

DECLARATION

I do hereby that the dissertation entitled “**MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS IN RELATION TO PARENTALINVOLVEMENT**” Submitted in partial fulfillment of the requirement for the award of the degree of Master of Education is entirely my original work and all ideas and references have been duly acknowledged. It does not contain any work that has been submitted for the award of any other degree or diploma of any university.

Date.....

Harpreet kaur

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CERTIFICATE

This is to certify that Harpreet Kaur has completed her dissertation entitled **“MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS IN RELATION TO PARENTAL INVOLVEMENT”** under my guidance and supervision. To the best of my knowledge, the present work is the result of her original investigation and study. No part of the dissertation has been submitted for any other degree or diploma to any other university. The dissertation is fit for submission for the partial fulfillment of the requirements for the award of Master of Education degree.

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Date.....

Harpreet kaur

Abstract

The present study was conducted on Mathematics Anxiety among secondary school students in relation to parental involvement. Descriptive survey method was used in the present study to obtain the pertinent and precise information. The sample of 281 secondary students school students was selected from Gurdaspur, Kapurthala and Jalandhar districts Punjab. The objective of the study was to find out the relationship between mathematics anxiety and parental involvement. The investigator used “Mathematics Anxiety Scale-India (MAS-I)” developed by karimi Venkatesan (2011) and “The Parental Involvement scale (TPIS)” developed by Chouhan and Arora (2009) for collect the data. The findings of the study reveal that there exists significant relationship between mathematics anxiety and parental involvement of secondary school students. Further analysis reveal that 59% students feel average anxiety in mathematics and nearby 8% students feel higher and lower levels of anxiety each. Also, 48% perceive higher levels of parental involvement,39% perceived lower levels of parental involvement and 12%students perceive average levels of parental involvement. Study also concluded that male and female secondary school students exhibited equal levels of mathematics anxiety and significant differences were found on dimension of mathematics anxiety with respect to various boards of education. Further analysing the results of parental involvement significant differences were found with respect to gender and different boards of education.

Key words – Mathematics Anxiety, Parental Involvement, Secondary school students

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1.1 THEORETICAL ORIENTATION OF THE PROBLEM

Mathematics Anxiety

Excessively different individuals are of conclusion that Mathematics is unnerving subject with four letters. Students do not care for maths and they do not feel like they are great in maths, and simply need to avoid it. People who feel uneasiness, apprehension, and frenzy of position relating math are thought to have math anxiety. Math nervousness is associated with poor execution in school. Math tension can begin close to the start in the fourth grade and tops in centre school and secondary school. It can be brought about by past times classroom encounters. Different people who do not have the fearlessness in their ability to perform maths may have secondary school feeling stressed over doing simple numerical tasks. Math nervousness impacts the math accomplishment.

Courant and Robbins (1941) bring about the salient features of mathematics that contribute to effective citizenship: Mathematics as an expression of human mind reflects the active will, the contemplative reason, and the desire for aesthetic perfection. Its basic elements are logic and intuition analysis and construction, generality and individuality. The National policy on Education (1986) also highlights the important role of mathematics: Mathematics should be visualised as the vehicle 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. Indian Education Commission (1966) clearly pointed out: We cannot overstress the meaning of Mathematics in relation to Science, Education, and Research. This has also been so, but at no time the significance of Mathematics been greater than today. It is important that deliberate effort is made to place India in the world map of Mathematics, within the next two decades or so.

Math is the mirror of civilization". There is no exaggeration in this saying because history of mathematics is history of civilization. Mathematics represents a high level of abstraction attained by human mind. Mathematics is broadly divided into algebra, analysis, geometry, and applied mathematics. There is no doubt that majority of people find mathematics boring, dull, difficult, and irrelevant. Only few people are really interested in mathematics. Most mathematicians fail to relate to the

difficulties that others have trying to learn the subject. Most teachers know terribly little about the essence of mathematics to instill a passion for it in their students.

Mathematics plays a vital role in the day to day life. It is a very important subject. Therefore before imparting and transmitting its knowledge it is necessary to understand that ‘what is mathematics?’ what its nature etc. There are various definitions of mathematics. The term mathematics has been interpreted and explained in various ways. Mathematics deals with the quantitative facts and relationships as well as with problems involving space and form. It enables the man to study various phenomenon in space and establish different type of relationship between them. Therefore it may be concluded that mathematics is the enumerative and calculative part of human life and knowledge. It helps the person to give an exact interpretation to his ideas and to reach on certain conclusion.

Mathematics is very important school subject and occupies a vital position in the school curriculum. And this is must be ask: ‘Is mathematics really an important as is claimed?’ The three categories are helpful for discuss the Mathematics. Initial category is survival mathematics- the mathematics that we need in order to go about our daily life and make good use of leisure time. Survival mathematics is a reflection of our personal life-style. This also deals with how to use a situation that requires an immediate response: choosing a right camera exposure, paying a bus fare, telling a time, reading a map, crossing the road. Next category deals with paper and pencil, pocket calculator. Third category deals with hardly conscious that one is using mathematical at all. This is formal mathematics instruction or taking a problem out of a textbook.

Math phobia affects a student position towards the math subject. Also, the main reason for poor performance in math may be fear and anxiety to the math. There were a various reasons for the math subject is boring, like ignorance for the subject, discontinuity in concept learning, avoiding participating in teacher-learning process, opening insult by teacher, parent or peer group, lack of concentration or low scores in the subject. Mathematics is abstract in nature. Student cannot see it. They need to picture properly for solving a mathematical problem. Image comes from the daily knowledge and relating mathematics with it requires a very strong point.

Converting word problems into mathematical equation requires a superior understanding of the verbal communication and math basics. Math basics are still taught in outdated way in the school. Teachers teach mathematics lacking of illustration. As a result; students are not able to understand the problem while they face it. Students try to cram mathematics similar to other subjects where they remember facts and figures. Mathematics required a systematic and excellent understanding. One main reason to the difficulty of mathematics is lack of new innovation in our education system. The traditional educational system of teaching makes mathematics a dull and boring subject. So, student curiosity level goes down. Therefore they begin developing a disassociation with the subject. If this disassociation continues for a longer stage of time and student starts hating mathematics.

Trainers do not enjoy mathematics themselves. If a math trainer does not enjoy mathematics then how can he make mathematics interesting for the students? It has been found that excellent students show poor command over the tables. A small number of them have gone to the senior classes say IX and X and still they rely on finger counting. When student faced the long multiplication, they cannot follow the complete multiplication steps to get the answer. Due to this calculation takes more time and even a simple mathematics paper seems difficult to the students. Here the question arises why do students have poor command over the tables? They have poor command over the tables because tables are not taught in mother tongue and moreover cramming is the popular way of teaching tables and logic behind them is not made clear to students.

Indian Schooling system based on cramming methodology. It tests only how much student cram for the exams. But mathematics based on logic. Due to all these reasons students develop fear in maths leading to anxiety to solving mathematics problem in class or during tests. It is fact that a nation progress depends upon its student's academic achievements and development. That's why every nation focuses on the student academic achievement. The academic achievement of the students are badly affected due to increase in anxiety in the society. Anxiety is related with fear, tension, stress that affects the performance of the students.

Anxiety is a biological response to protect human beings from harm. All humans experience normal anxiety at some level and to certain extent. Some

individuals experience this emotion with sufficient intensity or duration to produce psycho physiological dysfunction. Fear and anxiety, although distinct, have been recognized and analysed as part of human experience since times immemorial (May, 1997; Spielberger et al, 1972). The concept of anxiety as “normal” response to adversity or threat of adversity is not new. While anxiety was previously recognized as general states of uneasiness or trouble mind; in 17th century, the term anxiety was started to be used to describe feelings of fearfulness accompanied by physical symptoms like tightness in chest (Tobias, 1993). There is a broad range of normal anxiety that is considered to be healthy or even necessary under normal circumstances. Pathological anxiety is characterized by its excess, pervasiveness and uncontrollability. Anxiety has three components: (1) identification of potential threat or harm; (2) psychological features of alarm, dread, or fear, and (3) physiological response including autonomic discharge and motor activity.

