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RESEARCH ARTICLE

Gender difference in academic achievement of urban and rural adolescents in different types of school

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Abstract

The purpose of present study was to see the impact of gender on academic achievement of adolescents of urban and rural area in different types of schools. It was hypothesized that girls would be higher in academic achievement as compared to boys in both urban and rural area and high and low facility schools.

The study was conducted on four hundred urban and rural adolescents aged 12-14 years studying in different types of schools, employing 2x2x2 distributions of the sample in factorial design. Sample was drawn from recognized schools of Varanasi city. An academic achievement was measured by marks of the students from academic school records and teachers rating record for reliability of achievement records were also taken for the purpose. Apart from this Personal Data Blank was also used.

The findings indicated that there were significant gender differences in academic achievement. Girls were higher in academic achievement as compared to the boys in both urban and rural areas and high and low facility schools.

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ACADEMIC ACHIEVEMENT

Academic achievement is considered as a key criterion to judge one's total potentialities and capabilities. Therefore it is more pressing for the individuals/ students to have high academic achievement. The term achievement refers to the degree or the level of success attained in some specific school tasks especially scholastic performance, in this sense academic achievement means the attained ability to perform school tasks, which can be general or specific to a given subject matter. Academic achievement could be defined as self-perception and self-evaluation of one's objective academic success. Academic achievement generally indicates the learning outcomes of pupil. Achievement of those learning outcomes requires a series of planned and organized experiences. Good (1973) has defined, academic achievement as "knowledge attitude or skill developed in the school subject usually designed by test scores or by marks assigned by teacher or by both. Consequently, academic achievement could be defined as self-perception and self-evaluation of one's objective

success. According to Kang, Shumow and Vandall (1996), academic achievement describes learners' academic self-competence, conduct and grades. Howcroft (1991) describes academic achievement, in terms of actual marks or scores obtained in an examination.

While Kong et al., (1996) refers academic achievement to the grade, Howcroft (1991) uses the actual marks attained to describe academic achievement. Either the actual marks or grade can be describing the performance of an individual in academic situations. Gorden (1995) defines academic achievement as commonly used to denote a level of attainment measured by some form of objective test. Lastly it can be concluded that in school situation, academic achievement generally means the quality and quantity of mastery of the curriculum by students.

REVIEW OF LITEATURE

Studies Related To Gender Differences In Academic Achievement

Research conducted in the 1970s or earlier provided a reasonably consistent picture of gender differences in Math and English achievement-related constructs. For example Maccoby (1966; Maccoby & Jacklin, 1974) reported gender-stereotypic differences favouring boys in Maths and girls in English. In large survey studies (e.g., Hilton & Berglund, 1974; Wise, 1985; also see Fennema & Sherman, 1977), gender differences in Maths achievement were found to be increased in size during high school years. Girls' poorer performance in Math was typically attributed to gender-stereotypic socialisation patterns (e.g., Brophy, 1985; Eccles, 1987a; 1987b; Eccles & Blumfeld, 1985; Fennema & Sherman, 1977; Meece et al., 1982).

A gender difference in Mathematics achievement has been extensively examined. Meece, Parsons, Kaczala Caff and Futterman (1982) reviewed the literature and reported that gender differences in achievement was not large in elementary school years but the girls have lower level of achievement in junior and senior high school years.

Girls had significantly higher achievement scores than did boys in both reading and Math, as well as higher self-concepts in reading, but had *lower* Math self-concepts than did boys (Marsh Smith and Barnes, 1985).

In a longitudinal study of gender differences, Wentzel (1988) suggested that female and male classroom performance remains relatively stable throughout high school, whereas female mean standardized test score declined in relation to male mean scores over this same period of time.

Hyde et al. (1990) reported, from their meta-analysis of 100 studies, that gender differences in Mathematics performance are small. Where gender differences do exist, they are in critical areas such as Mathematical problem-solving tasks, which are essential for success in many Mathematics-related fields. Girls begin to perform less well than boys do in high schools.

Skaalvik (1990) reported that girls achieve significantly higher than boys in both English and Norwegian achievements ($p < .01$), whereas there is no significant gender difference in their Mathematics and general academic self-esteem ($p < .05$). He explains that a possible interpretation is that performance in Maths requires some reading whereas performance in verbal performance is more independent of Math ability.

Marsh (1994) uses the responses of 17,544 U.S. students and 1,147 Australian students and

found that girls scored higher on English and lower on Mathematics. The results of this study are same for both countries i.e., U.S. and Australian students. Tinku and Biswas (1994) found that girls are more involved in their studies than boys and get more marks.

Helmke and Aken (1995) conducted a study on 697 students from 54 German elementary school classes. The result of this study indicates that boys have slightly higher level of Mathematics achievement than girls.

