CHAPTER - 1

INTRODUCTION

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SECTION - I: CONCEPT OF UNDER-ACHIEVEMENT.
INTRODUCTION

Full many a gem of purest ray serene,
The Unfathomed caves of ocean Bear, full many
a flower is born to blush unseen. And waste
its sweetness in the desert air.

- Gray.

This spontaneous outburst of Gray in his
immortal "Elegy" can aptly be applied to the cases
of all gifted Under-scores amongst our students and
scholars. It is they who are the real flowers of a
nation "Born to blush unseen and loose their sweetness
in the desert air." A nation that suffers loss of its
talents can only cherish quite vague hopes of reaching
mighty heights of attainments and glory.

Everyday, after all, sees the light of the
day with his fundamental right of the fullest opening
of this inherent powers. Thus the problem of under-
achievement in the field of education assumes quite
serious proportions in the context of the basic
concepts of human developments.

The concept of Under-achievement takes into
account the academic achievement in relation to the
intellectual level of the individual with respect to
intelligence's wide variations have been observed by
western research amongst different individuals.
Alexander Tyler. (1969) "Despite an average or even above-average intellectual capacity, Unimpaired motor ability adequate, sensory functioning and absence of major emotional disturbance, some children fail to achieve satisfactorily in their academic work. This poor performance in the structural apparatus required for learning is commonly described as Under-achievement.

Undoubtedly education at best helps each individual to reach the maximum of his ability. It is plainly evident that students who possess the intellectual gift but still lag behind others in achievement may be rightly given the nomenclature, Under-achievement.

CONCEPT OF UNDER-ACHIEVEMENT AS AN INDEX OF EDUCATIONAL EFFICIENCY.

The concept of under-achievement has its origin in psychological and educational literature. The incidence of Under-achievment shows that for some reason students are not able to perform to the maximum extent what they are capable of. The reason for this is to be sought in the type of educational experiences to which the students are exposed. Under-achievement of students is a source of distress not only to teachers, educators, administrators, parents and society, but to all concerned with education. This
being of vital importance the concept has been developed and studied very elaborately in the western systems to find out the solution to it. But in our country much is needed to be done.

INCIDENCE OF UNDER-ACHIEVEMENT

The incidence of Under-achievement would vary with the school subject and probably with different samples. Sometimes the findings will vary from study to study and sample to sample.

Gowan (1964); who has written extensively on the topic proposed that 15 percent of Under-Achievement among gifted students is a normal experience.

Bracklin and Briclin (1969); suggested that 15 percent of all school children may fall in the category of Under-Achievement.

Shaw and Mecuen (1966); showed that the causes of Under-Achievement begins in the first grade in the case of boys and in the sixth grade in the case of girls.

Saxena (1986) has found that the incidence of failures in secondary Board education in India ranges between 44.0% to 72.0% during 1965-69.
UNESCO (1976) Report observed that around 1970's nearly 1200 million people lived in utter poverty, 460 million suffered from malnutrition, 300 million were unemployed or underemployed. Half of the world population received only 7% of the world's total earning.

This tells the said story of lack of education. Unfortunately, India lips the list. The drop out rates, which nearly 40% at the said level is quite alarming. The studies have proved that the large number of drop out at the secondary stage is because of under-achievement, especially in science and mathematics subjects.

UNDER-AchieVEMENT : EDUCATIONAL IMplications

Under-achievement is a crucial problem that needs urgent solution so as to enable the society to derive optimum benefits from the system of education. Under-achievement can be reduced to a minimum, if not eliminated completely, by identifying the contributory factors, causes and doing away with them. Before the factors are subjected to investigation under-achievement itself has to be identified. Though it is necessary to identify under-achievement at different stages during the course of a student's, educational career, there is a strong view that it is unfair to
label a youngster an under-achievers, for once he is labelled so he remains such for ever and very often the label is erroneous in many respects.

Education is the very basis of nation's prosperity and welfare in a developing country, like ours. It is the foremost national investment which will help our country in ranking amongst the top nations in world affairs. India is blessed with many gifted individuals. What Wedmeger (1953), had referred about Russia in nation turning as out to be a big country cannot afford this waste of its most vital resource talent.

Wastage of talent is a matter of deep concern in India. In India, the problem assumes special significance in view of the two facts: One; the rapidly growing population on one hand and widening of the horizon of knowledge on the other hand.

Second, the high degree of wastage in our educational efforts both at the primary and the secondary levels.

In Western countries according to certain estimates, under-achievers comprised approximately 25 percent of the backward children. In India, it is apprehended the percentage is much higher, thus involving a higher rate of wastage. Now the question is how soon this wastage can be minimised and
with what means? Here lies a challenge to our educators, psychologists, and mathematicians. Numerous studies of this nature have been conducted in the Western countries. But in India a few studies have been done on the general academic under-achievement. But these studies have not covered the factors especially related to mathematics which is the most important subject. In Indian conditions mathematics is the single subject which has caused maximum wastage. Khotari commission, (1966) while contemplating on the problem of under-achievers remarks has observed.

"The group of under-achievers who are not intellectually dull but are not at least of average and may even be of superior ability. The failure of such children should be of great concern to developing country like India which cannot remain indifferent to this loss of potential manpower within the higher ability range. Several factors like physical intellectual emotional and environmental contribute to the failure of under-achievers to come up to the level of their talent abilities."

Shaw (1966), Deo (1967), Dehan and Haxighurst (1961), Frankel (1961). Choudhary (1976), Sharma (1978) have found that nature of under-achievement results from a number of causes which are independent or interrelated. One factos or a combinations of factors can be attributed to under-achievement. The degree of under-achievement varies in according to these factors.
Wellington and Wellington (1964) write that the guess that a child is an under-achiever is not enough because guess even by professionals have been proved to be incorrect by researches.

Under-achievement is a problem which needs to be attended. A psychologist, economist, mathematician, teachers, researchers and parents. In a democracy all pupils are entitled to an educational programme which will foster optimal development in keeping with their capacities.

The phenomenon of under-achievement is both a builder and a challenging one building in its complexities and challenging in the significance of its reversal/frequency.

Raph, Goldberg and Pasaw (1966): observed

"Recognition of academic achievement a serious psychological and social problem reflects the values of a culture which attempts to look beyond performance to potential, maintaining a prolonged compulsory system of education, seeks to nurture and develop diversity of abilities within and amongst individuals, and concerns itself with the maximum development of the individual as well as his contribution to society."
Now the whole world has realised that the talent unchanneled on & unevoked is a tremendous waste. Comparing the unsatisfactory rate of growth talented persons in United states and in India the problem seems to be serious.