Anxiety among students can be caused in variety of areas like anxiety in overall academics, anxiety related to a particular subject or anxiety in test situation. Available literature in psychology provides several conceptualizations of mathematics anxiety. Kennedy and Tipps (1990) define math anxiety as fearful, negative, emotional reaction to mathematics. Hendel and Davis (1978) conceptualize mathematics anxiety as ‘an effective response that includes avoidance of math, subsequent failure to learn basic math skills, and thus negative career and school related decisions. Richardson and Suinn (1972) provide a widely accepted definition as “feeling of tension and anxiety that interfere with manipulation of numbers and solving mathematical problems in a wide variety of ordinary life and academic situations. Mathematics anxiety may be also analyzed using a three system approach, which includes the dimensions of physiology, self- report, and overt behaviour (Lang, 1968).

The Mathematics Anxiety Rating Scale (MARS) (Richardson and Suinn, 1972) appears to be the most commonly used instrument to assess mathematics anxiety. This is despite disagreement over the factorial nature of the tool and, consequently, the construct of mathematics anxiety. The authors of this scale report mathematics anxiety as a unidimensional construct dominated by a single homogeneous factor to “evaluative test taking and problem-solving mathematics

situations". However, other researchers have found contradictory results by obtaining from 2-6 factors underlying the construct of mathematics anxiety.

Among related variables, age is reported as influential aspect in mathematics anxiety especially before 18 years (or the so –called developmental period) (Ebadi and Karimi, 2003) even though these findings are inconsistent with growing grade levels of students. Bush (1991) mentions that mathematics anxiety originates during students early educational experiences. Hembree (1990) found that mathematics anxiety increase during junior high grades; reach its peak in grade 9-10, and levels off during senior high grades. This implies that taking there is some relationship between mathematics anxiety and grade levels. The abstract nature of mathematics in grades 9-10 may contribute to be creation of mathematics anxiety (Bush, 1991).

Attempts have been on to understand the nature of relationship between mathematics achievement and mathematics anxiety. Hembree (1991) and Richardson and Suinn (1972) observed that high levels of mathematics anxiety were significantly related to lower levels of mathematics achievement. Consequently, the effects of mathematics anxiety on academic outcome, although in conclusive, appears to merit continued investigation. No agreement has been reached on the possible relationship between and test anxiety accounts almost fully for math anxiety (Meece et al.1982), while others contend that two types of anxiety are different (Brush, 1978). These multifaceted conceptualizations provide the most comprehensive explanation for the relationship between math anxiety and test anxiety. It is hypothesized that if a person exhibits distress behavior across testing situation, then poor performance on math exams may reflect high levels of general test anxiety. If a person experiences anxiety and performs poorly only in innate-related situations, then it maybe a situation – specific problem. General test anxiety may or may not coexist with math anxiety and both types of anxiety can occur in isolation.

Attitude as part of students disposition, has significant relationship with mathematics anxiety. Students with mathematics anxiety have accepted that they will fail in any mathematics situation. Ashcraft and Virk (2001) note that parents form impressions of their child interest and abilities in general on the basis of their own beliefs. Parents communicate their beliefs and attitudes about mathematics and its utility through their individual practices. The outcome of these communicated

attitudes is one in which students take on their parents “mathematics anxiety” (Bush, 1991). Gresham (2007) describes mathematics anxiety as feelings of powerlessness, worry, or fear when performing mathematics operations or struggle. According to Geist (2010) attitudes toward mathematics are set because of earlier experience.

Math anxiety is actual a problem that can shake a young person’s goals, several career-related decisions they make at present and their overall future. (Furner and Gonzalez-Dehass,2011).A clear but unfortunate effect of the escaping leaning is that compared with people who do not have math anxiety, highly math-anxious persons finish up with miner math skill and success.(Ashcraft, 2000). Mathematics anxiety has been defined as a belief of stress, worry that get in the way with a way of records and the solutions of mathematical trouble in a broad collection of normal living and scholastic situation. Math anxiety can source to forget and of drop one’s self-assurance. (Tobias, 1993).

Math anxiety consists of depressing attitude towards mathematics. These attitudes are unconstructively linked to on the whole math achievement (Geist,2009).Mathematics anxiety is an unthinkable fear of mathematics that can obstruct with manipulating numbers and solving mathematical effort within a diversity of everyday life and academic situations(Buckley & Ribordy,1980). Math anxiety is an actual problem that can impact young person’s goals, many career-related decisions they can make in their life.

Mathematics has a wider practical application. All principles and theories of mathematics are applied in different aspects of life. Thinking and Reasoning is very much guided by mathematics and it is thinking and reasoning that help the building of the society.

Mathematics is helpful in other branches of science such as Enginery, Physics, and Economics etc. No business can flourish without mathematics. Mathematics is the gate and key to all sciences. Our whole universe is charged with mathematics. Every occupation in the world requires mathematics at every state. We need mathematics in a adjusting our expenditure to income. Mathematics is used by a humble coolie, a Finance Minster, an ordinary mason and skilled engineer. “A Science is exact only in so far as it uses mathematics”. So, mathematics is responsible for giving us a system,

Organization and essential abilities for leading a successful life. We shall remain too much handicapped in our life in case we remain ignorant of mathematics.

Man is social animal and human life depends upon the cooperation of each other. The change in the social structure with regard the modern facilities like modes of transport, means of communication and progress in the field and science and technology is due to mathematics only. Ideal education is that which help to make a child qualified and useful citizen of society for the beginning. Napoleon has accepted the social value of mathematics and said that, "The progress and improvement of mathematics are linked to the prosperity of state." In this way mathematics has played an important role in not only understanding the progress of society but also to develop the society. At present our social structure seems to be scientific and systematic its credit goes to mathematics. In its deficiency, the entire social system will be disturbed.

The culture of every nation of society has its unique characteristics. It has its own importance. Each nation of society reflects its culture by its living standards rituals, artistic progress, economic, social and political aspects etc. the history of mathematics presents the image of culture of different nations. The person said to be cultured if one is well educated and have refined manner of dealing. The person becomes critical observer, logical thinker and proper knowledge of mathematics changes the mind of the person. Thus the Person becomes more cultured with the proper knowledge of mathematics. The famous mathematician Hogben has remarked that "**Mathematics is the mirror of Civilization.**" In fact mathematical knowledge is indispensable and changes the way of one are living.

Mathematics not only familiarise us with the culture and civilization but also helps in preventing, promoting cultural heritage and transmitting it to future generation. Through the application of scientific and mathematical discoveries our culture and civilization is undergoing constant change. The welfare of our civilization is now almost wholly dependent upon scientific as well as mathematical progress. It affects view of life and way of living as a result of which it also effects of philosophy of life. Hence the teaching of mathematics plays a vital role in developing of culture heritage. Hence mathematics shapes culture as a playback

pioneer and has played an important role in bringing him such an advanced stage of development.

Those who did not get proper opportunities to study mathematics have developed a wrong notion in their minds that mathematics is dry and wintering subject. For the lover of mathematics, there is all beauty, art Music and fitness in this subject. One finds a huge treasure of pleasure after getting success in the solution of mathematics problem. It was the reason why Pythagoras sacrificed hundred oxen to the goddess for celebrating his discovery of the theorem that goes by his name. In the same way, Archimedes had also forgotten his nakedness after discovering his principle. Just imagine the feeling of ownership and self – mathematics problem. Especially when the answer tallies with the answer given in the book every student feels maximum satisfaction and derives the greatest pleasure.

There is no exaggeration in saying that Mathematics is the creator as well as the nourished and savoir of all the arts. What we enjoy in the arts like Drawing, Painting, Architecture, Music or Dance etc is all due to Mathematics. Mathematical regularity, symmetry, order and arrangement play a leading part in beautifying and organizing the work of these arts. Even the poetry is not enjoyable without Mathematics .Music is nothing but the mathematically organized sound. All the musical instruments Harmonium, Drum, Table, Flute, Guitar, Sitar, and Violin etc are played on the set rules of Mathematics. Therefore, Leibnitz is right when he said that Music is a modern hidden exercise in Arithmetic of a mind unconscious of dealing with numbers.

In dancing too one has to take care of Mathematics in taking steps and responding to the tunes. Moreover, the secret of the beauty of a garden, an ornament or a flowering pot lies in the hands of the arrangement made with the help of Mathematics. In brief we can say that secret of the beauty no matter whatever, lies in regularity, precision symmetry, order and arrangement and it is only Mathematics that is itself capable of decorating a thing with so many characteristics.

