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A comparative study of Arithmatic skills of boys and girls of IX class studying in English and Hindi medium schools

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ABSTRACT

The present study is a comparative study to find out level of arithmetic skill among boys and girls of English and Hindi medium studying in class IX. The purposive sampling technique was used in the selection of 200 samples-100 each from both English and Hindi medium schools distributing 50-50 equally among boys and girls. The objective was to compare the level of arithmetic skills of boys and girls studying in English and Hindi medium schools. The study concluded that the boys of English medium showed more grade appropriate mathematics in comparison to boys of Hindi medium school. The result highlights that there was no significant difference between girls and boys of English and Hindi medium on arithmetic assessment scale *i.e.* in concept, operation and application.

KEY WORDS : Arithmetic skill, Arithmetic ability, Grade level

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A mathematical skill is the ability to represent or process information in one or all of the many mathematical domains (e.g., geometry) or in one or a set of individual competencies within each domain. Children used a greater variety of problem-solving strategies during calculations, including sophisticated strategies more typically observed in older students. Individuals display a mathematical disability when their performance on standardized calculation tests or on numerical reasoning tasks is comparatively low, given their age, education and intellectual reasoning ability.

According to psychologists, the mathematical abilities that are required for narrative are pivotal in being able to think mathematically, so that stronger those abilities are, the better equipped an individual will be to do mathematics.

Although the study of mathematical cognition is hardly new, recent and renewed interests in delineating cognitive influences on mathematical ability coincides with efforts to promote successful mathematics achievement for all students, including children with learning difficulties in mathematics. In this paper, a few of the neuropsychological factors have been considered that correlate with mathematics ability, some that mediate cognitive correlates of mathematical performance, and others that predict later mathematical achievement outcomes. Relatively new methodological approaches allow oneself to look beyond static group differences between children with versus without mathematical disabilities.

Educationalists propose that teachers' knowledge of these factors can serve to enhance their ability to identify children at risk for poor math achievement, and to thereby determine which children may benefit from instructional modifications of mathematics activities aimed at reducing processing demands. The objectives of the study was to compare the level of arithmetic skills of boys and girls studying in English and Hindi medium schools. It was hypothesized that English medium boys and girls will show significant difference in arithmetic skill as compared to Hindi medium boys and girls.

RESEARCH METHODS

Sample:

The purposive sampling technique was used in the selection of sample for present study. Sample size consisted of total 200 samples-100 each from both English and Hindi medium schools distributing 50-50 equally among boys and girls.

Tools for the data collection:

Education assessment tool (Arithmetic)- Child guidance centre and Adolescent guidance service centre (National Institute of Public Co-operation and Child Development), New Delhi was used for the study which is the derived form of Comprehensive inventory of basic skills by Albert. H. Brigance. The test was administered in a group of 15-20 students at a time.

Techniques used for analysis of data:

This arithmetic skill assessment is made by analyzing each grade level, if students have more than 80 per cent accuracy in any of the grade levels only than next grade assessment is made. Overall analysis of percentage was attempted.

Test of significance:

It was used to compare arithmetic ability among students of English and Hindi medium schools studying in Grade IX.

χ^2 of significance:

It was used to compare arithmetic skill among school boys and girls in Grade IX of English and Hindi medium schools.

RESEARCH FINDINGS AND DISCUSSION

The level of arithmetic ability among boys of Hindi medium and English medium when analyzed on the basis of 't' value, revealed that 20 per cent of English medium boys showed grade appropriate mathematics as compared to Hindi medium which was only 6 per cent in contrast, English medium boys of IX class showed above average result in I to V Grade in comparison to Hindi medium boys.

Fig. 1 represents comparison among boys of English and Hindi medium according to their grade appropriate mathematics. English medium boys have significantly higher mean (35.6) as compared to mean of Hindi medium boys (21.77) with t = 1.89 significant at .05 level of significance. It indicates that Hindi medium boys showed less grade appropriate mathematics than boys of English medium.