**NEED TO MINIMISE UNDER-ACHIEVEMENT**

This study is concurred with scholastic under-achievement among intellectually superior-high school students. The ever growing spectrum of our scientific and technological progress from the harnassing of atomic energy to the conquest of outer space, has placed a special premium on talent and brain-power in all areas of human thought and endeavour. The young people whose scholastic performance lacks for behind their intellectual ability represent a serious loss of society in terms of their potential contributions, In addition, failures to achieve at the level of their ability often leads to a depreciation of self-worth accompanied by unhappiness and frustration.

The under-achievers have restricted opportunities for higher education and at the same time, they have difficulties in obtaining a suitable job. Many a times, these under-achievers who could have been of great use to society misuse their
potentialities and become a nuisance to others. As the under-achievers find themselves unable to concentrate on studies, they create tension in society by their violent behaviour.

Thus these under-achievers not only spoil their own future but also in doing in the transquint of the society becoming irrepossible towards their studies.

MEANING OF THE TERM UNDER-ACHIEVEMENT.

The term under-achievement is creatical to express, as it is linked with psychological and sociological problems. It compries of various factors and causes. It is difficult to select identical groups of under-achievers. The question is whom to call under-achievers? How are they to be identified? In the previous studies conducted in India and abroad, it has been the term has been defined by different ways, and meaning has changed from person to person.

UNDER - ACHIEVERS

Englist and Englist (1958) defined under-achievement as "performance poor than predicted from and aptitude measurement"

Under-achievers are defined as those inividuals whose actual achievement falls short of
at least one standard error of estimate below the regression line predication of achievement.

Under-achievers is that student whose performance is lower than the performance of an average student.

Under-achiever is the individual who is falling below his learning capacity that is not learning at par with his learning capacity.

Under-achiever is that student who is in lowest or fourth quartile of the same class with scholastic attainment at average of a percent or less.

Shah, (1966); Contends that "Under-achievers are those pupils whose intelligence was measured to be normal (IQ. 85 to 110) but whose academic achievement was rated by teachers as below average".

Kothari commison (1966) has defined under-achievers as, "The group of under-achievers consists of children who are not intellectually dull, but are of atleast average and may even be of superior ability."

Burt, (1974); Contends that the term "Under-achievers is used for the child whose academic achievements are below average."
Sinha, (1970) has defined an under-achiever as, one who either fails or passes an university examination in third division.

Sinha (1971) defined under-achievers as, "whose intelligence score is equal to or greater than 60 and the achievement on the diagnostic achievement test is equal to or less than 34 percent."

Wellington (1964) defines Under-achieves as, "one who possess ability to achieve considerably higher grades than his record shows."

THE WORDS SYNONYMOUS TO UNDER-ACHIEVEMENT.

There are some words which are used to express the term under-achievement.

Retardation is used to express one who is incapable of learning inspite of his continuous efforts to pass the examinations.

Backward is used for a pupil whose achievement is low and his intelligence is not less than normal.

Backwardness is a comparenansive term which may not be used to describe the pupil's having various types and degrees of learning difficulties.

Dull pupils: such pupils are backward due to lack of intelligence.
Burt, (1974) suggests that we should describe a backward child as one whose education quotient is below 85 this was widely accepted.

Backwardness and Retardation

Prendasm, (1966): Retardation is measured in terms of the extent to which the educational age falls below the mental age, while backwardness is measured in terms of the extent to which the child's educational age falls below his 'chronological age'.

Failures and Under-achievers

In general failures and under-achievers are understood to be the same but, 'failure' and Under-achievers are two different expression.

Under-achievers can be a failure but a failure can never be an under-achiever.

There are some synonymous terms like low-achievers, poor-achievers, non-achievers etc. These terms are closer to 'failure' than to 'under-achiever'.

The main difference between failure and Under-achiever is the absence or presence of ability.
A failure could not have done better than what he did because of the limits of his ability where as an Under-achiever is one whose ability can permit him to do better but is unable to do so because of other factors not related to ability.

As already pointed out Under-achiever are those who are in fact capable of getting good marks, as they are sufficiently intelligent but due to certain other causes they are unable to concentrate on their studied and thus are unable to utilise their potentialities, these Under-achievers are quite different from failures.

ACHIEVEMENT AND UNDER-ACHIEVEMENT

ACHIEVEMENT: The learning experience accomplished on a course content imported to the learner in a specified period.

Low achievement in mathematics Shah (1967) observes Achievement of a pupil in mathematics is considered to be low when he score less than 40 percent in the subject.

Achievement of the student when below the level average score is termed as low achievement.

Achievement below the average achievement without any preformance to the 'intellectual capacity is low achievement.
Normal-Achievers: is that where performance is better than the performance of an average student of the same ability.

Higher-achievers: Diderosinha (1971) describes as, are those who obtained 56 percent of marks but percentage of marks is not the only criterion for over-achievers.

Achiever above the average achievement without any reference to the intellectual capacity.

Over-Achievers: is performance better than the performance of an average student of the same ability.

One achieve above the level expected of him on the basis of his intellectual potential.

Low-Achievement and Under-Achievement

The terms under-achievement is often conterminous with low achievement. This unfortunate confusion has been responsible for the scant attention given to the treatment of Under-achievement. One possessing low ability will, in general, achieve low but he need not be an under-achiever, if he is achieving q5 pqr with his ability. If one does not achieve as much as he is capable of achieving i.e. the level of achievement is less than what it ought to be on the basis of his intellectual potential, it is a case of Under-achievement.
SECTION - II

ROLE OF MATHEMATICS IN MAN'S LIFE
ROLE OF MATHEMATICS IN MAN'S LIFE

"The ideas of quantity and ideas of number are fundamental to all".

- A.N. Whitehead

Education is preparation of life. It modifies and refines the behaviour of the individual and enables him to adjust to his environment. It is thus related to life but the system of education in our country does not fulfil these criterion in totality. Indian Education Commission (1966) comments, ".......... the existing system of education is largely unrelated to life and there is a wide gulf between its content and purpose and the concerns of national development."

Our education system needs a complete re-orientation and re-organisation. This re-orientation and re-organisation of education cannot take place unless it is science-based and gives an important place to mathematics in modern curriculum emphasizing the importance of mathematics.

The Education Commission (1966) observes "one of the outstanding characteristics of scientific culture is quantification. Mathematics therefore assumes a prominent position in modern education apart from its role in the growth of the physical sciences. It is now playing increasingly important part in the development of biological science. The advent of automation and cybernetics in this country marks the beginning of the new scientific industrial revolution and makes it all the more imperative to devote special attention to the study of mathematics. Proper foundation in the knowledge of the subject should be laid at school."
During our lifetime mathematics has provided tools of discovering new scientific principles, inventing new machines and new product, creating computing machines, and electronic memories developing strategy for games, business and Govt., harnessing, atomic energy, directing traffic and communication, navigating jats and space vanicles, forecasting storm, floods any crop condition, etc.

The technological revolution in our country makes it all the more imperative to devote special attention to the study of mathematics as it plays a vital part in technical professions, atomic research, acquiring self-sufficiency and full employment. At the base of all the scientific and technological knowledge, lies the learning of mathematics, which is said to be 'The science of all the sciences'.