The study of Mathematics helps us to develop all over intellectual powers like power of imagination, memorization, observation, invention, concentration,

originality, creativity, logical thinking and systematized reasoning. Every problem in Mathematics is and open challenge to the faculties of the mind and organized exercise for one's mental health. Hubsch has rightly remarked that Mathematics is like a whetstone and by its study one learn to think distinctly, consecutively and carefully.

There is no end of the knowledge in the world of ours. The treasure of the knowledge is not going to be decreased in future but is bound to get more and more enriched. It is rather impossible to acquire such ocean of knowledge in one's life. There the important thing is not so much to acquire knowledge but to learn how to acquire knowledge. In the other word we should aim to acquire the power of acquiring knowledge. Moreover the knowledge is useful only when we know how to use of apply it in solving of our problems. The man who has a vast storage of knowledge but cannot use it at proper time is like a donkey who is loaded heavily without making any use of it is load. Professor Schultze says, "mathematics is primarily taught on account of mental training it affords and only secondarily on account of the knowledge of fact it imparts," Therefore both the things-- the power of acquiring knowledge and skill to use the acquired knowledge properly at the hour of need are only aimed through the teaching of mathematics.

Actually problem solving in mathematics is helpful in the proper development of mental powers. Every problem in mathematics passes through a process that trains and individual in the scientific method of reasoning and thinking. First of all the problem is studied and analysed to know what is given and what is given and what is to be found out. Then all the relevant fact and techniques concerning the solution of the problem are collected .All of these facts and techniques are carefully analysed and sorting out for choosing the most suitable ones. Now with the help of the chosen technique or sorted facts one tries to reach on some conclusion. The derived conclusion are again verified and accepted only when they prove true in like -wise situations. Therefore, the problems of Mathematics give opportunities for the training of the thought process and developing the facilities of the mind. Mathematics emphasizes originality than a mere reproduction and appeals more the reasoning power than to memory. It increases our power of concentration, reasoning and discrimination and thus helps in developing our mental power as Plato

observes;” Mathematics is the subject which provides an opportunity for the training of the mind to close thinking stirring up a sleeping and uninstructed spirit.”

Mathematics does not only help in developing and controlling the faculties and individual, it also equips him with proper intellect, reasoning and seriousness needed to lead a responsible life. That is why a mind trained through the study of Mathematics is more capable of leading a well disciplined life. Study of Mathematics is helpful in having constructive discipline. Every student of Mathematics is habitual to think properly without any unnecessary biases and prejudices. He can discriminate what is good and what is bad, therefore, He does not take decisions through his emotions but tries to apply the logic and intellect. He does not believe in hear saying but tries to investigate the thing before reaching to it.

Mathematics by its very nature helps the students to imbibe so many virtues and good habits like concentration, hardworking punctually, regularity, neatness like concentration, hardworking, habit of paying attention to the classroom study and doing regular home and drill work. These habits go in a long way to train the students in leading a life full of self-restraint and reasoning. It is why a kind trained by Mathematics is more disciplined to the mind that is not being trained by Mathematics.

The main aim of education is to help the children to earn their living and to make them self dependent. To achieve such aim, mathematics is most important subject than any other. At present the vocational value of engineering, technology, management, information technology has become more important and prestigious or reputed. The knowledge and training of these vocations is possible only through mathematics. Even to learn difficult vocations related to difficult branches of science require the knowledge of mathematics. More cover, Mathematics plays a very important role in different vocations. Like an architect cannot become a god designer without the knowledge of geometrical drawing and measurement. Further, official work requires the knowledge of mathematics, to become an engineer, accountant, banker etc. there is need of mathematical knowledge. Similarly to understand different sciences, Knowledge of mathematics is must. Therefore, it can be said that and every person needs mathematical knowledge for the earning and to maintain his living standard.

Mathematics has international value in the sense that it is helpful in creating international understanding and brotherhood. Its history reveals that there was a time when our ancestors were not able to count even more than one. Therefore, as far as the potential of knowledge and intellectual development is concerned we all human beings – the inhabitants of all countries, the follower of all the religions and members of all the races – are the same and therefore, it is unwise to think superior or inferior to any of the other race, religion, culture or nation.

That we have in Mathematics today is the net result of the combined efforts of all the nations and races. Mathematics is not an exclusive property of a particular nation or race. All mathematicians, irrespective of their casts, colours or creeds, have generously contributed towards the progress of Mathematics. The man made boundaries cannot restrict or check the co-operation among the mathematicians of the world. Any new idea brought in field of Mathematics does not take much time to become an international property. In fact co operation and acquaintance with the other's progress is very much essential in going ahead in the field of mathematics and Science. This need has brought the nations and races together. Even the bitter enemies like Russia and U.S.A have at least a common platform for understanding each other in relation to the exchange of Mathematical and scientific knowledge. Likely, there is a continuous flow of teachers, mathematicians and researchers from one nation to another nation for the exchange of mathematical and scientific ideas. The Mathematics books and research journals are also exchanged and circulated among almost all the nations of the world. All these things add to the feeling of international understanding and are helpful in bringing international peace.

Mathematics becomes meaningful when it helps in mental, emotional and social development. Those experiences which have utilitarian, practical and behavioural values. Further, it should be helpful in proper learning of other subjects and stimulate and maintain interest in the subject and which lead to development of proper attitude towards the subject. Mathematics can be taught in a manner by which the students learn mathematics and do not develop any fear about it. It is possible to arouse the student's interest by stimulating curiosity. The work in Mathematics should challenge the intellect of students. This stimulates their curiosity and mental

powers and help in awakening their interest. The intellectual activity is governed by (a) thirst for knowledge (b) love of truth and beauty (c) desire to interpret and control environment. The interest will be maintained if it remains challenging to their mental powers.

One is always anxious for a thing which one considers more and more valuable. Generally student's interest is aroused by pointing out the applications of mathematics to some other field with which he is already familiar. He comes to know that mathematics is an important subject worth learning. When he realises the utility of the subject his interest is aroused and maintained in mathematics. Mathematics is related to so many other subjects and the teacher should make full use of these correlations to arouse student's interest in mathematics. It is thus desirable to take up relevant problems of mathematics from other subjects while teaching mathematics. Recreational activities such as puzzles, riddles etc. make the subject lively and interesting active mathematics club is one of the good examples for students Interest.

Practical presentation of matter should precede its abstract form. Small children cannot understand and appreciate much at abstract level. The children like to observe and handle various objects. They may be asked to verify mathematics truths by making doing small experiments. A topic should not be continued for too long period, otherwise monotony would set in and interest of student will be lost. Similarly the same method or aid will lead to loss of interest. Thus the teacher should try to bring some novelty or variety in his day to day teaching. For good teaching a teacher should prepare his lesson plan and use correct method of teaching. A good teaching is sure to keep student interested in the subject.

The teaching can also be made interesting by proper use of teaching aids. The teaching aids provide a departure from routine teaching and help in making understand even difficult ideas. Preparation of aids and application can be regular activity of the learners. Physical discomforts should be eliminated, and distractions should be avoided. Psychological conditions for study should be comfortable for students and there should be no overcrowding in the class. Rooms should be well ventilated and classroom infrastructure should facilitate mathematics learning.

Review of the literature

The teacher should pay individual attention to various categories of students. All the students are not interested in the same things. Some can be motivated by challenging situations, some by practical work and so on. In the usual class teaching, some of the pupils may not understand certain steps, which is indicated by their blank note-books, such students begin to lose interest. The teacher should make sure that all understand what he teaches.

Ma (1999) conducted a meta-analysis of 26 studies on the relation between anxiety toward mathematics and achievement in mathematics among elementary and secondary students. Results revealed that the association is regular across gender groups, grade-level groups, cultural groups, instruments measuring anxiety, and years of publication. But association was however different on the basis of instruments measuring achievement as well as among types of publication. Researches using standardized achievement tests reported an association of significantly minor magnitude than researches using teachers' results and self constructed achievement tests.