Mello (2002), reiterating Entwistle (1990), reported that females have been found to have higher grade points than males in their general academic performance. Linver, Davis, Keven and Eccles (2002) also reported to their studies that young women have slightly higher grades than young men.

In recent years research efforts (Fierros, 1999; Zhang and Manon, 2000; Johnson, 2000; Leahe and Guo, 2001; Ericikan, McCreith, and Lapointe, 2005) show no significant differences in achievement between boys and girls as they start getting acquainted with Mathematics.

Wentzel, K. R. (2004) reported from a longitudinal study of 6th through 12th graders that female Math and English classroom grades remain stable over time but their achievement test scores in both subject areas declined in older ages whereas, males' classroom grades and achievement scores in both subjects remain stable.

In summary, there are strong gender effects favouring girls for total academic achievement measures. It is strongly found that boys have higher academic achievement in Maths domains whereas girls reported higher academic achievement in language domains.

Objectives

1. To study the sex differences in academic achievement of urban and rural adolescents.
2. To study the sex differences in academic achievement in different types of school.

Hypotheses

1. Academic achievement would be higher in girls as compared to boys in urban and rural area.
2. Academic achievement would be higher in girls as compared to boys in high and low facility of school.

METHODOLOGY

SAMPLE

The sample of present study consisted of four hundred urban and rural adolescents studying in different types of schools, employing 2 (area) x 2 (area) x 2 (sex) factorial design. For each area (rural and urban), an equal number of adolescents from high and low facility of schools were drawn. There were two hundred subjects in each area equally divided into fifty subjects in each category of schools. To ensure the representiveness of schools, equal number of boys and girls in each group were sampled from high and low facility schools. This resulted in a 2 (area) x 2 (school) x 2 (sex) distribution of the sample in a factorial design. Schools were categorized as high facility and low facility on the basis of sixteen indices of physical and educational opportunities available in them (Shukla & Mishra, 1993). The categories were given 'two' or 'one' points on each index and a median split on the index (i, e., 24) was used as criterion for distinguishing between high and low facility schools. These indices were- location of school (open area-congested area), building (good-poor), space (sufficient-insufficient), furniture (good-ordinary), physical amenities such as electricity and running water (adequate-inadequate), teaching aids (sufficient-insufficient), facility for games and sports (adequate-inadequate), staff (permanent-temporary), teachers training (mostly trained-untrained), method of instructions (active-passive), teacher-student

interaction (good-poor), discipline (good-poor), extracurricular activities (sufficient-insufficient), school uniform (proper-improper), health facility (sufficient-insufficient), and conveyance facility (sufficient-insufficient). Thus schools which contained good building, had a proper space and physical amenities, provided adequate visual aids, facilities for games and sports, recreational and extracurricular activities, conveyance and health facilities and trained personnel etc.were put in the category of high facility schools. On the other hand, the schools which were lacking in or were not equipped with the above facilities were regarded as low facility schools.

Area was categorized as urban and rural. The area which comes under municipal's undertaking was considered known as urban area. Rural area had been defined as the area which is situated 15 km. away from the centre of the city and included under Gram Panchayat. The occupation of the people in rural area was mainly agriculture based. In this area conveyance facility was not easily available and the people usually follow traditional way of life. Another feature of rural area was the absence of civic amenities such as absence of clear water supply, transportation facility, and sanitation etc.

Table-1

Sample Distribution (N=400)

Area	High Facility school		Low facility school	
	Boys	Girls	Boys	Girls
Urban	50	50	50	50
Rural	50	50	50	50

TOOLS OF RESEARCH

Academic achievement

The marks of students in the two previous annual school examinations were obtained from the school records to get an index of academic achievement. For the purpose of this study, marks in the respective subjects were chosen because they are ecologically valid and vital for progress in school.

Need for construction of teacher's rating scale

The percentage of aggregate marks obtained at the annual examination had been taken as a

measure of academic achievement. Various measures of academic achievement like essay type, objective type test, grading, ranking etc. have their own limitations. So it was difficult to select and decide on the technique for the objective and reliable measurement of academic achievement which would have least limitations and at the same time, be simple and convenient to handle. Suitable standardized achievement tests related to the all subjects prescribed in the curriculum of C.B.S.E. board were not found at the time of the execution of the study. Further, it has been pointed out that grade point average, which covers a larger span of time involvement, is more sensitive to motivational

influence that the standardized test (Schulz & Pomerantz, 1974). In Indian context, the annual examination marks are one of the most important criteria for the students' future admissions and employment. Such a measure of academic achievement has extensionally and efficiently been used by several other researchers (Sinha, 1970; Dutt & Sabharwal, 1981; Gandhi, 1982; Giri, 1987, Giri, 1995) etc.