**NATURE OF MATHEMATICS**

"Mathematics is the science of measurement quality and magnitude."

Mathematics is a basic survival-skill. Its qualification, crude or sophisticated, is essential in various walks of life. A person devoid of numeracy is greatly handicapped in the struggle for survival. Mathematics holds a central position in the field of knowledge and enriches every branch of knowledge by
its sophisticated techniques and approaches towards accurate qualification.

It is the numerical and calculation part of man's life and knowledge. It helps the man to give exact interpretation to his ideas and conclusions. It deals with quantitative facts and relationships as well as with problems involving space and form, "Mathematics may also be defined as the science of abstract form."

"Mathematics is also called the science of logical reasoning". In, it we approach everything with a question mark in our mind.

Locke said, "Mathematics is a way to settle in the mind a habit of reasoning". Keyser says "Symbolic logic is mathematics; mathematics is symbolic logic". Lindsay says, "Mathematics is the language of physical sciences and certainly no more marvellous language was ever created by the mind of man" Thus man has the ability to assign symbols for objects and ideas. There are many symbols which are used in mathematics.

< - Greater than
> - Less than
= - Equal to
\[\sum\] - Summation
\[\sqrt{\cdot}\] - Square root
\[\equiv\] - Congruence
\[(a+b)^2 = a^2 + b^2 + 2ab\]

The students must be made familiar with them so that they are in a position to understand mathematical processes and conclusions and mathematical literature. Many of them have interest in the subject because of their inability to understand mathematical language and symbolism. They cram the statements and processes and try to solve problems mechanically. Rather they should be enabled to understand and appreciate precision, brevity, logic, sharpness and beauty of mathematical language.

Mathematics is significant for both a scholar and layman, though their perceptions differ. Polya (1945).

"Mathematics presented in a Euclidian way appears as a systematic deductive science, but mathematics in the making appears as an experimental inductive science."

Mathematics is a science and also an art. As a way of thinking it can be used to determine whether or not an idea is true or at least probably true, and as a way of reasoning it gives us insight into the powers of the human mind.

Mathematics is also of intrinsic nature. Dienes, (1960): Mathematics is based on experience, it is the crystallisation of relationships into a
beautifully regular structure distilled from our actual contact with the world.

"Mathematics is a kind of language"

It is a calculative language, with extreme degree of precision, we manage to express any number of things with only the symbols, like as; 0-9.

5 + 7 - '7' stands for a groups of 7
5 + 7 - '7' stands for a Number of groups:
57 - '7' stands multiplication of 5 at '7' times.

IMPORTANT OF MATHEMATICS

"Human talent is our greatest national resource, its conservation and development should, therefore, be a primary concern of every one. When human talent is wasted, every one is deprived, when it is rightly developed, every one is benifits."

- Harriot (1963)

As the twenty first century draws near, the information and the technological changes are effecting all aspects of society. This is the age of automation. The have opened new era of development recent revolution in micro-computer technology space. Science, Unless we bosess the knowledge of mathematics at all levels of our citizens, we shall not be able to fill up the gap between the advanced countries and the developing contries, of the world and the gap shall continue to widen.
Education must be oriented to the needs and demands of the society. Mathematics enables to fit oneself into a changing world and makes one ready to adopt oneself to new circumstances as it arise.

The National policy on Education (1986), says that, "Mathematics should be visualised as an instrument to train a child to think, reason, analyse and to articulate, logically. Apart from being a specific subject it should be treated as a concomitant to any subject involving analysis and reasoning."

"Young children usually have an extremely inadequate grasp of some abstract qualities"

- Piaget.

"Mathematics is the science of abstract thing". It uses abstraction and symbolism. Mathematics requires its own high-brow style of reasoning because of its exclusive use of symbols. The sort of reasoning used throughout in mathematics is just the same as that used in everyday life.

Mathematics gives us a training of developing a habit of thinking in a concise, precise and economical way.

Piaget, (1952) says, "Mathematics is things of manipulation" described by following stage.

Stage - I  - (0-4 years) pre-operation stage.
Stage - II  - (4.7 years) Concrete operation stage.
Stage - III  - (7-11 years) Transitional stage.
Stage - IV  - (11-14 years) Formal operations.
In this stage the intellectual ability of the child is based upon his ability to operate on hypothetical problems without being concretised to physical manipulations and experience of things right before him.

Rage Bacon contended that, "Mathematics is the gateway of the science."

Neglect of mathematics does injury to all knowledge since he who is ignorant of it cannot know other sciences or the things of the world and what is worse, man who are ignorant are unable to perceive their ignorance and so they plunge into further darkness.

Linclor Higher, says, "Mathematics has invaded every walk of our daily lives to such an extent that nobody can do any thing without the knowledge of mathematics, we can well understand the stage of things to come in future.

Mathematics is not only the basis of all the modern sciences but it is also the base of all the spherea of life.

Kempa. and Gouch. (1977); identify that the activity of mathematics includes numerical operations, spatial concepts and measurement, logical reasoning and the mental handling of quantities in abstraction.
Osborn, (1983); postulated that the mental power exercised in any thinking has four basic mathematical activity, i.e. computational and operations, logical reasoning, symbolic manipulation and abstract quantities and pattern recognition.

Bayapi, (1981); stated that, mathematics has played a good role in the creation and development of science and technology. It has also promoted the growth of many cultures. Mathematics is called "The queen of all sciences, it is not only this but is also the arts of all arts."

THE EDUCATIONAL VALUE OF MATHEMATICS

Every student up to the secondary stage seem to be worried and concerned to improve his mathematics. Their getting through in the examinations and getting good division depends upon good scoring in mathematics. The guardians and the parents are all worried and ask for good coaching in mathematics for their wards as they are concerned for their career. The makes one to questions, what is the importance of mathematics in life. Can one not do away with mathematics, why it is so taxing on the students to learn it. Why should they learn it at all. These and
many such questions come to us and in the absence of any suitable answer, one is rather confronted with further question. But one thing is certain that one who is good in mathematics and science climbs high on the ladder of professional life, which entails material happiness. The career avenues are wide open to such pupils who are good in mathematics and science. They have alternatives before them as compared to their counterparts who are non-mathematics.

Looking from socio-economic and personal angles mathematics has got three educational values.

1. Practical or utilitarian value.
2. Disciplinary value.
3. Cultural value.

1. Practical Value

Mathematics plays important role in man's daily life. Every person should know how to count and calculate. Numeracy is basic in human life. A person without the knowledge of numbers is a parasite on the society. The knowledge of numbers does not mean only that it makes one able to count, substract and add money and count his profit or loss but also enables him to calculate movements in every day life. In fact life is a big mathematics and every move and step what
we take should be well calculated counted and measured. One who is wise on this count succeeds in life like success Nepolean said, "The progress and the improvement of mathematics are linked to the prosperity of the state".