Zakaria and Nordin (2007) investigated the effects of mathematics anxiety on 88 matriculation students in relation to their motivation and achievement. The results showed that the achievement scores and motivation scores of low, moderate and high anxiety groups were significantly different. Findings uncovered a low negative correlation between mathematics anxiety and achievement and also a strong negative correlation between motivation and mathematics anxiety

Johnson and Vandersandt (2011) investigated mathematics anxiety amongst education majors at present enrolled as pre-service teachers in special education, deaf and hard of hearing, early childhood and elementary education. Results point out that the maximum level of mathematics anxiety occurred with pre-service deaf and hard of hearing teachers as they enter their training as teachers. Results expose that positive education majors benefit more than others from mathematics training courses. The results of this study identify a lack of the current system of mathematics teacher preparation that does not assist in the reduction of mathematics anxiety, especially for the teachers of students with special needs.

Abbasi and Shahbazzadegan (2012) examined the connection between mathematical anxiety among 480 high school students and their self-esteem and

teachers' traits characteristics of 60 mathematics teachers. Results concluded that there is negative significant relationship between the students, mathematical anxiety and self-esteem of students. A significant relationship between the students' mathematical anxiety and their teacher's personality characteristics was also founded. Further, it was founded that mathematics anxiety was not associated with educational levels. But level of anxiety was different for students of humanities and natural sciences. Further male and female students were different on mathematics anxiety significantly.

Zakaria and Erlina (2012) in a research show that mathematics achievement in students is influenced by psychological factors such as mathematics anxiety. The research examined the differences in mathematics anxiety with respect to gender as well as the differences in mathematics achievement of students based on the level of mathematics anxiety. The findings of the study indicated the existence of mathematics anxiety among secondary school students. Further, mean difference between mathematics anxiety of males and females was not significant. Significant differences were found in achievement based on the level of mathematics anxiety.

Fraser (2013) investigated relationships between the learning environment and mathematics anxiety of 745 students, as well as differences between male and female students in perceptions of learning environment and anxiety. Mathematics anxiety was found to have two factor ally-distinct dimensions namely, learning mathematics anxiety and mathematics evaluation anxiety. In comparison to males, females perceived a more positive classroom environment and more anxiety about evaluation in mathematics and less anxiety about mathematics learning. Statistically significant associations were there for learning mathematics anxiety but not for mathematics evaluation anxiety.

Haciomeroglu (2013) examined relationship between mathematics anxiety and mathematics teaching anxiety of 260 elementary pre- service teachers. Results revealed low relationship between mathematics anxiety and mathematics teaching anxiety of pre-service teachers.

Roberts and Vukovic (2013) examined whether mathematics anxiety of students serves as an underlying pathway between parental involvement and mathematics achievement of their children. The results indicated 78 parents from U.S

low income and ethnic minority along with their children were respondents influence children's mathematics achievement by reducing mathematics anxiety. Through mediation analyses it was found that parental support and expectations influenced children's performance on word problems and algebraic reasoning by reducing their mathematics anxiety. Mathematics anxiety did not mediate the relationship between parents support and expectations.

Hemza and Helal (2013) investigated maths anxiety in undergraduates with different main subjects of study and across cultures. The results indicated a significant main effect for country, a non-significant effect for major, and a non significant interaction effect between country and major. Furthermore, the study used a two-way ANOVA between two factors (gender and country and maths anxiety). The analysis revealed a significant main effect for country, a significant effect for gender, and a non-significant interaction effect between country and gender.

Cheema and sheridon (2015) investigated the effect of time spent on homework and mathematics anxiety on achievement in mathematics. The results indicated that math anxiety and time spent on homework had a significant effect on maths achievement.

Ciftci (2015) conducted a study to compare the differences in mathematics anxiety and achievement in secondary school students according to their perceptions of the quality of their mathematics education and to test the effects of the perception of mathematics education quality on anxiety and achievement. The sample of the study was 638 secondary school students from schools located at the city centre of Eskisehir, spread in the region. Data were collected using the Mathematics Education Quality Scale and the Mathematics Anxiety Assessment. The result of the study was grouped as (I) input, (ii) process and (iii) output clusters, which each presented different perceptions of secondary school students regarding the quality of mathematics education. In addition, result also indicated that mathematics education quality perception positively affects the TEOG and mathematics GPA, whereas it negatively affects mathematics anxiety.

Mutawah (2015) examined the relationship between mathematics anxiety and students achievement in the school Bahrain. The sample of the study was 1352

primary students. The result of the study shows that level of anxiety is the highest among those who perceived themselves as low achievers.

Seng (2015) examined the relationship between mathematics test anxiety and numerical anxiety on student's mathematics achievement. Results of the study showed that all the variables of mathematics anxieties were statistically significant on student's mathematics achievement.

Parental Involvement

Most parents do not know much about the learning programs in their children's school or what teachers necessitate of them. Parental involvement in education has received much attention in recent decades as various school-improvement hard works have sought to enhance student learning. Although careful to suggest that parental involvement is an adjunct to well developed educational programs, many investigators have reported that parental involvement, including involvement in student homework, is related to student achievement and personal attributes conducive to achievement. Expanding the participation of parents in the education of their children has freshly been viewed as a significant scheme to go forward towards success and get better the excellence of education (Epstein, 1995; Chrispeels, 1996; Scheerens & Bosker, 1997).

Surrounded by the structure of as long as superior independence for schools, strengthening parental involvement is also considered important with the underlying thought that parents can be construed as a force with a vested interest and thereby the potential to balance the efforts of directorates and school boards at times. In addition, strengthening the cooperation between schools and parents appears to be critical to improve the school careers of disadvantaged groups, such as ethnic minority and low socio-economic status pupils (Smit et al., 2002). And along these lines, more and more pleas to better integrate the activities of schools, parents and local communities are being heard (McNamara et al., 2000; Smit et al., 2001). Performance vary from the provision of home support for parents, support for learning activities in the classroom (e.g. reading mothers), parent nights, helping-hand services at school (e.g. parent help in celebrations) to the formal participation of parents in school boards or councils and the integrated provision of services to the local communities. Research on parental involvement has shown considerable variation to occur in the level of

involvement and this variation to largely depend on the socio-economic location and ethnic surroundings of the parents (Boethel, 2003).

At the similar time, parental involvement has indeed been established to authority the cognitive and social progress of children. Presently which forms of parental involvement are mostly successful and which aspect of the development of children are purposely affected remains uncertain. Research on the disparity property of parental involvement on pupil related outcomes is scarce (Jordan et.al.2000).

Parent involvement includes a number of diverse forms of contribution in education and with the schools. Parents can support their children's schooling by presence school functions and responding to school obligations (parent-teacher conferences, for example). They can become more concerned in helping their children improve their schoolwork-providing encouragement, arranging for suitable study time and space, modelling desired behaviour (such as reading for pleasure), monitoring homework, and actively tutoring their children at home. Outside the residence, parents can serve as advocates for the school. They can volunteer to assist out with school actions or effort in the classroom. Or they can take an active role in the governance and decision making necessary for arrangement, developing, and providing an education for the community's kids.

Parent involvement is the participation of parents in every facet of children's education and development from birth to adulthood, recognizing that parents are the primary influence in children's lives (PTA, Connecticut, 2008). What does it mean to be an involved parent? A group of parents defined parent involvement as : involvement; being involved in their lives, at school, coaching them; spend time together-doing activities, attending activities, listening to and talking with them, reading together, having meals together, going on vacation, and being there for them; teach them/guide them-helping them with their education, help discern right from wrong, guiding through important decision, teaching citizenship and life skills and developing their unique talents and abilities; know them what is going on in their lives, playing close attention to where they spend their time and with whom, and knowing their interests and passions; Have the right mindset being interested in the child's activities, and loving them unconditionally; and provide for them; food, clothing, shelter, give them a wide range of experiences. (Baumgardner, 2007).

Children learn by copying what they see other people do. They are most influenced by the people who spend the most time with them. Parents are effective role models for their children when they plan time with their children, encourage them and spend time, talking and listening to them about that have meaning for both parent and child. Many parents believe that as children approach the teen years, their influence drops significantly. While it is true that parental influence does diminish, parents who continue to stay engaged in the lives of their children are still seen as an important resource and influence in the life of the child.