In order to make the measurement of academic achievement more objective and reliable, after consulting experts of Education, it was decided to obtain teacher's rating for each subject viz.,

Analysis of sex differences of the dimensions of academic achievement

English, Computer, Hindi, Mathematics, History, Geography, Arts, Sanskrit, Science, and Overall school subjects on five point scale i.e., excellent, very good, good, average, and below average.

Coefficient of correlation between academic achievement and teacher's rating was later found highly significant in the present study.

RESULTS AND DISCUSSION

The obtained data were statistically analyzed in terms of mean, standard deviation and t test.

Table-2

Mean, S.D., and t value of various dimensions of academic achievement in High facility school

Dimensions of academic achievement	Boys		Girls		t
	Mean	S.D.	Mean	S.D.	
Hindi	67.97	13.04	77.15	12.51	5.078***
English	67.69	12.81	75.40	13.64	4.119***
Science	74.32	13.34	71.03	13.59	1.724
Sanskrit	70.20	13.87	71.30	12.76	.586
Mathematics	74.91	12.75	67.24	13.32	4.162***
History	67.06	15.14	68.38	15.00	.619
Geography	66.81	13.78	68.60	12.61	.955
Computer	69.69	14.22	71.54	12.64	.969
Arts	70.12	13.44	73.01	11.84	1.613
Overall school subjects	617.90	100.99	633.32	93.15	1.123

*P<0.05, ** P <0.01, P<0.001

Table 2 reveals that in high facility school, boys have scored significantly higher on Mathematics ($t = 4.162$, $P < 0.001$) domain whereas girls have scored significantly higher on Hindi ($t = 5.078$, $P < 0.001$), and English domains ($t = 4.119$, $P < 0.001$).

Table-3
Mean, S.D., and t value of various dimensions of academic achievement in low facility school

Dimensions of academic achievement	Boys		Girls		t
	Mean	S.D.	Mean	S.D.	
Hindi	63.01	13.38	68.78	11.94	3.213**
English	60.00	13.11	67.22	13.34	3.859***
Science	58.48	13.57	68.34	13.56	5.140***
Sanskrit	61.77	14.38	71.36	13.47	4.866***
Mathematics	61.12	13.89	65.68	13.14	2.385*
History	64.91	14.81	66.52	12.88	.823
Geography	61.32	12.65	67.18	12.07	3.350**
Computer	62.80	14.02	69.79	12.94	3.660***
Arts	63.55	13.15	71.75	13.56	4.337***
Overall school subjects	556.81	96.66	616.81	93.82	4.454***

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

A study of Table 3 indicates that in low facility school, boys have scored significantly higher on Mathematics ($t = 2.385$, $P < 0.001$) domain whereas girls have scored significantly higher on Hindi ($t = 3.213$, $P < 0.05$), English ($t = 3.859$, $P < 0.01$), Science ($t = 5.140$, $P < 0.001$), Geography ($t = 3.350$, $P < 0.001$), Computer ($t = 3.660$, $P < 0.001$), Arts ($t = 4.337$, $P < 0.001$), Sanskrit ($t = 4.454$, $P < 0.001$) and Overall school subjects ($t = 5.140$, $P < 0.001$).

Table-4
Mean, S.D., and t value of various dimensions of academic achievement in urban area

Dimensions of academic achievement	Boys		Girls		t
	Mean	S.D.	Mean	S.D.	
Hindi	66.79	13.70	77.20	13.48	5.415***

English	65.34	12.63	74.83	14.86	4.860***
Science	69.20	14.34	70.75	13.84	.777
Sanskrit	64.10	14.12	74.31	14.44	5.057***
Mathematics	74.20	14.50	67.93	14.72	3.031**
History	65.59	15.69	67.94	14.66	1.094
Geography	66.09	14.77	68.27	12.74	1.118
Computer	69.32	15.48	72.21	13.59	1.402
Arts	69.72	13.84	71.89	13.43	1.122
Overall school subjects	607.01	107.22	627.94	100.64	1.424

*P<0.05, ** P <0.01, P<0.001

Table 4 revealed that in urban area, boys have scored significantly higher on Mathematics ($t = 3.03$, $P < 0.01$) domain whereas girls have scored significantly higher on Hindi ($t = 5.415$, $P < 0.001$), English ($t = 4.860$, $P < 0.001$), and Sanskrit domains ($t = 5.057$, $P < 0.001$).

