

An Investigation on Mathematical Ability of Boys and Girls Based on the Result of Xth Standard Board Examination under SEBA, during 2005-2007 in the High and Higher Secondary Schools of Nagaon Town, Assam

Dr. Samir Uddin Ahmed, M.A, M. Phil, Ph. D.

HOD & Associate Professor
Department of Education
Nowgong College
Nagaon, Assam, India

Abstract:

The study was conducted to know the mathematical ability of boys and girls based on the final result of H.S.L.C./10th Examination, under the Board of Secondary Education Assam (SEBA) in the high and higher secondary schools of Nagaon Town during 2005-2007. The main purpose of this study was to find out whose mathematical ability is better between boys and girls? It is the general assumption that girls are comparatively slower in mathematics than the boys. Their enrolment in engineering, business and business management are poor too. But in general achievement tests girls' performances are found not so backward. In some academic courses girls' are seen showing better results than the boys'. So the investigator was very much inquisitive to know about the mathematical ability of students. He therefore explores a small area of Nagaon town, as representation of the other towns of Assam. Through this study, he also wants to aware the students about the importance of mathematics and its larger application in the field of engineering, banking, business and so on.

Keywords: *Mathematical ability, attitude, skills, education, capacity, commercial and technical courses*

Introduction:

Ability is a power to perform responsive acts. These are different from persons to persons. Again abilities are interrelated to intelligence, thinking and reasoning. Mathematical ability is one of the important abilities of man. It helps in engineering, banking, business, in some special studies as well as in domestic matters. "Mathematical results possess a clarity and give an intellectual satisfaction".

Mathematical ability is a broad based term and not easy to explain its nature. Some want to say that it is an inborn capacity while others refused it. According to them it can be improved by

practice. However, every one admits its importance in life. Ability plays a vital role in the field of education. Various psychological tests have been conducted to measure or to find out the particular ability of an individual and to prepare him for future vocation. Abilities are of different kinds like musical ability, clerical ability, drawing and painting ability, numerical or mathematical ability and so on. Out of these abilities mathematical ability is very important in day-to-day life. However, it is often assumed that girls are not good in mathematics. Boys are far better than the girls in this respective subject. But this assumption sometimes proof wrong. The situation is changed now. Girls are seemed to be more enthusiastic in this subject than ever before. In some achievement tests they have shown excellent results. Hence, nobody can say whose ability is better in mathematics. As an important subject and a matter of usability in almost each and every field, it can be a problem of investigation which may bring a new hope for new generation.

Objectives of the Study:

1. To find out the mathematical abilities of boys and girls of 10th standard.
2. To know about the mathematical capacities of boys and girls in general mathematics.
3. To know about both boys' and girls' ability in advanced mathematics.
4. To find out the female representatives in advanced mathematics.

Purpose of the Study:

1. To give actual information about the mathematical abilities of boys and girls.
2. To aware the people about the importance of mathematics in to-days life.
3. To change the negative attitude of people for the girls' ability in mathematics, and to increase their participation in advanced mathematics.
4. To stimulate teachers to impart skill based teaching in mathematics.
5. To encourage parents/guardians for taking special care for mathematics of their child without discriminating a girl, and prepare himself/herself for the technical or commercial courses.
6. And to give some valuable suggestions for the improvement of mathematics.

Review of Literature:

It is a new topic. No researcher has been throwing eyes in this line. Hence, research study related to mathematics is not available. However, "Kosambis Vision of Science" A Critical Appreciation, is written by M.G. Narasimhan, Published in Resonance (a journal of science education) June 2011 where Kosambis' contribution to Mathematics and Science is widely analyzed. Here, the nature of mathematics and scientific knowledge, its needs and importance etc. are clearly described (Pp 529-539). Moreover, mathematical ability in relation to intelligence is also discussed by Phunu Das in his book "Psychological Foundation of Education & Statistics"

(Pp 251-256). Discussion on “Human Abilities” is also found in “Psychological Review” published from London/Delhi 1940 by Guilford J.P.

Methodology:

Under sample survey method Questionnaire, opinionnaire, interview and observation of records are applied as tools for data collection. For Questionnaire, a set of 12 questions were prepared on different aspects of mathematical ability. At the same time, another set of Opinionnaire (10 yes/no questions) was given to the participants to make the study more reliable. People were selected for these are students, teachers, guardians, social workers, political leader and members of women organization. Again, face to face discussion was made with them on present needs and importance of mathematics. And finally, the data of result sheets (2005-07) were collected from the following 10 (ten) schools out of 25 in the Nagaon Town, Assam.

1. Nagaon Govt. Boys' Higher Secondary School.
2. Haibargaon High School.
3. Dawson Higher Secondary School.
4. Marwari Hindi High School.
5. Nagaon Bengali High School.
6. Govt. Urban High School.
7. Khagarijan Night High School.
8. Motiram Bora Girls Higher Secondary School.
9. Nagaon Govt. Girls' Higher Secondary School.
10. Bengali Girls' High School.

Results at a Glance:

Table-1

Mathematical ability of boys and girls who secured 80% & above marks in surveyed schools of Nagaon Town, Assam (based on H.S.L.C. Examination, 2005-2007)

YEAR	M/F	No. of candidates	Ability/Average marks secured in Gen. Math.	No. of candidates	Ability/Average marks secured in Adv. Math.
2005	boys	56	87.06%	17	85.51%
	girls	23	86.82%	05	84.75%
2006	boys	31	82.45%	27	89.07%
	girls	16	87.81%	08	81.15%
2007	boys	51	89.22%	18	82.83%
	girls	22	87.00%	10	84.80%

Source: result sheets 2005-2007 (SEBA).