Young teens need parents in their life more than they admit (to the parents or themselves), although they may want parents to be present under different terms and conditions than they previously did. Some parents misread the signals that their children send and back off too soon. For children aged 9 about 75% of parents reported high or moderate involvement, but when children reach age 14, parental involvement dropped to 44% and continued to drop with age (U.S. Department of Education, 2003).

Lessening of adult authority due to maternal employment and a change of traditional family pattern increases problems for the youth. An adolescent who needs both educational and emotional support at this juncture is left unattended and unsatisfied. At the heart parent involvement seems to be open and effective communication. Lebel (2007) reported that although teenagers will make their own choices, a good home life can increase the odds that kids will avoid many of the pitfalls of adolescence. Particularly, a kind, warm, solid relationship with parents who demonstrate respect for their children, an interest in their children's activities, and set firm boundaries for those activities which may directly or indirectly lead to criminal activity, illegal drug and alcohol use, negative peer pressure, delinquency, sexual promiscuity, and low self-esteem. There are three major areas that are crucial to the parent-adolescent relationship – connection, monitoring, and psychological autonomy.

First, a sense of connection between a teenager and parent provides a backdrop against which all other interaction takes place. In addition to the sense of connection between parent and teenager, the monitoring process is crucial to successful parenting. Finally, parents need to encourage the developmental of

psychological autonomy in their teenage children. The combination of connection, monitoring, and psychological autonomy may sound simple, but the simplicity of the directions can be frustrating to navigators when they are lost.

While it is true that one of the main developmental tasks of adolescence is to separate from parents, and that peer influence tasks on greater and greater importance during teen years, there is still no substitute for the parent-teen relationship. Communication from parents to children and parental listening to the adolescent helps eliminate misunderstanding and fosters cooperation. When family communication breaks down, adolescents may find parents to be unsympathetic and may generally be unsatisfied (Dusek, 1987).

Review of the Literature

In a study of adolescents' relationships the most successful adolescent experiences occur in families in which interest, involvement, and intensity of interaction are at a moderate level. There is a thin line between sensitive, respectful involvement and intrusive involvement that adolescent need for separateness and independence (Hoffnung, 1991).

Silman (2006) revealed that greater parent involvement, greater parent monitoring, and better parent-child communication results in fewer adolescent behaviour problems. Adolescents are more likely to develop problematic behaviour patterns when the opportunities to engage in those behaviours, are repeatedly made available through a lack of parental intervention. Patterns of parental involvement were generally not associated with parent-offspring relationship quality at about adolescent age 13, but this earlier parent-offspring relationship quality moderated the associations between parental involvement and adolescent romantic experiences at about age 18 (Kan, et al., 2008).

Research indicates that parents contribute significantly to school effectiveness and to students' success. Especially, parental involvement has been one of the most significant of school effectiveness (Rosenblatt and Peled, 2002).

Fehrman et al. (1997) found that perceived parental involvement can help achieve higher grades through monitoring daily activities, by keeping close track of

their school progress, and by working closely with them for planning post high school pursuits.

Keith et al. (2006) reported that parental involvement has a large and significant effect on student grade point average in standard 10th. The pattern of influence of the variable was indistinguishable for boys and girls and had important effects for all ethnic groups.

Wang (2006) found that children with uninvolved parents were less likely to complete academic work than those with involved parents.

Gibson and Jefferson (2006) examined the effects of perceived parental involvement and the use of growth fostering relationship on self concept of 78 adolescents. Results support the influence of the family, peers, mentors and involvement in community groups on adolescent self concept.

Furthermore, perceived maternal involvement contributes positively to the psychological wellbeing of adolescents (Flouri and Buchanan, 2003). The role of strong and positive adult influence appears to be important to adolescents evolving self concept. Veneziano and Rohner, (2002), concluded that parental involvement was a significant indicator of psychological adjustment in children. Teenage parenting is filled with emotional issues both for the society and teens (Gladding, 1995) and a positive, constructive and sensitive parental involvement can play an effective role on it.

Greenwood and Hickman (1991) conducted a study on parent participation in education. The sample of the study was elementary school students and their parents. The result of the research revealed that Parent involvement has as large influence on student learning and behaviour as of teacher and the school.

Epstein and Dauber (1991) conducted a study uses data from 171 teachers in 8 inner city elementary and middle schools to examine the connections between school programs of parent involvement, teachers' attitudes, and the practices that teachers use to involve parents of their own students. Patterns are examined at 2 levels of schooling (elementary and middle), in different academic subjects, under various classroom organizations (self-contained, semi departmentalized, departmentalized), and under different levels of shared support for parent

involvement by the teachers and significant other groups. Each of these variables has important implications for the types and strengths of school programs and teachers' practices of parent involvement. Results exposed that elementary school programme were stronger, more positive and comprehensive than middle school programs. Discrepancy scores show greater differences between teacher and principal, teacher and teacher-colleagues, teacher and parents are associated with weaker involvement programs and less involvement with families who are based to reach.

Grolnick and Slowiaczek (1994) conducted a study with 2 goals. The first was to examine a multidimensional conceptualization of parent involvement in children's schooling, defined as the allocation of resources to the child's school endeavours. A second goal was to evaluate a model in which children's motivational resources (i.e., perceived competence, control understanding, and self-regulation) are mediators between parent involvement and children's school performance. Three hundred 11-14 years old children and their teachers participated in the study. Factor analysis of a set of parent involvement measures supported the hypothesized 3 dimensions of parent involvement: behavior, intellectual/cognitive, and personal. Path analyses revealed indirect effects of mother behavior and intellectual/cognitive involvement on school performance through perceived competence and control understanding, and indirect effects of father behavior on school performance through perceived competence. The results argue against a one-dimensional understanding of parent involvement and maintain the view of the child as an active constructor of his or her school practice.

Further, Sui-chu and willms (1996) studied indicators of parental involvement in children's education vary considerably across studies, most of which treat parental involvement as a one-dimensional construct. This study identified four dimensions of parental involvement and assessed the relationship of each dimension with parental background and academic achievement for a large representative sample of U.S. middle school students. The findings provide little support for the conjecture that parents with low socioeconomic status are less involved in their children's schooling than are parents with higher socioeconomic status. Furthermore, although schools varied somewhat in parental involvement associated with volunteering and attendance at meetings of parent-teacher organizations, they did not vary substantially in levels of involvement associated with home supervision, discussion of school-related activities, or parent-teacher communication. Yet the debate of

school-related actions at home had the strongest connection with academic achievement. Parents' participation at school had a moderate consequence on analysis achievement, but a negligible result on mathematics achievement.

Griffith (1998) employing a sample of 122 public elementary schools in the present study used results of parent and student surveys to examine relations among school structure, school population composition, parent involvement, and parent perceptions of school safety, school climate, the school facility, the helpfulness of school staff, the academic instruction, teacher-student relationships, and student recognition. At the individual parent level, characteristics associated with higher participation in school activities included having a child enrolled in the gifted and brilliant program, a child in the second grade, multiple children enrolled in the public schools, and perceptions of a safe, empowering, and positive school climate. In contrast, characteristics associated with lower parent participation in school activities included being Hispanic, African American, or Asian American; being of lower socioeconomic status; having a child enrolled in either special education or the English-as-a second-language program. At the school level, higher parent participation was reported in schools having larger classes and larger student-teacher ratios, and in schools where parents said they were less informed about their children's education and perceived a lower quality of academic instruction and not enough student recognition. Lower parent participation was reported in schools with more student newcomers and with greater percentages of students enrolled in the free and reduced meals program.

Fan (2001) conducted a study to assess the effect of parental involvement on students' academic growth during the high school years. National Education Longitudinal Study of 1988 data was used, and latent growth curve analysis within the framework of structural equation modelling was the major analytic tool. The result of the study showed that: (a) Parental involvement appears to be multidimensional; (b) ethnic group samples reported comparable degrees of parental involvement; (c) parents' aspiration for their children's education attainment had a consistent and positive effect on students' academic growth; and (d) the effect, or lack thereof, of parental involvement was consistent across ethnic group samples and across data sources (student vs. parent data).

Jeynes (2005) examined the relationship between parental involvement and the academic achievement of urban elementary school children. The sample of the study was elementary school students. The result of the study indicates a significant relationship between parental involvement and overall academic achievement.

