

To Study the Effect of Sex and Faculty on Aptitude and Achievement in Mathematics

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The study was conducted in the descriptive survey design and sample of 450 male & female students of three different extremes (science, arts, commerce) were selected. The study of the researches indicates that (1) the effect of gender was statistically the same in all the three faculties for aptitude. (2) Effect of gender on achievement also varies from faculty to faculty. (3) While studying relationship among aptitude, and achievement in the groups of boys and girls (B1 and B2) of Arts, science and commerce (A1 A2 A3) faculty It was observed that in the groups A1 B1, A2 B2, A3 B1 when aptitude increases, achievement also increases and for group A1 B2, A2 B1 & A3 B2 aptitude does not affect the achievement of an individual. (4) In the study of only faculties- (a) for A1 A2 A3 (Arts, Science, Commerce) Variables. For A1 & A2 Variables Aptitude and Achievement are highly uncorrelated but for A1 A3 Aptitude and Achievement are highly Correlated In the study of gender B1 and B2 Aptitude and Achievement are also correlated.

In this competitive age where individuals have a larger way of life and greater variety of choices than any time in the past, required more consciousness about selection for future. It is an established fact, that the individual differ in mental ability as well as physical ability and personality traits. The basis of these differences, is the extent to which they are inborn or the result of training and experience Many factors combine to determine what a person may be expected to do in the future, especially in the achievement of educational or vocational courses. If a person gives evidence of a high degree of aptitude, talent in a certain field, it is reasonable to assume that training aimed specifically at the development of that talent will result in superior achievement and consequent success.

School Education in recent times, has emerged as an important segment of the total educational system expected to contribute significantly to the individual as well as national development processes. Today the important need of India, is to produce the right type of grown up children who will one day take the responsibility of their own and also handle the problems of our country, and lead the uneducated masses to right path of social and economical development. Our dreams can only be true if and when educated boys and girls are equipped with sterling qualities of head and high to lead the masses and to take the work of future development in their own hand. It can only be possible by classifying them according to their abilities, qualities through aptitude test.

Aptitude can be considered as the phase or area of an individual's mental ability in which he can be expected to continue to improve to a point of exceptional performance. Aptitude measurement gives an indication of ability to succeed in a specific field and achievement is a quality or ability of a person, which is measured after training of a subject or a group of subjects.

Rationale of the Study:

Mathematics is very essential in any learning programme. It is most important school subject because of its utility in personal use, home, finance, clerical work, book keeping, teaching, statistical engineering etc. Mathematical Aptitude measurement gives an indication of ability to succeed in Mathematics such as achievement in Mathematics, so it is important to study the relationship among Aptitude, and Achievement in Mathematics. A knowledge of students aptitude can enable the teacher to provide them adequate vocational training at school and to help them prepare for suitable careers in future life.

Related Literature:

Bhavsar, S.J. (1970) worked on construction and standardization of numerical Aptitude test for students of IX and X. The findings of their study was- (i) The performance of boys was significantly superior than girls. (ii) The City and Urban students did not differ from each other.

Khatoon Fareed (1988) attempts to identify mathematical aptitude among boys and girls and its relationship with interest and vocational preference at the secondary school level.

Harris Abigail M. Carlton sydell T. (1993) studied the patterns of gender differences on Mathematics items on the scholastic aptitude test.

Horman Hans Judger (1999) Studied on the development of selection methods

for civil aviation students pilots. A Comparative study of aptitude test scores between Chinese and Germans.

Tuli MR in 1979 studied "Mathematical creativity as related to aptitude for achievement in and aptitude toward Mathematics" the finding or (i) Mathematical creativity was significantly positive related to aptitude for mathematics. (ii) The attitude toward mathematics was not found to be predictor of creative ability in mathematics. (iii) Achievement in mathematics was significantly related to creative abilities in mathematics. (iv) Aptitude and attitude toward mathematics conjointly did not contribute to mathematical creativity.

Objectives of the Study:

To Study the effect of Gender and Faculty on the Mathematical aptitude.

To study the effect of gender and faculty on achievement in Mathematics.

To study the relationship among Aptitude and achievement in mathematics in the groups of boys and girls of science, Arts and commerce.

Methodology:- The study was conducted in the descriptive survey design and the procedural details are as follows-

Population:- Students studying in class X of U.P. Board of Kanpur City having Mathematics as a subject were considered as population of the present study (Investigation).

Sampling Technique:- The Sampling design used in the study was stratified. Random sampling. Sample of 450 male & female students of three different extremes were selected.

Faculty- Science, Arts, Commerce (A1,A2, A3)

Sex- Boys and Girls (B1, B2)

Thus in all six Groups will be formed as given below-

Science		Boys
Arts	x	Girls
Commerce		

Description of the tool:

(1) Mathematical Aptitude test constructed & standardized by researcher herself was used to measure the mathematical aptitude. In order to test reliability of the tool, test retest method has been used. The reliability of the tool was 0.681 in order to test the validity of the mathematical aptitude test. The scores of first test created by researcher and also a scientific test Battery (Standard Aptitude test) constructed by Dr. K.K. Agarwal and Dr. Saroj Arora which was already proved valid, and correlation Coefficient was found .533. score, percentile and stannie was also calculated.