OR

Table-2

The average marks of boys and girls who obtained 80% & above marks in mathematics in three consecutive years (2005-2007), in surveyed schools of Nagaon Town, Assam.

	Total number	Ability/Average Marks in Gen. Math.	Total number	Ability/Average marks in Adv. Math.
Boys	138	83.25%	62	86.70%
Girls	61	87.21%	23	85.57%

Source: Op. cit.

Findings:

1. In Gen. Mathematics, girls' average ability is found quite better than the boys'.
2. Boys' mathematical ability is found little improved than the girls in Adv. Math., which is not significant i.e. almost equal.
3. The wide gap which is found between boys and girls is in 'Numbers' not in merits. The number of boys in Gen. Mathematics is found three/four times greater than the girls, and two/three times greater in Adv. Math.
4. Some girls are found scoring more than 80% marks in Advanced Mathematics.
5. Some girls have shown better results in Gen. Mathematics than the boys.

Additional Information based on Questionnaire, Opinions and Observation:

1. 60% of the respondents to opinions want to say that mathematical ability is not an inborn quality; it can be improved by proper practice or exercise.
2. More than 50% of the respondents agreed that both boys and girls are almost equal in their mathematical performances.
3. Almost all respondents argued that in our male dominated society girls/women are not allowed free to choose their vocation/profession. Many parents do not like to send their daughters for studying Engineering, Commerce, M.B.A., B.C.A. etc., even though having mathematical ability. But interestingly they never hesitate to prefer teaching or medical profession if possible.
4. More than 60% respondents say that girls/women are naturally not interested in technical branch. Most of them are more interested in literary subjects than the tiresome subjects.
5. From general discussion, it is found that most of the parents/guardians are not so aware about the needs and importance of mathematics for their daughters. Their expectations for them are not beyond than to carry good marks or pass out. Their thinking is limited to the traditional thinking rather than to prefer the technical line for their daughters.

6. Sometimes socio-economic problems of our society are also responsible for the negligence of mathematics.
7. Many reasons like illiteracy, poverty, early marriage, child labour, superstition, preference to boys, lack of schools nearby, poor communication, etc. are considered as obstacles for the low enrolment of girls in schools.

Conclusion:

Mathematics is the main door and key of all sciences. It gives intellectual satisfaction. Mathematical ability is a strong ability which helps us to solve many problems of day-to-day life like shopping, buying something, home management, office management, while giving fare in the taxi's, busses or auto's, calculating something, banking and many more . From the above investigation, girls/women are found a little slower than the boys, which is not significant. Both boys and girls are found almost equal in their mathematical performances. In the rich countries like U.S.A., China and Japan men and women are equally involved in technical, medical or any other vocational courses. They are given special care of mathematics since their childhood. Girls are given full freedom to choose their interested area. But in our country, girls are specially deprived from many things which can be a barrier for developing our nation. Therefore, women should be given special care and family support to grow her life and carrier in that way she likes. This single step would be a great support for countries improvement.

Suggestions and Recommendations:

1. Parents should be made aware about the need and importance of mathematical abilities. They are to be motivated to give equal opportunities to both sons and daughters, so that any disparity cannot take place.
2. Government as well as N.G.O's should take necessary steps to remove illiteracy, poverty, early marriage, superstition, conservativeness and gender disparity from the country. Force can be imposed with law, passing in the parliament.
3. Government should provide incentives to meritorious girls/women for studying technical courses. Moreover financial aid or loan facility can also be provided to girls/women who run industry, small business, self financed business, and etc.
4. New trained teachers should be appointed in schools to impart skill based teaching.
5. Achievement tests should be organized frequently to improve mathematical ability.
6. Students should be competitive minded. School authority should organize inter school competitions where students can perform their abilities.
7. Meritorious students should be rewarded. They should be praised for their hard work and success in front of many people along with their parents.
8. Students should be motivated to do lots of practice. Only regular practice can assure high ability and immense success in mathematics.

9. Mathematical ability requires mental activeness. To solve any mathematical problems, one has to follow the formula/s that is fixed for that. Absent of mind or little mistake can spoil the whole thing and results zero
10. Conscious, concentration and regularity are the main things to get mathematical ability. One should stick to that who wants to develop his mathematics.
11. Girls are showing excellent performances in each and every field of life. Sometimes they are loading their family burden also. So, they should be given a chance to show their ability in the global platform.

References:

- Baruah Jatin. (1999). *Bharatar Sikshya-Itihas Adhayan* (pp. -456), Guwahati: Lawers book stall.
- C.F. Guildford J.P. (1940 & 1947). *Human Abilities, Psychological Review* (1940 pp-367 and 1947 pp-394), London/Delhi.
- Das Phunu et.al. (2009). *Psychological Foundation of Education & Statistics* (pp 108-113, 245-256), Guwahati: Shanti Prakashan.
- Freeman Frank S. (1971). *Theory and Practice of Psychological Testing* (pp 159-168), New Delhi: Oxford & IBS Pub.co.
- Mahadevan. S. (2011). *Resonance – a Journal of Science education*, vol. 16 (pp 535-537), Bangalore.
- Mangal S.K. (1990). *Educational Psychology* (pp 233-235), Ludhiana: Tandon Publication.