Mathematics, virtually gives reasoning and logic. It is not just 2+2=4 but much more than it. It is knowing why and when and how two plus two make foure is important. This is the practical askpect and only with this practicality in life one makes his life richer, fuller and better.

2. Disciplinary value

Locke says, "Mathematics is a way to settle in the mind a habit of reasoning. It trains or discipilries the mind". It is fachial definite and exact. It develops reasoning, thinking and imagination not poetic but calculative imagination, having its foundations on facts and objects. It makes one objective and enables him to hypothise situation to find out the best and surest alternatives to solve the problems by doing so one develop the skill of criticisim and evaluation.
3. Cultural value:

Digit said: "Mathematics is the mirror of civilization".

The understanding of the world in which man lives, of the civilisation to which he belongs and of the culture of which he is very a proud inheritor requires the understanding of scientific and social principles, the development of which depends upon the ability to calculate.

Calculation is not just logarithm but establishing causes and effect placing things in the right perspective and finding relationship with one and another. In the whirl of interacting and reacting elements all round us, the humanity has marched ahead and in the course of this long march it has accumulated a vast wealth rather, treasure of wisdom improving upon the conditions of life, winning over, the hazards, and difficulties, making the total human life, Good to live. It has all been a history of man's ability to count, measure, size and systematise, of course, through calculations. Without the knowledge of this calculus the mankind would not have come this long way. Mathematical skill has helped mankind to rationalise and conceptnalise life. The human culture is the out come of it.
NEED OF MATHEMATICS

"Mathematics is the science of measurement, quality and magnitude."

We should build up the mathematics of the children upon strong and firm foundation with reliable building material on which they can have a solid, durable and useful structure with the provision of further expansion and enrichment as per their interest and need. If one wants to learn mathematics without proper understanding of its principles, formuleas, concepts and symbols one would not go very far. The abstractness, symbols and digits may seem very easy to adults but cause builterment and confusion to young learners because it is not linked up with realities of life. Without mathematics become quaquine for most of the students and they fail to show up their metal. Such students are termed as Under-Achievers.

AROUSING AND MAINTAINING INTREST IN MATHEMATICS

"Once backword always backward"

But it is not so loss of but it interest is one not of so the principal causes of student
failure. Interest in the subject can be effectively aroused and maintained by numerous, remedial diagnostic devices and followups. Mathematics needs special concentration. The home environment, parental aspirations motivation, and career prospects help to develop interest for the subject.

Let there be no presumption that the students are intellectually backward. Mathematics exhibits fully the power of man to think consistently and logically. As pupils having interest in mathematics would have been interested in other subjects. It is also observed that the students who having low interest in mathematics opt for their higher qualification faculties, like Arts, commerce, etc. Even they know mathematics is the important subject for success in life. Constantly they fail enormously. Such students who being under-achievers in mathematics leave the academic line and OPT for other subjects easier to grasp.

The picture given below explains the importances of mathematics in life, for it obeys various careers and disciplines.
PICTURE SHOWING THE IMPORTANCE AND RELATIONSHIPS OF MATHEMATICS WITH OTHER FIELDS OF KNOWLEDGE

- JOHN NORTON

FIGURE - 1.a.
SECTION III

* FACTORS CONTRIBUTION ACHIEVEMENT IN MATHEMATICS

* ACHIEVEMENT
* INTELLIGENCE
* ATTITUDE
* SOCIO-ECONOMIC STATUS . (SES)
ACHIEVEMENT

A comprehensive Dictionary of psychological and psych-analytical terms (Horace B. English 1958) defines the term 'Achievement' in three ways.

Achievement is Succes in bringing on effort to the desired end.

Achievement is The end gaining the thing accomplished.

Achievement is the degree or level of success attained in some specified area (especially scholastic) or in general. Here the term 'Achievement', academic or scholastic, bears the meaning. "The attained ability to perform school tasks, it may be general or specific in a given subject matter".

The term "Achievement" has been defined by various ways, namely;

- The learning experience accomplished on a course-content imparted to the learner in a specified period.

- The degree of success attained in a task or solving a test.

- An Achievement is something which has been successfully accomplished, learning has already taken, place, putting the emphasis on proficiency.
The studies done by Hynsen (1967); Maler and Casselman (1971); Sharma (1977); Soman (1977); Flemmeman and Sherman (1977); Sharma (1976); Ruach (1974); Armstrong (1980); Gakhar (1981); have conducted that Achievement in mathematics in particular depends upon the following factors as intelligence, sex, attitudes towards mathematics, area the students studying and home background and environment.

FACTORS CONTRIBUTING ACHIEVEMENT IN MATHEMATICS

'Achievement' in mathematics has been studied in relation to a number of variables both cognitive and affective.

Nalinidere. (1976); Kabu (1950); Tabbal (1951); Gakhar (1981); Nilimakumari (1984); Rajput (1984); Singh (1986); Studied in the past decade, have confirmed that intelligence and socio-economic background are major contributions to achievement in Mathematics.

Nilima Kumari (1984) studied the conservation of number and substance in relation to intelligence and socio-economic status.

Gakhar (1981); Identified variables of educational environment as responsible for acquisition of Mathematical concepts.
Katiyar's (1974) study revealed that boys and girls did not differ in Mathematical achievement.

Iyer. (1977) found factors responsible for Under-achievement in Mathematics, are personality, & parental profession.

According to the report of the Indian education commission (1964); "--------------- the causes of stagnation and wastage are classified into three categories as Economic, Educational and social; about 65 percent of the wastage is due to poverty and another 30 percent on account of existence of incomplete schools. The dull character of schools, the poor attraction and retention power of schools and the failure of the average parents to see the advantage of attendance of school."

Deo, (1967); suggested that the factors affecting achievement can be classified under four major categories.

- Physical and physiological.
- Psychological
- Sociological and Economic
- Educational.

Dowd (1953); Frankel (1960); Gowan (1957) and lurn (1960); In India Joshi and Sharma (1967); Passi and Sing (1968); Gupta (1969) have studied factors conducive to achievement or the lack of it in the schools. These can be grouped as Under:

- Psychological factor
- Socio-Economic-status
- Education
- Physiological and Physical factors.
In the various studies, it was observed, that there are other factors which are detrimental in achievement in Mathematics.

Achievement in Mathematics is very highly related to cognitive and non cognitive factors; such as intelligence, Attitude towards Mathematics, Socio-Economic-Status of the pupils, Profession and Education of parents, Reasoning power, Teacher’s qualification and Method of teaching, class size, school and home environment, study habit, personality, health, friends circles. Anxiety of adjustment, motivation, Textbooks and curriculum, Space visualisations, etc. The literature reviewed has revealed that studies have been conducted taking these factors, taking one or two. But factors like, Intelligence, SES., locality, Attitude, towards mathematics, sex have not been studied establishing correlation among these factors. Hence, the present study has been designed in incorporating the factors named above.

