adolescents at different levels of their occupational aspiration.
6. There exists significant difference in the mean score of Mathematical achievement of adolescents at different levels of their educational aspiration.

Hence, study concluded that different parenting styles of dealing at home play a vital role in determining their children's response at school and intern their academic achievement. The authoritative parenting style is positively associated to the academic achievement at school. Study recommends that fathers should take interest in the education of their children and there should be a good and cordial relation between parents, teachers and students.

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