Sleegersb (2005) conducted a study on parental involvement is seen as an important strategy for the advancement of the quality of education. In addition, special attention is paid to the children of low-educated and ethnic minority parents. Various forms of both parental and school-initiated involvement are examined. The sample of the study was more than 500 schools and 12,000 pupils in the last year of primary school and their parents. The result of the study revealed that predominantly schools with numerous minority pupils appear to provide a considerable amount of extra effort with respect to parental involvement, but that a direct effect of such involvement cannot be demonstrated.

Domina (2005) conducted a study on past decades; a great deal of energy has been dedicated to improving children's education by increasing parents' involvement in school. However, the evidence on the effectiveness of parental involvement is uneven. The sample of the study was children from the National Longitudinal Survey of Youth 1979 to estimate time-lagged growth models of the effect of several types of parental involvement on scores on elementary school achievement tests and the Behavioural Problems Index. The result of the study showed that parental involvement does not independently improve children's learning, but some involvement activities do prevent behavioural problems. Interaction analyses suggest that the involvement of parents with low socioeconomic status may be more effective than that of parents with high socioeconomic status.

De Hass et.al. (2005) conducted a study on relation of parent involvement with motivation of elementary and high school students. The result of the study shows that students from the elementary school to high school show a beneficial relationship between parental involvement and the following motivational constructs: school engagement, intrinsic/extrinsic motivation, perceived competence, perceived control, self-regulation, mastery goal orientation, and motivation to read.

Bakker and Laeven (2007) conducted a study on a Parental involvement and teacher perceptions of parental involvement in the education of children were studied

in relation to level of parental education and pupil achievement. The sample of the study was 218 parents and 60 teachers. The result analyse that regression analyses and analyses of variance showed teacher perceptions of parental involvement to affect pupil achievement more strongly than parental reports. The result analyses showed teacher perceptions to be weakly related to parental reports of their own involvement and to operate at a different level. The results suggest that teacher perceptions of parents may be stereotyped and that such stereotypes can clearly affect academic results.

Mo and Singh (2008) examined the relationship parents relationships and involvement in their children's lives and the effects on the students school engagement and school performance. The study used the Wave I data from the National Longitudinal Study of Adolescent Health (Add Health). The data on seventh and eighth grade Students School and family experiences were analyzed using structural equation modelling. The study examined the effect of parents relationships and involvement on students cognitive, emotional, and behavioural engagement in school and subsequently on school performance. The results confirmed the importance and significance of parents involvement in middle school students school engagement and performance.

Calkins et.al. (2011) conducted a study on parent involvement in a child's education. The sample of the study was 158 seven-year old participants, their mothers, and their teachers. The Results indicated a statistically significant association between parent involvement and a child's academic performance, over and above the impact of the child's intelligence. A multiple mediation model indicated that the child's perception of cognitive competence fully mediated the relation between parent involvement and the child's performance on a standardized achievement test. The quality of the student-teacher relationship fully mediated the relation between parent involvement and teacher ratings of the child's classroom academic performance.

So, from the above review on mathematics anxiety and parental involvement it can be concluded that mathematics anxiety has been studied with motivation, achievement, self-esteem, learning environment, and mathematics teaching anxiety (Ma, 1999; fraser,2013; Zakaria and Nordin,2007; Abbasi and

Shahhazzadegan,2012) parental involvement has been studied with academic growth, academic achievement, motivation, school engagement.(Fan,2001;Jeynes, 2005; De hass, 2005; Domina,2005). There is dearth of studies on the association of two variables. So, the present study is humble attempt on the part of investigator to the study Mathematics anxiety in relation to parental involvement.

1.2 SIGNIFICANCE OF THE STUDY

Anxiety is considered as a block to an activity. It is, therefore, considered by many that math anxiety interferes with the activity and so learning is impeded. This notion is, however, based on an erroneous understanding of the role of math anxiety. In fact, math anxiety might deter learning or might also stimulate it. Mathematics anxiety is hampering for young people's achievements. Students with mathematics anxiety problems tend to show lower achievement in math. Mathematics anxiety can have an effect on a student's evaluation performance.

The present study advances the previous findings by demonstrating the relation of mathematical anxiety among secondary school students with parental involvement. In Indian setting, we have few studies highlighting the influence of parents on children's mathematics anxiety. The study also accentuates the role of parents and their contribution to reduce the mathematical anxiety among their children for the better performance in mathematics.

Also researches on involvement of parents yield the results that interest and involvement of parents in students lines is very crucial factors to their success and academic growth. Parents play a great role in the academic life of students in terms of motivating them, helping them in self regulation, enhancing student engagement and much more. On the same lines studied have also focused on role of parents in controlling their children in various academic situation. In contribute to it, the present study will be beneficial for the parents and teachers so as they come to know about the importance of parents involvement in overcoming the anxiety related problems of students. Further, students will also feel the importance of contribution of the parents in their lines. On the whole study will suggest recommendation for schools and educational agencies to enhance the participation of parents in students lives.

1.3 STATEMENT OF THE PROBLEM

Present study, was conducted on Mathematics Anxiety among secondary school students in relation to involvement of their parents. So the dissertation is titled as **MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS IN RELATION TO PARENTAL INVOLVEMENT.**

1.4 OPERATIONAL DEFINITIONS

Mathematics Anxiety

Mathematics anxiety - An emotion of worry, nervousness, or fear that interferes with math performance in mathematics. In the present study mathematics anxiety will include maths tests anxiety and numerical anxiety.

Parental Involvement

Parents involvement is the participation of parents in every facet of children's education and development from birth to adulthood, recognizing that parents are the primary influence in children's lives (PTA, Connecticut, 2008). In the present study parental involvement will be operationalized as connection between parents and children, monitoring of children by parents and psychological autonomy given to the children by parents. Secondary school students studying in grades IX and X are called as secondary school students and will be taken as sample for the present study.

1.5 OBJECTIVES OF THE STUDY

1. To analyse the levels of mathematics anxiety among secondary school students.
2. To study the patterns of parental involvement as perceived by secondary school students.
3. To compare mathematics anxiety of secondary school students with respect to gender and different boards of education.
4. To compares patterns of parental involvement as perceived by among secondary school students with respect to gender and different boards of education.
5. To explore the relationship between mathematics anxiety and parental involvement among secondary school students.

1.6 HYPOTHESES OF THE STUDY

1. There exists no significant difference between mathematics anxiety of male and female secondary school students.
2. There exists no significant difference in mathematics anxiety of students studying in schools affiliated to ICSE, CBSE and PSEB boards.
3. There exists no significant difference between parental involvement as perceived by male and female secondary school students.
4. There exists no significant difference in patterns of parental involvement as perceived by students studying in schools affiliated to ICSE, CBSE and PSEB boards.
5. There exists no significant relation between mathematics anxiety and parental involvement of secondary school students.

1.7 DELIMITATION OF THE STUDY

1. The study will be limited to schools of 3 districts namely Gurdaspur, Jalandhar and Kapurthala only.
2. The study will be limited to students studying in schools affiliated to ICSE, PSEB, and CBSE boards only.

CHAPTER- 2

METHODOLOGY

2.1 RESEARCH METHOD

The use of term ‘Methodology’ dates back to 1800 and it’s originated from a Latin word ‘*Methodus + –logia –logy*’. In New Latin, the term is ‘*Methodologia*’. It is synonymous to words like line, course, policy, procedure and program. Often, the word ‘method’ and the term ‘methodology’ are used interchangeably. They are not exactly the one and the same thing. A narrow difference exists. Methodology is a broad term whereas method is narrow –method refers to a specific way of doing things while methodology refers to a set of methods, rules or ideas. Quite confusingly, ‘method’ and ‘procedure’ are sometimes interchanged and used. Procedure is the steps involved in applying a method and cannot be equated with method directly.

Methodology enriches the study. As stated above that methodology refers to a set of methods, it is of utmost importance to select method that best suits the research problem. This particular chapter deals with plan, method of investigation, tools and techniques applied for data collection and also talks about sample briefly but adequately.

In doing a research, there are three major methods: Historical, Experimental and Descriptive method. The nature of the problem under study (the intention of the study), the availability of funds and time with the researcher determines the method to be used. For the present study, descriptive method is selected.