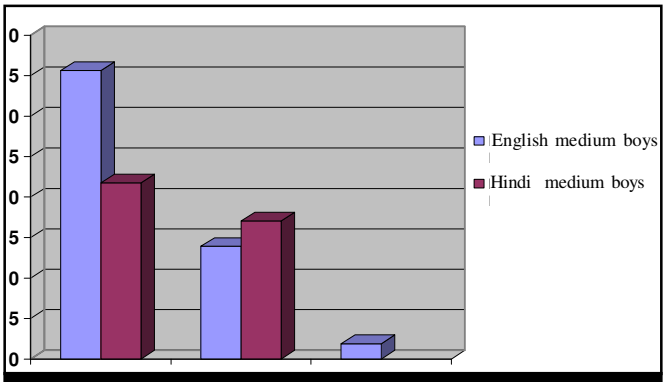

Fig. 1: Comparison of arithmetic ability among boys of English and Hindi medium

The level of arithmetic ability among girls of English and Hindi medium according to norms of children on grade appropriate mathematics scale depicted that 12 per cent of English medium girls of ninth class showed grade appropriate mathematics in comparison to Hindi medium girls which was only 2 per cent. Around 14 per cent of Hindi medium girls could clear seventh and eighth Grade, respectively whereas 42 per cent of English medium girls could reach seventh and eighth grade, respectively. The above data depicts that English medium girls have better arithmetic ability according to their grade.

Fig: 2 highlights the comparison of girls of both medium studying in class IX. English medium girls have higher mean=24.7 than Hindi medium mean =15.93 (t=0.97<.05) though not significant. Hence, it can be concluded the English and Hindi medium girls did not differ significantly with each other according to their grade appropriate mathematics.

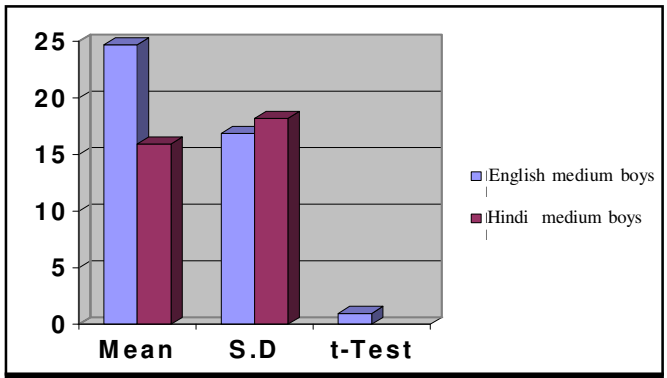

Fig. 2: Comparison of arithmetic ability among girls of English and Hindi medium

The data indicate comparison of boys and girls of Hindi medium on the basis of their grade appropriate mathematics in which Hindi medium boys scored higher mean (m=21.77) than Hindi medium girls (m=16.88). The non-significant difference between boys and girls of Hindi medium (0.587<.05) highlights that both girls and boys of Hindi medium did not differ significantly in Grade IX.

Similarly arithmetic assessment of boys and girls of English medium indicates that boys and girls of English medium did not differ significantly with each other and it can be concluded that both the groups showed similar grade appropriate mathematics. Bow-Thomas *et al.* (1996) and Byrd-Craven (2008) have also done some works concerning to the present aspects.

The results of Fig. 3 reveal that majority (40%) of girls studying in English medium have problem in operation based questions compared to 30 per cent of English medium boys. Similarly, girls (26%) as compared to boys (10%) faced difficulty in Concept based questions. Contrary to that boys (40%) faced more problems in application based questions than girls (22%). This data reveals that girls faced comparatively more problems in

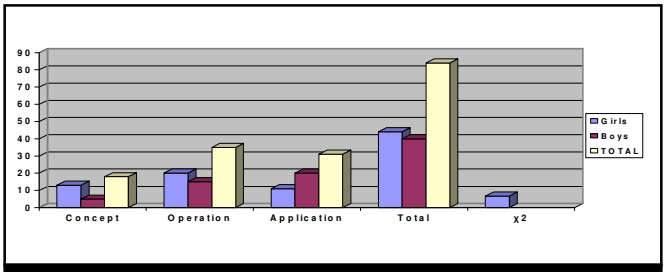

Fig. 3: Comparison of arithmetic ability among English medium school boys and girls

arithmetic concept and operation whereas boys found application based questions difficult. When an over all comparison of arithmetic skill among English medium boys and girls was done the data reveals the basics of concept, operation and application, scored χ^2 =6.707 at 0.05 level of significance at 2 df, 6.707>5.99. This highlights significant difference between boys and girls of English medium according to three arithmetic skills which proved that girls have more problems in arithmetic skills than boys.