(2) Mathematical Achievement test developed by L-N- Dubey.

Data Collection:

For the data collection, mathematical Aptitude test was administered strictly. X class students of Four U.P. Board Inter Colleges of Kanpur City, Colleges were also selected by random sampling. Students responses were collected and scored with the help of scoring key.

Statistical Technique:

To study the effect of two factors A and B faculty and gender with three levels A (A1 - Arts, A2- Science, A3 - Commerce) and two levels of B (B1 - Boy, B2 - Girls) on the three variables V1- Aptitude, V2 - Intelligence, V3 - Achievement, Researches used Analysis of Variance (ANOVA) on the principles of Factorial experiment.

In the present study there were gender groups with seventy five individual in each, as given below-

A1 B1 [Arts - Boys] A2 B1 [Science- Boys] A3 B1 [commerce - Boys]
A1 B2 [Arts - Girls] A2 B2 [Science- Girls] A3 B2 [commerce - Girls]

In order to find out the relationship among (i) Aptitude (ii) Intelligence (iii) Achievement, Taken two at a time, coefficient of correlation, were calculated in the followings groups-

(i)	A1 B1	A2 B1	A3 B1
	A1 B2	A2 B2	A3 B1
(ii)	A1 A2	A3 B1	B1 B2

Whole Sample.

Results And Findings:

From the above table 2 which was observed that t-value for the 'groups' was significant at .01 level of significance this indicates that there was significant differences among the means of the six groups. The significant values of F1 of A

indicates that there was significant differences among three A means. Similarly highly significant value to F for B- indicates that the difference between the average aptitude of Boys and Girls was highly significant. The F value interaction of A and B was non significant at .05 level. This indicates that the effect of gender was statistically the same in all three faculties.

From table 3 it is observed, that the highest average aptitude (14.81) was of the group A1 (Science student) and the lowest average aptitude (13.58) was that of group A1 (Arts student). So far as boys and girls are concerned, the highest average aptitude (14.71) was that of group B1 (Boys) and was significantly great that of girls. Form A X B table, of means 3(b) giving the means of six groups. It was observed that the highest average aptitude (15.20) was that of the A2B1 (Science Boys). And A1B1 (Arts Boys). All these four groups were statistically at par. The minimum average aptitude (13.05) was that of A3 B2 (Commerce Girls). Bracketed with A1 B1 (Arts Girls).

From the table 3©, the F - value for the interaction A and B is significant at 1% level of significance. This indicates, that the effect of gender on achievement varies from faculty to faculty.

Correlation Studies:

From the table 4 (a) it is observed, that correlation between aptitude and achievement were highly significant at 1% level in the groups A1 B1, A2 B2, A3 B1. All these coefficients were positive This indicates that as the aptitude increases in these groups achievement also increases. In the remaining three groups A1 B2, A2 B1 A3 B2, the correlation coefficient were found to be non-significant indicating that the variation in one variable does not effect the variation in other variable. In the table 4(b) the correlation coefficients between the variable Mathematical aptitude and achievement were found uncorrelated in the groups A1 and A2 but highly and positively correlated in the group A3 (commerce).

From table 4(C) in the case of B1 B2 (boys, girls) the variable V1 and V2 are also highly and positively correlated in the group of B1, Accept in the group B2 girls were found uncorrelated. In the case of V2 V2 both variables were highly and positively correlated at .1% level of in all three groups.

Conclusions and Discussions:

The study of the researches indicates that-

1- (a) The effect of gender was statistically the same in all the three faculties for aptitude.

(b) The minimum average aptitude was that of A3 B2 (commerce girls) with A1 B2 (Arts Girls). The Max. Average Aptitude was that of A2 B1 (Science Boys).

2- Effect of gender on achievement varies from faculty to faculty

(a) Maximum average achievement was in the group of girls of science followed by girls of Arts but significant superior to the remaining four groups.

(b) Minimum Average achievement was that boys of Arts. This group was significantly inferior to all remaining five groups

3- It was observed that in the groups A1 B1, A2 B2, A3 B1 when aptitude increases, achievement also increases and for group A1 B2, A2 B1 & A3 B2 aptitude does not affect the achievement of an individual

4- In the study of only faculties- (a) for A1 A2 A3 (Arts, Science, Commerce) Variables.

(a) For A1 & A2 Variables Aptitude and Achievement are highly uncorrelated but for A1 A3 Aptitude and Achievement are highly correlated.

(5) In the study of gender B1 and B2 , Aptitude and Achievement are also correlated Educational Implications

The present study gives direction to predict future accomplishment of Mathematics student's teachers or parents can predict the student if he/she is fit for mathematics or not- the study is also helpful for educational and vocational guidance.

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Encl. Of Tables