In obtaining pertinent and precise information concerning the current status of phenomena, descriptive research studies are designed. And, from the facts discovered, valid general conclusions are drawn. Descriptive research studies are not restricted only to fact finding. They often result in formulation of important principles of knowledge and solution of significant problems concerning local, state, national and international issues. Such studies involve measurement, classification,

analysis, comparison, and interpretation. Phenomena are investigated in their natural setting through descriptive studies and their purpose is both immediate and long range. Such studies involve events that have already taken place and are related to a present condition. They vary greatly in complexity. Though they do not aspire to develop an organized body of scientific laws (being a primitive type of research), they are helpful in solving local problems as useful information are usually provided by them. Not only that, they at times provide data thereby forming the basis of research of a more fundamental nature.

The most popular and most widely used research method in education is the descriptive research method. The use of this particular research method in educational field is immense in the sense that it helps to explain educational phenomena in terms of the conditions or relationships that exists, opinions that are held by students, teachers, parents and experts, processes that are going on, effects that are evident, or trends that are developing. The apparent ease and directness of this method helps researcher in gathering information by a simple questionnaire. Descriptive survey at times is the only means for improving educational practices and instruction by obtaining opinions, attitudes, suggestions and other data. Hence, in solving problems about children, school organization, supervision and administration, curriculum, teaching methods and evaluation, descriptive investigations are of immense value.

By various writers, descriptive studies have been classified variously on the basis of the purpose they achieve; geographical areas they cover; and some on the basis of the techniques they employ. Broadly, it can be either quantitative or qualitative descriptive research. The quantitative descriptive research uses quantitative (statistical) methods in describing, recording, analyzing and interpreting conditions that exists at present while qualitative descriptive research uses qualitative methods to discover and describe non-quantifiable relationships between existing variables.

Descriptive studies may be classified into three categories for the sake of convenience. These are: (1) survey studies; (2) interrelationship studies; and (3) developmental studies. The classification though arbitrary, from an operational as

well as from an organizational point of view, it seems to have merit. Some investigations fall exclusively within one of these categories, but others have characteristics of more than one.

When the intent of the researcher is to employ data to justify current conditions and practices, or to make more intelligent plans for improving them, survey studies are conducted to collect detailed descriptions of existing phenomena. Their objective is to determine the adequacy of status by comparing it with established standards.

Depending upon the scope, nature and purpose of the problem under investigation, survey studies may take different forms. Some surveys encompass several countries, states or regions; or may be limited to one country, region, state, district, city, school system, or some other unit. Survey data may be collected from every unit of a population or from a representative sample. The information gathered may be concerning a large number or related factors or may be confined to a few selected items.

This study is an inter-relational study focused on investigating teacher effectiveness in relation to adjustment and organizational politics among secondary school teachers. Descriptive survey method was employed to collect the data.

2.2 SAMPLING

Sampling refers to the process of drawing sample (representative proportion of population) from population. In any research work, interviewing or observing each unit of population is usually not feasible. Lack of time and money is the main hindrance the researchers face in this respect. Generally, researchers need to draw sample from the population and conduct study on the selected sample and deduce conclusions for the population. For this reason, sample taken should be representative proportion of the population. Therefore, sampling procedure/technique is very important to be considered.

In this study, 281 secondary school students were chosen randomly from secondary schools affiliated to PSEB, CBSE and ICSE boards in Gurdaspur, Jalandhar and Kapurthala districts of Punjab. Districts and schools were under various boards were selected on the basis of convenience of the investigator and

students from the selected schools were selected randomly for collection of data.

Sampling design for the study is given in figure below:

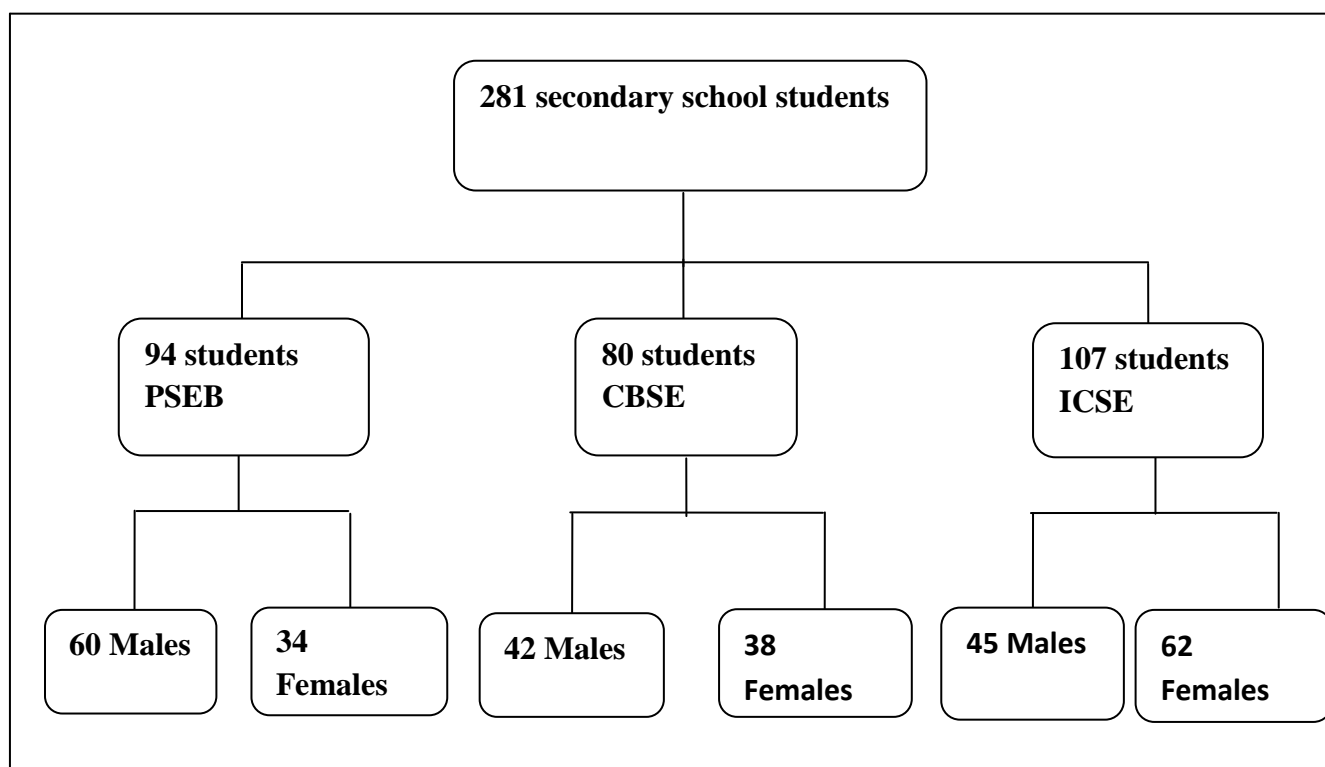


Table 2.1 Sample Design

Investigator selected six secondary schools Jalandhar and Gurdaspur district.

The distribution of the sample from various schools is given in the table below.

Table 2.2 Distribution of Sample

Gurdaspur District			
Sr.No.	Name of Schools Batala	No of Males	No of Females
1.	Baring union Christian school (ICSE)	23	27
2.	Des Raj D.A.V.Sr.Sec.Public school(PSEB)	38	12
3.	Des Raj Heritage Public School(CBSE)	27	23
4.	St. Francis School(ICSE)	22	35
Jalandhar District			
5.	Shri Mahavir Jain Model Sr. Sec School (CBSE)	15	15
Kapurthala District			
6.	Govt.Sen.Sec.School (PSEB)	22	22
Total		147	134

2.3 TOOLS

Researcher collects data from various fields. The instruments or devices employed in collecting data are called as research tools. The nature or the type of study undertaken by the researcher determines appropriateness of the tools. In other words, a valid tools need to be used for collecting required data. If the existing research tools do not serve the purpose, the researcher may have to modify or construct his own and then standardize it. Thus, lots of care and concern needs to be paid while selecting research tools. For present study, the following standardized scales were used to collect the data from the sample

1. Mathematics Anxiety scale (2011) by Dr. Ayatollah Karimi, Prof. S.Venkatesan
2. The Parental Involvement Scale(2009) by Dr.Vijaya Laxmi Chouhan, Mrs.Gunjan Ganotra Arora

(1)Mathematics Anxiety scale (2011) by Dr. Ayatollah Karimi, Prof. S.Venkatesan-

The scale measures the anxious of students. The scale is suitable for both individual and group administration. The scale is a resource to study, research or survey the adolescent population and to prepare and plan future interventions for them. It can be useful for psychologists, counsellors, educationist, in their specific areas of work, to understand secondary school students anxious level.