INTELLIGENCE

Backingham (1966); defined, "Intelligence is the ability to learn"

Terman. (1971); defined, "An individual is intelligent in proportion, he is able on abstract thinking."
Stodbord. (1973); : defined, "Intelligence in global terms", i.e. Intelligence is the ability to Undertake activities that are characterised by-

(i) Difficulty (ii) Complexity (iii) Economy (iv) Abstractness
(v) adaptation (vi) Social values and (vii) The Emergence.

Thondike (1977); : The six primary factors emerged are as follows-

(a) Number factor (N) : Ability to do numerical calculation rapidly and accurately.
(b) Verbal factor (V) : Found in text involving verbal comprehension.
(c) Space relation (S), Involved in any tasks in which the subject manipulates on object imaginary in space.
(d) Memory (M) : Involving the ability to memorize quickly.
(e) Reasoning (R); Found in tasks requiring the subject to discover a rule or principle.
(f) Word fluencey (W); Involved when ever the subject is asked to think of isolated words at a rapid rate.
Achievement and its relationship with Intelligence:

It has been observed that intelligence contributes substantially to the variables in the academic achievement scores.

Menree (1952) observed, "At one time it was thought that intelligence was the primary determinant of scholastic success.

Burt (1921), Crenford and freeman (1946); Burns (1946), Gerfer (1952) Stephens (1956) and Uppal (1965) found intelligence affect achievement.

Vygs (1993) found that General mental ability is closely associated with failure in academic achievement.

Lalitham (1975), Datta (1959) found that the achievement in mathematics was positively related to intelligence.

Dave and Dave (1971); Teetha (1775); Singh. (1977); Ethington and wolfle (1986); Rathod. (1988); Concluded that intelligence is a good predicator of achievement in Geometry.

Singh (1993), found Pupils who suffer from anxiety may not, be able to devote their full energy for the performances of achievement.
Mellinger and Hagar (1959), Thronike (1956) concluded that intelligence along determines achievement.

Kaul's (1975) found that high achievers in Mathematics are influenced by high intelligence, numerical ability and abstract reasoning.

Kaker (1969) has described in his paper "on education of the gifted." That gifted students were higher achievers.

Holland and Tylor (1969) Suggested that the gifted students at high school are independent and intellectually expressive.

Thus the cognitive factor has a high correlation with the achievement in Mathematics. This has been proved by the studies conducted so far in India & outside. Intelligence, abstract thinking, & numerical ability are important ingredients in the performance of the students in school subjects.

Attitude is another to factor which is determination in giving high achievement to students. In forgoing account confirm to this fact.
ATTITUDE

Attitude determines our patterns of life as well as our success and happiness. Not only they determine the conclusions, one derives from the facts, but also influence the very facts one is willing to accept. Attitude is a complex affair which cannot be described briefly in a single definition.

Allport, (1935); "Attitude is an idea changed with emotion which produces a class of action to a particular class of social situations."

Newcomb, (1948); "Attitude is more or less persistent set to respond in a given way to an object or situation".

Good, (1959); "Attitude as a readiness to reaction towards or against some situation, person or thing in a particular manner e.g. love or hate."

Therston. (1966); "The sum total of a man’s intentions and feelings, prejudice, Preconceived notions, ideas, tears, threats and convictions about any specific topics."

Back, (1977); "Described attitude", as, "pre-disposition towards any person idea or object that contains cognitive, affective and behavioural components".
Thus, we conclude that attitude is something which is a part of the psychological built-up of an individual. It is a set of mind which directs an individual to act and respond to any situation or object in a particular way. This is an important component in so far as an individual’s reaction’s are concerned. It is to a high degree explanatory as to how a particular individual has reached in a particular way in a particular situation. The variance in individual’s reactions are on account of attitudes.

Attitude has been found to be an important factor in effecting the attainment score of high and low achievers in school subjects. The foregoing account confirms that it has a positive correlation in achievement scores in mathematics. The students with high positive attitude towards mathematics score high and those with negative attitude towards mathematics score low.

Difference between Attitudes and Interests

Attitudes and interests both deal with likes and dislikes. But the terms are not synonymous. An attitude, is a predisposition to accept or reject, in a consistent manner, groups or individuals, social or other social object. It is tied up with emotional responses to social objects. Interests, on the other
hand, are tendencies to participate in an activity. If one decides to pass his evening hours one faces an option either of reading a novel or seeing the T.V. Proj. In such situations if one chooses to read a novel, the subject he selects to read would be related to his attitudinal system, but his preference for the activity or reading reflects an interest. The essential distinction in this case between attitudes and interests is that attitudes identify the predisposition of an individual for emotional responses to social object, whereas interest is tied to activities. Attitudes are the one’s set of action, tendencies, associated with a social object. None can see them and know what people are likely to do (their tendency to act) until the situation inciting the action arises. Attitudes are inferred from behaviour so by identifying a person’s pattern of responses to a class of behaviours, one may make up his mind about what his or her attitude is. But any one cannot push people into a wide variety of ‘real life’ situations to observe their behaviour and ask those being evaluated, to tell in turn of how they think they would respond to them.

Under-achievement and Attitude towards Mathematics

Academic achievement is a complex behaviour. It is not yet known what determines the level of
achievement of school students. No one study in India has been conducted to find out the attitudes of the student in mathematics, of the especially, under-achievement group, to confirm that attitudes have affected their achievement in the subject.

Gupta (1970), Studied and found that high achievers in mathematics display positive attitudes in comparison to the under-achievers.

Throndike (1963); Tezh (1969); Keeve (1975); Newin (1973); Simpson (1974); Teilton and Bergerd (1974); Lilithamma (1975); Aiken (1979); Tayansrg (1979); Srivastava (1988); found that boys have more favourable attitude towards mathematics than girls.

Charles (1975); Pointed that there was correlation between attitude and achievement in mathematics.

Aiken (1976); Kulkurni (1970). Found student’s with favourable attitude towards mathematics achieve higher in mathematics.

Sundarajan (1991), found academic achievement of rural students are better than urban students in mathematics.

Sunderajan and Rayuselear, (1987); Sunderajan (1987), Sundarajn and Babu (1988) Sundarajan and
Krishnamurthy (1988); have confirmed that attitude towards mathematics influences achievement.

Shah (1966); Conductes that "Negative attitudes towards mathematics is one of the causes of under-achievement in mathematics.

Chopra (1982); Sundarajan (1990) and Srinivansan (1992); defined in mathematics unless a student has a favourable attitude towards the subject of study he may not achieve considerably high in that subjects and may not also like to study it at higher levels.

It is evident from the above that theoretical formulation is needed which conceives of attitude as a set of moderator variable that affect the subject’s response to mathematical situation in observable and predicator ways i.e. the favourable attitude towards the mathematics influences on the achievement in mathematics.