Very less difference among boys and girls in the given parameters of concept, operation and application was revealed. Girls were having significantly higher problems in operation based questions and boys in concept based questions. The data are not in congruence with English medium boys and girls data which showed clearly higher percentage of boys having application related problem whereas girls having concept and operation related problem (Fig. 4).

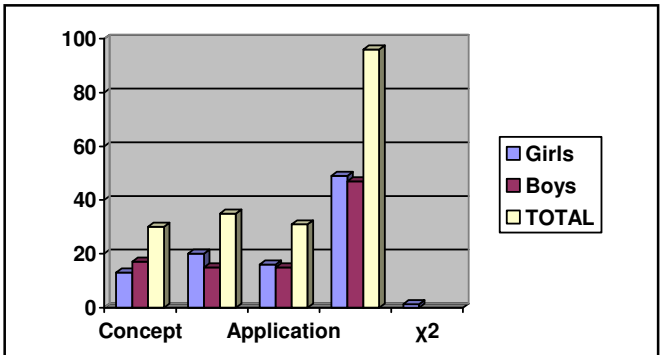

Fig. 4: Comparison of arithmetic skill among English and Hindi medium boys

The results revealed no significant difference between boys and girls of Hindi medium according to three arithmetic skills. Over all results manifest that English and Hindi medium boys and girls have scored χ^2 – 0.659 at 0.05 level of significance .There was no significant difference between girls of English and Hindi medium according to their arithmetic skills. This proved that level among English and Hindi medium girls on basis of concept, operation and application skills was similar.

The data reveal that there was a major difference between English and Hindi medium boys in terms of concept related problems. Only 10 per cent English medium boys have problems in concept related problems whereas 34 per cent boys of Hindi medium have concept related problem. Equal numbers of boys in English and Hindi medium have operation related problems.

Comparison of arithmetic skills among English and Hindi medium boys showed that both groups of boys have scored χ^2 - 6.74 at 0.05 level of significance 6.74> 5.99 which reveals significant difference between boys of English and Hindi medium according to three arithmetic skills. The results thus proved that there was significant difference between boys of both medium in arithmetic skills.

It can be concluded as hypothesized on the basis of present study that boys of English medium will score better than boys of Hindi medium on arithmetic assessment scale Hence, the hypothesis is accepted at 0.05 level of significance.

The present study highlights no significant difference between girls of English and Hindi medium on arithmetic assessment scale. Hence, it indicates that level arithmetic is similar in both the medium. So, in this condition hypothesis is not contradicted.

The present study was conducted in two phases. The purpose of initial phase was to estimate the prevalence of grade appropriate arithmetic skill among boys and girls of English and Hindi medium and in next phase an attempt was made to determine the pattern of arithmetic skill on concept, operation and application bases.

Findings from first phase indicate that prevalence rate of arithmetic skill according to grade appropriate mathematics was more in girls than boys and highly prevalent in Hindi medium than English medium children. This is congruent with findings from previous studies conducted in England (Lewis *et al.,* 1998) which also showed that prevalence rate was higher for boys in grade 5-7, while in grade VIII more girls were identified as having arithmetic disability. Several studies have reported no sex difference in prevalence of arithmetic disability, while others have reported that children with arithmetic disability are characterized by slightly higher prevalence in female than males (Bull and Scerif, 2001) found substantial sex difference in arithmetic reasoning ability in favour of boys in a study on 9927 children. Similar type of results were observed in present study which revealed that boys had more reasoning and application

skill in comparison to girls.

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