Table-5
Mean, S.D., and t value of various dimensions of academic achievement in rural area

Dimensions of academic achievement	Boys		Girls		t
	Mean	S.D.	Mean	S.D.	
Hindi	64.19	13.05	68.72	10.79	2.677*
English	62.35	14.20	67.80	12.33	2.895*
Science	61.62	14.06	68.94	12.05	3.954***
Sanskrit	62.77	14.44	71.92	12.32	4.816***
Mathematics	69.62	11.95	65.03	13.76	2.521*
History	62.59	13.76	66.12	13.59	1.824
Geography	66.81	13.78	68.60	12.61	.955
Computer	69.32	15.48	72.21	13.59	1.402
Arts	63.95	12.92	72.87	12.01	5.056***

Overall school subjects	617.90	100.99	633.32	93.15	1.123
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***P<0.05, ** P <0.01, P<0.001**

A study of Table 5 indicates that in rural area, the boys have scored significantly higher on Mathematics ($t = 2.521$, $P < 0.05$) domain whereas girls have scored significantly higher on Hindi ($t = 2.677$, $P < 0.05$), English ($t = 2.895$, $P < 0.05$), Science ($t = 3.954$, $P < 0.001$), Sanskrit ($t = 4.816$, $P < 0.001$) and Arts domains ($t = 5.056$, $P < 0.001$).

An inspection of table 2 to 5 indicates that in dimensions of academic achievement, boys have scored significantly higher on Mathematics domain whereas girls were higher on all dimension of academic achievement in urban and rural area as well as high and low facility schools.

The results indicated that girls have scored significantly higher in all the dimensions of academic achievement than boys except the dimensions of Mathematics. In the dimension of Mathematics males are better than females. Researchers conducted in 1970s or earlier provided a reasonably consistent picture of gender differences in Mathematics and English achievement-related constructs. For example Maccoby (1966) Maccoby & Jacklin, (1974) reported gender-stereotypic differences favoring boys in Mathematics and girls in English. In large survey studies (e.g., Hilton & Berglund, 1974; Wise, 1985; Fennema & Sherman, 1977), gender differences in Mathematics achievement were found to be increased

in size during high school years. Girls' poorer performance in Mathematics were typically attributed to gender-stereotypic socialization patterns (e.g., Brophy, 1985; Eccles, 1987a; 1987b; Eccles & Blumfeld, 1985; Fennema & Sherman, 1977; Meece et al., 1982). Brophy, in particular, emphasized that gender differences in academic achievement decline and may eventually disappear altogether. In recent Australian research, however, other researcher analyzed the same trends in gender differences over a decade in performances on high school certificate tests and found a steady increase in the performances of girls relative to boys that was consistent across different school subjects, geographical regions, and types of schools, leading educators to propose special programs to improve boys' educational outcomes.

Correlation between Academic Achievement and Teacher's Rating Scale

In order to check the reliability of measures of academic achievement (marks obtained in the last two annual examinations), attempt was made to find out the relationship between academic achievement and teachers rating scale. For achieving this, subsidiary research objective, coefficients of correlation between these two measures were calculated. Related results are being reported in Table 6.

Table-6
Correlation between academic achievement and teacher's rating scale of urban and rural boys and girls in high and low facility schools

Variable	High and Low facility school	Urban and Rural area	Boy and Girls	Total
Academic Achievement	.739** (.783**)	.830** (.769**)	.845** (.856**)	.803**

****P<0.01**

Note: Figures in parenthesis indicate the correlation between academic achievement and teacher's rating scale in low facility school, rural area and girls.

The result revealed that academic achievement was found to be significantly positively correlated with teacher's rating scale among high facility ($r = .739$, $p < 0.01$) and low facility schools ($r = .783$, $p < 0.01$), urban ($r = .830$, $p < 0.01$) and rural area ($r = (.769$, $p < 0.01$) and boys ($r = .845$, $p < 0.01$) and girls ($r = .856$, $p < 0.01$) and for total sample ($r = .803$, $p < 0.05$).

These findings are in tune with the findings of Sharma (1977). He concluded that the reliability of teacher's ratings as one of the true measures of academic achievement. Krupezak (1970) also found that teacher's perception of students' academic ability was correlated with students' self-concept of academic ability. In a recent study Chang (2006) has reported significant correlation between child's self-concept and teacher's rating and child's academic achievement and teacher's rating.

SUGGESTIONS AND IMPLICATIONS OF THE STUDY

The study has confirmed that gender stereotype of students exist in the schools that were included in the study. Gender stereotypes, gender discrimination and preferential treatment tend to diminish the academic achievement. It is therefore suggested that boys and girls should be treated equally in all spheres of life, including what is expected from them, subjects offered as well as subject choice and career development in order to eradicate gender stereotypes.

LIMITATIONS OF PRESENT STUDY AND FUTURE RESEARCH

The study is heavily dependent on report cards of the students for performance evaluation. Further study should try to evaluate performance changes in other parameters like creativity. However, this could be possible only if the schools keep a record of evaluation of creativity for students at least on annual basis. Admittedly, this has problems.

The researcher could not draw the sample from other boards (U.P. board and I.C.S.E.) due to time constraints. The future research can be made more meaningful using larger samples in different boards.

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