It seems an important area of under-achievers to find out the factors and reasons of their under-achievement. Really do they have negative attitude or the attitude has to do nothing with their achievement.

Such studies are needed to find out whether the under-achievers have favourable attitude towards
mathematics or not. If it is negative then what can be done to make it positive, or, if otherwise positive, what are other factors which are effecting in the negative achievement. If positive or negative attitude is so detrimental in causing high and low achievement in mathematics than it becomes imperative to study how negative attitude can be made positive. The present study attempts to examine the attitude of students towards mathematics and its effect upon their achievement in mathematics.

Though is has been studied by various investigators that attitude has positive bearing upon achievement, but no investigator has examined as to why pupil have positive or negative attitude. What measure can be taken to make attitudes favourable with special reftrence to mathematics. Why do pupil have liking for certain subjects and disliking for other why under-achieveres develop apathy and disliking for the particular subject, especially mathematics and science. Why high achievers have liking and interest in mathematics these are certain questions, which attract attention of teacher and parents alike. Normally the factors of likes and dislikes have been associated with Under-achievers in particular to subject like mathematics and science. But there have been certain cases that pupils who have been under-achievers have later on shown good
performance and joined the category of high achievers. So the fact yet remains unsolved as to why the under-achievers are associated and related to their under-achievement in mathematics and science with attitude and interest factors. On the contrary it has been reported that pupils with low achievement actually do not have negative attitude towards mathematics, but they fail to put the required labour and concentration in bringing home the concepts and skills.

Socio-Economic Status

It has been confirmed by various investigations that SES of the children is very much responsible to their academic achievement. The socio-economic status in fact relates to the economic standard of the parents and there by their social standing in the society. Obviously, in society a person is known by his economic status. If it is high, i.e. if his earning is of quite adequate standard, then he is looked upon with esteem, irrespective of his learning or origin. The social status of a person is closely related to his economic standing. As such the children coming from well to do families enjoy social prestige among their peers. This gives them security and sense of superiority compared to others.
The socio economic status is a wide term. It needs clarity and proper understanding because in all the societies the standard to judge the SES of an individual depends upon the standard of living and ultimately the per-capita-income. A few observations to define SES is necessary to be looked into.

Chamber's (1970); meaning of SES is 'state' condition or standing of a person.

Green, (1961) defined "position in a social group or grouping in relation to their positions held by other individuals in the group or grouping".

Good, (1973); defined, "The level indications of both the social and the economic position of an individual or group. In other words a set of potentially influential factors generally associated with home is called the socio-economic status of the child".

The scholastic achievement of children from deprived environment has aroused increasing concern and interest in recent years. The social pattern in India is fast changing due to industrialisation in the country of course, a child of low socio-economic status may be seriously handicapped in his social relationship.
"A great deal of scientific research has been done relevant to the condition and causes leading to backwardness. In general, the research indicates a high positive correlation between socio-economic factors and achievement. The school children from the lower strata of society tend to be insecure in the academic environment, as they lack motivation for learning to be, which is verbally inadequate, they are tested lower on intelligence quotient tests and are harvest of low opinions of themselves. In essence, these children differ from children from higher social strata."

- Dr. William M. Cave

Home background and academic achievement

The socio-economic background or social class has been studied as one of the important variables that determines the academic achievement. At every stage of education middle class students are found in great number among the high achievers. The middle class families normally comprises of the people who earn their living by service, either in the government undertaking or in private sector. This class of people make up their living by dint of their education and training. As such they have high regard for the utilitarian value of education since they do not possess any capital with them except their education and professional build up, they insist upon their wards and children to make their way in the society through education and training.
In the home background or we may say family background, parents-education, profession-income; home environment, family size, ambition of parents for their wards. Parent-child relation, etc., are included for their various studies have been conducted to prove that the family background plays an important part in the education of children. The home variables have been identified in a few studies which are referred below. These variables bring upon the composit effect upon the education of the children.

Dave, (1963), identified the following variables.

(1) Achievement press (2) Language models in home (3) Academic guidance provided in the home (4) Stimulation provided in the home to explore various aspects of the larger environment (5) The intellectual interest and activities of the home and the work habits emphasised in the home.

Rosen and Andrade (1959), contend that "home environment have been demonstrated to be directly related to academic achievement".

Melson (1969) conducted a study to find the influence of home environmental factors alone on
school achievement among sixth grade children to predict academic success. Vygas (1993) found out that "Fail" group of the students are having poor family environment.

UNDER-ACHIEVERS AND SOCIO-ECONOMIC STATUS

Burt (1959) conducted a study which pointed out that one in five who run away from school come from poor homes. He concluded that poverty is associated with backwardness in school work.

Lavin (1965) reported that academic performance is directly and positively related to socio-economic status of the family.

Unkel (1966) summarised that "socio-economic status has significant effect on achievement in arithmetic.

Brush (1986) & Armzstrong (1985) have found that socio-economic-status was among other variables that co-related significantly with achievement in mathematics.

Erysenek (1957); Bendia (1961); Child (1964) and Jamual (1961); conducted, introverts would be better achievers than extraverts.
Hangerman (1967) pointed out that no relationship either to achievement in maths or attitude towards mathematics exists with socio-economic-status of students.

Spady (1973) concluded that students of higher socio-economic background benefit from the use of technology more than students of socio-economic background. Homes, schools, environments and other relevant sources have been effective in shaping favourable attitude towards various aspects of mathematics.

Franbel, (1961) is of opinion that the origin of under-achievement in mathematics is traced back to home and parents.

Vernon (1972) points out that low intelligence and generally unfavourable environment are for more important causes of under-achievement, than is mainnutrition, which some educators consider as the major cause of low achievement.

Griffitts (1966) and Huskn (1967); Dave and Dave (1971) have confirmed that: There is a negative correlation of about .20 to .30 between pupils achievement in mathematics and family size.
ICSSR (1973) studied the SC/ST students achievement in mathematics and indicates that majority of students who were underachievers interviewed, said that the financial condition at home were difficult. The parental level of education was also found to below.

Lord Rabin and his colleagues (1963); Rush Durga (1962); Chopra (1967); Fraser (1969); Saxena (1972); Garden and Will (1978); Long and Fresh (1976); Gakhar (1981) all have found that income levels distinguished the over from the normals and unders. Mother learning, besides social economic status, education of the parents, especially of mother has a great bearing upon the achievement of pupil.

Frankel, Edward (1960); Di, Sinha (1970); Saxena (1972) have found that mothers of low-achievers were engaged mainly in non-professional jobs and remained away from their homes for a long period; where as mothers of high achiever in most of the cases, were engaged in teaching profession. The study indicates that education of the mothers effects positively in the academic achievement of their children.

Terman (1947); Klausmeric (1958); Westfall slocum (1958); Sucteliff (1959); Lord Robbin (1963);
Chopra (1967); Saxena (1972); have studied father occupation and its effect upon achievement. They conclude that father’s occupation exerts significant influence on child’s achievement in mathematics. Father’s having unskilled jobs; as a result have low ambitions and imperceptible endurance.

Kulkarni (1970); Hustan (1967); Dave and Dave (1971); Saxena (1972); Singh (1988); Surmise that parents education is associated with academic achievement in mathematics, stream.

William (1968); found that normally it is expected that educated mothers can be more useful in bringing up their children, help them more efficiently to attain high educational standard than uneducated mothers.

Bush (1985); concluded that sex has significant correlation with mathematics achievement. He claims that socio-economic-status would effect girls plans’ to take mathematics at high school. The season for this is that low SES girls decide that a business or secretarial track is more desirable and they do not opt for mathematics. The low SES boys may not have stopped mathematics for lack of clear options or because of the available options.
NEED OF THE STUDY

Thus above studies reflected that the factors, Intelligence, Attitude towards mathematics, and SES impact on the achievement in mathematics. But in their researches many of them yet not consider the group Under-achievers and studies still not in deep to the Boys-Girls, Sc-NSc and Rural-Urban, subgroups of the students. Secondly none of the studies conducted, the variables attitude and SES together effecting achievement in mathematics.

The group of Under-achievers in mathematics were considered by lyer (1977) who has found personality and SES factors effecting achievement in mathematics but not go so deep and now there is changes of society and highly needs of mathematics subject in technology field.

Hence this study has a vide scope and importance as it deals with the subgroups referred above with special emphasis upon Under-achievers.
SECTION IV

SIGNIFICANCE OF THE STUDY
SIGNIFICANCE OF THE STUDY

"Treat people as if they were, what they ought to be and you help them become what they are capable of being".

- Goethe.

The question arises; can one do better than ones ability. There can't be any doubt that nobody can do better than his own ability but one can positively do better than an average person of the same ability.

"Children need encouragement the same way plants need water."

- Dreikers.

The phenomenon of under-achievement is both baffling and challenging baffling in its complexities and challenging in the significance of its reversal.

Gown. (1957), Rath and Megerbura (1963) have emphasised the role of non-intellectual factors in scholastic achievement. Roph, Golbery and Passoni (1966) believe that recognition of academic achievement as a serious psychological and social problem. It reflects the values of a culture which attempts to look beyond performance to potential, maintains mathematics as a compulsory subject for a prolonged course of the study, seeks to nurture and develop diversity of abilities within and among individuals and concerns itself with the maximum development of
the individual in respect of his contribution to society.

Kohli (1971), Sexsena (1972), Jayagopal (1974), Batt (1977) have justified newer attempts at least it is better to be "On road than to stay on in inn".

Negarkar (1989), Terman and dem (1994) have found that under development of the under achievers were in their studies and observed that they required proper guidance and channelisation of their intellectual resources.

We are concerned with this particular section of under-achiever who though equipped with intelligence do not do well in school. This is the serious problem facing the students guardians, parents and teachers as well. Unless the reasons for their under-achievement are found the problem would remain unsolved. So a systematic investigation into the causes and factors contributing to under achievement of intellectually gifted children is highly essential. This study is under taken with the intention of locating causes for the under-achievement of intellectually gifted children "If the gifted children are left lobe spoiled in their education it will be a loss to be society and the nation". If the causes and factors are found out at an early stage and the
remedial measures are applied the possible loss to the nation could be avoided.

Raph, Goldberg and Passon (1966) seem surprised that in a culture that believes in the right of the individual to develop their unique talents and in a society, which values education for all and maintains prolonged compulsory education, the needs of the gifted children are not yet fully met.

Waddington and O'Brien (1979), Freeman (1979), Davis and Reimm, (1985), Gallagher, (1985) all have called, despite the increasing interest in gifted children education stipulated by the growing need to meet the scientific and technological challenges of the space era, very little attention has been directed to the gifted under-achievers.

Present study envisages to minimise the percentage of under-achievement and to help teachers by suggesting ways for improving mathematics education.

There have been some studies exploring the factors contributing to academic achievement in mathematics, such as Attitude, intelligence and SES. There have been few studies on the general achievement of the students. Unfortunately in India there is only one study. Iyer (1977), that found the personality factors contributing to achievement in mathematics, But
the world has realised that the talent unchannalised results in a tremendous waste. Comparing the unsatisfactory rate of talents in united states, wedmeger (1953) states, Russia is a nation which is turning out scientists at double the rate as compared to USA this waste of its most vital resources. Our country cannot afford this waste of its most vital resources.

Talent wastage is a serious concerns and country like our can not afford to do so. It has to do something to check it. Talent wastage in India is a serious problem.

The studies so far conducted in under-achievement in mathematics have taken into consideration the variables like personality, S.E.S. (Dyer, 1977); Iyer. (1977); pointed out that personality and SES are two variables that effect a economic and social factor, failures in maths. present study tries to study the effect of intelligence, Attitude and SES. Also considers the factors of SES relationship with Achievement it compares its. Achievement and Attitude among different subgroups. Study would be used to minimised the under-achievers at the secondary stage.

Tyler (1956) Conduced that significant difference has been found between high and low achievers in respect of psychonological factors.
inspite of the acceptance of the fact that differences in intelligence, Attitude & SES that influence the scholastic attainment in mathematics not much research has been conducted in this area, particularly in mathematics. The need for more systematic studies in this field has become more imperative because of the influx of child population into the schools coming from different socio-economic background and environments.

The present study is significant in the sense that it involves such variables as intelligence, Attitude and socio-economical status, locality and sex. The locality has been classified into rural-urban areas according to the residence of students. The scheduled and non-scheduled students, i.e. the caste factor has also been considered. There is paucity of research in this area, especially in India no work has been done comprising these factors with special references to under-achievers. Of course studies focusing either this or that factor has been conducted, like Iyer (1977). Studied, the personality factor affecting achievement in mathematics.

The study and knowledge of mathematics is important. Be it a simple household management or high policy and planning decisions, mathematics has played its role quite significantly. Mathematics as it
is known is that the study of numbers is not calculations or addition and subtraction, but a way of logical and calculated thinking. The importance of it is being felt in all walks of life and the societies which are advanced have brought this fact home that the study of mathematics right from early stage of schooling is not to be neglected. If we do so do we do, it at the cost of socio-economic development.

The importance of mathematics education has always been realised and recognised in our country. In all the reports and commissions, insistence has been placed in the teaching of mathematics at the school level. But the scene remains far from being satisfactory. The utility criterion of mathematics has been the main factor effecting the whole teaching and learning scenario of mathematics-education. The children aspiring for engineering career, of course motivated by parents take pains to grasp mathematical concepts through their own labour and efforts make the mark. This has very little to do with the class room teaching. The teaching of mathematics in the class-room remains to be stereotype, taking examples and solving on the board and then asking further one or two exercises to be solved with the help of the students. This process does not keep provisions and scope for the slow grasper to cope up with the pace
and once they lack behind keep marking there and gradually fall out of the front line, No. effort is being made to arouse these slumbering lot who turn into 'Under-Achievers'. This is not only the reason of students becoming under-achievers in mathematics. There are very many factors effecting this. Mostly the studies conducted to find out the reasons of failures and under-achievers in mathematics so far, have taken into scope the pycological and sociological factors, but there still remains certain more factors; like place of residence of the students i.e. the locality, rural-urban, sex and caste, that play a significant role in labelling otherwise normal or average students as under-achievers.

The present study considers these factors and attempts to find out the inter relationship of these factors in having unison effect upon under-achievers in mathematics.

Under-Achievers are the lot of large students population of our country who are just neglected and left un-motivated, thus causing a great loss to the society, collectively and individually. These Under-achievers if properly coached and attended to would come out to be average and above average students and would make out to be better carrier personnels, for, they do not, suffer from any other weakness or reardation one. Only they need to develop
psychological make-up and positive attitude towards mathematics, so that they come out of the under-achiever's level and walk pace to pace with achievers and high achievers and make sound foundation for career building. The neglect of under-achievers and lack of remedial measures, are effecting otherwise the career of good many bright students and diverting many students to careers which they do not otherwise opt. This is the reason of a mal distribution of work force, Unemployment, under-employment and ultimately degrading work and professional ethics. Proper utilization of the man-power and Judicious training is hindered because of the great number of under-achievers in mathematics. The examples of the Prof. Ramanunjan, and Einstein are apt for citation. It is a known fact that Prof. Ramanunjan, when a student at secondary stage, failed in mathematics. He was labelled as dull student in mathematics but by dint of his effects determination and changed conditions, he came out to be efforts determination and the one of the best mathematician the world has ever known. Similar is the story of Prof. Einstein who was a lost case in the early stages of education, but the factors causing his under-achievement in of education mathematics, once removed, proved to the world that there cannot the another man like him.
MISS-UNDERSTANDING OF THE UNDER-ACHIEVERS

Often in practice the pupils who continuously fail in the same class or score below the average marks, are unfortunately treated as the dull retarded or mentally affected students. Some of them are even labelled as dullards by birth by the fellow students and teachers. The parents too become hopeless and treat them as lost-cases. Such students meet miserable end to their educational career either they withdraw themselves from schools or dropout.

The drop out rates at the secondary level is quite alarming and measures are being taken to check this wastage. But unless the specific causes of such dropouts, who otherwise would have continued with their studies, are not studied into, the lot of the under-achievers can not be improved.

The study puts the basic question before itself as to, why these students fail? What causes & what factors are responsible for their being Under-Achievers. The study envisages to help such students by analysing the factors.

GIFTED GIRL UNDERACHIEVERS

Butter-por, (1985) found that sex-related attitudes towards achievement explain the lower
proportion of girls participating in programmes for gifted children and add understanding of the ambivalence felt by women and girls towards academic and career success.


Bush, (1985). Found out that low SES Girls avoid to take higher class mathematics.


The girls because they are not very bright and interested in mathematics, drop-out from the science stream. In rural areas the drop-out and low percentage of literacy in out country is very alarming. It has been observed in the Indian Education Commission (1964) that ".....

for full development of our human resource the improvement of homes, and for moulding the character of children during the most impressionable years of infancy, the education of women, is of even greater importance than that of men."
TO DEVELOP SKILLED WORKERS

India is passing through the age of science and technology. We are making strides to come in pace with the marching nations of the world. For that it is necessary that our work-force be skilled and have technological expertise. We all know that skilled and specialised workers play an important role in increasing the productivity. Thereby the total gross national production, effecting in increase of per capita income.

But the total scene of our society reflects a different story. With high percentage of illiteracy and greater number of drop-outs at elementary and secondary levels gives a set back to our economic design.

The Literacy Mission (1992), has rightly observed. "In India unskilled worker are to the tune of 62% of the total work force. It was observed that unskilled and semiskilled workers have mostly illiterate. The report emphasises on the imparting of fuctional literacy, it means that besides the learning alphabets. The should have numerical literacy along with the orientation in their trades."
CHOICE OF THE SECONDARY SCHOOL LEVEL

"Secondary stage of education, is both, terminal and gateway through which the young push on to the world of work and the world of knowledge". (reference)

The secondary stage is from eight to ten classes. The students are normally in the age group of 12 to 16 years. According to Piaget, (1956) this is the formal operational stage of life.

Gowen, (1955); Chouney (1958); MC, Clellant et al. (1958); Passow and Golderry (1968) have shown that a large number of gifted pupils are Under-achievers in this age group. This is very serious as this causes the problem of talent wastage'. The talents play important role in the growth of a nation, has been emphasised.

Gowen, (1957); Shows that only 19.7 percent of pupils entering into the bottom grade (viz., std.V) of the school, appear to pass the final Secondary School Certificate Examination at the end of the seven years. The effectiveness of the secondary school system would thus be only 19.7 percent. It also means that there is an apparent waste of 80.3% in secondary education considering the high school as made up of grade one to eleventh.
Feldhyson, (1967) noticed that children with disapproved behaviour were having I.Q. above 100 and were in no sense intellectually starded. They were found to be the main agents of aggression in schools.

Feranel (1970) found that the incidence of Under-achievement persists throughout the senior high school.

Nair, N. (1974) found that 28% of high-intelligence group, was found among the Under-achievers at the secondary school level.

Singh, (1981) continued that "Statistically speaking, every sixth student studying in mathematics in Madhya Pradesh is an Under-achiever. This figure of Under-achievement is around 16.6% of the entire students population studying in Madhya Pradesh".

Alibi, (1983) stated that mathematics to school children is a difficult subject. It keeps them worrying and they perform poor in the subjects. He suggests that this situation requires urgent attentions for the national and technological development, otherwise, will remain an impossible goal.

Thus, it becomes clear that secondary stage is a vital stage where from the talents come and if
talent-waste continues to be so high, as is observed, than it becomes a serious problem. Hence, the present study confined itself to the secondary stage for studying the problem.

This stage of education has a, particularly, vital role to play in the social cultural and economic change which is in transition in our country. The future work-force of the country is shaped at this stage. Theis quality of education imparted at this stage will shadow itself in future and higher ladders of education and also the formation of human capital.

The aim of education is to make available to posterity the wisdom of the past and present, so that the youth may be equipped to solve the problem of the future.

The chief purpose of higher education is to form elite not for its own sake but far the society.

On passing out of the secondary school stage such students who do not prepare themselves to join the college or technical institutions, should be made able to enter into the various walks of life so they do not become parasites.

Hildreth, (1966) found the under achievers are restricted to utilize the opportunities for higher
education and at the same time they have difficulties in obtaining a suitable job.

This becomes imperative for the present study to keep the scope of its investigation to secondary stage only.