Administration and Scoring

The 37-item Mathematics Anxiety Scale- Indian version has been empirically derived from 96 items in its original counterpart. It covers two factors (19 items on ‘maths test anxiety’ and 18 items in ‘numerical anxiety’). It can be administered individually on a group of students. Although not a timed or speed test, the maximum time needed for completion of the scale is about one hour. The items are given below. The questions are presented along with a Likert scale of 1-5 to measure anxiety from 1(not at all) to 5 (very much).To find out the overall ‘anxiety score’ of a given subject, the total selected points must be added (the score is the corresponding number of response on five points scale. The range of score on this scale for a subject can vary between 37 (minimum) to 185 (maximum).

Reliability and Validity

The results of reliability coefficients expressed as alpha cronbach values on internal consistency of the MAS-1 for the overall and two sub scales are: 0.80 for factor one, 0.88 for factor two and 0.84 for total scores respectively. Convergent validity as assessed through two correlation studies between the overall scores of MAS-I and the MARS-Suinn in India indicate($r: 0.88$), with TAI ($r: 0.77$) and with mathematics performance ($r-0.44$).

(2) The Parental Involvement Scale (2009) by Dr.Vijaya Laxmi Chouhan, Mrs.Gunjan Ganotra Arora

The scale measures the perception of students towards involvement of their parents. The scale is suitable for both individual and group administration. The scale is a resource to study, research or survey the adolescent population and to prepare and plan future interventions for them. It can be useful for psychologists, counsellors, educationist, in their specific areas of work, to understand adolescents and also plan social or family level programmes to enhance adolescent's developments.

Instructions for Administration

1. The respondents have to be told that the test contains some statements about them. There are five alternatives to choose from. They should read each statement carefully and tick the alternative they find most suitable.
2. No answer was right or wrong and their responses will be kept confidential.
3. It should be specified that the scale was not meant to rank them as good or bad, right or wrong but rather to know the differences between individuals.
4. No time limit should be given for completing the scale however most of the respondents should be able to complete it in about 15 minutes. It was advisable to emphasize that responses should be ticked as fast as possible. It is advisable to emphasize that responses should be ticked as fast as possible.
5. The instructions should be read out and clarified for better understanding.
6. It is important to mention that all statements should be responded to; no statement was to be left unanswered.

7. It may not desirable to tell the respondents the exact purpose for which the scale was being used, if needed a generalized answer can be given.

Reliability

The reliability of the test was calculated for the entire length of the scale on sample of 100 adolescents (boys and girls), aged 13-18 years. The split half method and was used and the split half reliability coefficient found to be 0.92.

Validity

All the statements on the scale are clearly concerned with the study variable, thus face validity is confirmed. The critical appraisal by experts, their feedback and rating and the approval ensure the content validity. Validity of the research tool was calculated by the product moment method and was found to be 0.85.

Scoring

The total 25 statements comprise of both positive and negative statements, 14 positive and 11 negative. The list of negative statements numbers and positive statements numbers are given below.

Table 2.3 List of negative and positive statements in the serial order

Sr. No.	Statement Type	Item Numbers in Serial Order	Total
1.	Positive	1,2,4,6,8,9,11,12,13,14,15,20,22,24	14
2.	Negative	3,5,7,10,16,17,18,19,21,23,25	11
		Total	25

This scale is a five point scale. The items can be responded to by choosing from options; always, often, sometimes, rarely, and never. The minimum score on the scale is 25 and the maximum score is 125. The scoring of the positive and negative statements is done from 5 to 1 and 1 to 5 respectively as below in Table 3.

Table 2.4: The scoring is as below for the positive and negative statements

Statement Type	Always	Often	Sometimes	Rarely	Never
Positive Statements	5	4	3	2	1
Negative Statements	1	2	3	4	5

Norms and interpretation

After the computation of the total scores the percentile ranks are calculated and interpreted as very low, low, average, high or very high perceived parental involvement. Percentile norms for the interpretation of the parental involvement scale (As perceived by adolescents) were established from a sample of 100 adolescents, 50 boys and 50 girls in the age group 13 to 18 years. As the norms are based on a sample drawn from the city of Udaipur, Rajasthan the users are advised to develop their own norms based on their own sample. The grouping of very low, low, average, high and very high parental involvement in terms of percentiles for interpretation is given below in table 1.

Table 2.5: The percentile norms for the interpretation of scores

Sr.No.	Percentiles Scores	The Parental Involvement scale	Score Awarded
1.	Up to 20 percentiles	Very low	25 – 75
2.	21- 40 percentiles	Low	76 – 84
3.	41-60 percentiles	Average	85 – 88
4.	61-80 percentiles	High	89 – 95
5.	81 and above percentiles	Very High	96 -125

2.4 PROCEDURE OF DATA COLLECTION

The data required for the study was collected from ICSE, CBSE, PSEB schools situated in Jalandhar and Gurdaspur district of Punjab. After the selection of suitable tools and related information about the selected variable of the target group that is the secondary school students, the next step was the collection of data. For this purpose investigator visited selected secondary schools of Jalandhar, Kapurthala and

Gurdaspur. Prior permission had been taken from principals of selected secondary schools. The secondary school students were taken to confidence. Instruction regarding to conduct of test were given and subjects were ensured that the information provided by them will be kept confidential.

2.5 STATISTICAL TECHNIQUES

Unless interpreted, the data collected from the field is meaningless. Statistical technique helps in interpreting the data and give meaning to the work of the researchers. Statistical techniques are therefore indispensable. The finding of the research is unveiled only through application of statistical techniques to the data. There are many statistical techniques. Their use depends on the nature of the study. In this study, the data collected from the field was analyzed using following statistical techniques.

1. To study the behavior of the sample with regard to the chosen variables, mean and standard deviation were applied.
2. The difference between means of two samples on the variables was examined using t-test.
3. For exploring correlation of organizational politics with teacher adjustment and effectiveness, Pearson Product Moment of Correlation (r) was calculated.

CHAPTER-3

ANALYSIS AND INTERPRETATION

Besides its usefulness in gathering and organizing numerical data which is merely a raw data, statistical techniques have greatly contributed in analyzing and interpreting numerical data thereby giving meaning or sense to raw data. It is only after giving sense to raw data that the researchers draw answers to their research questions. It may not be wrong to say that analysis and interpretation is something that gives life to meaningless raw score collected from the field.

As a part of plan of attack or to reach to appropriate answers to research questions, data gathering tools are employed and then the raw data that the researchers obtain after scoring are organized. Basically, editing, classifying and tabulating quantitative information are included in data organization. The gathered raw data when checked for accuracy, usefulness and completeness is what is implied by editing. Classification on the other hand refers to dividing of data into different categories, classes, groups or heads. Usually, for this purpose, nature of the problem, the hypotheses to be verified, responses or characteristics of the samples the researcher has selected acts as guidelines. The next thing that comes under organization of data is tabulation which is referred to the process of transferring classified data from data gathering tools to the tabular form in which they may be examined systematically. After this, keeping in view the research objectives and hypotheses the data so organized is analyzed using suitable statistical techniques and then interpreted.

The organized material needs to be studied deeply from different angles to fish out the inherent facts embedded therein. It involves breaking down or splitting complex things into smaller parts so as to enhance fact finding. This is known as analysis. Basically, interpretation is nothing but the process of stating what the results show. It calls for a careful, logical and critical examination of the results obtained after analysis. In the present study titled “Mathematics anxiety among secondary school students in relation to parental involvement”, the numerical data are processed or analyzed using statistical package for the social sciences (SPSS).

3.1 Result pertaining to levels of Mathematics Anxiety among secondary school students

Objective 1. To analyse the levels of Mathematics anxiety.

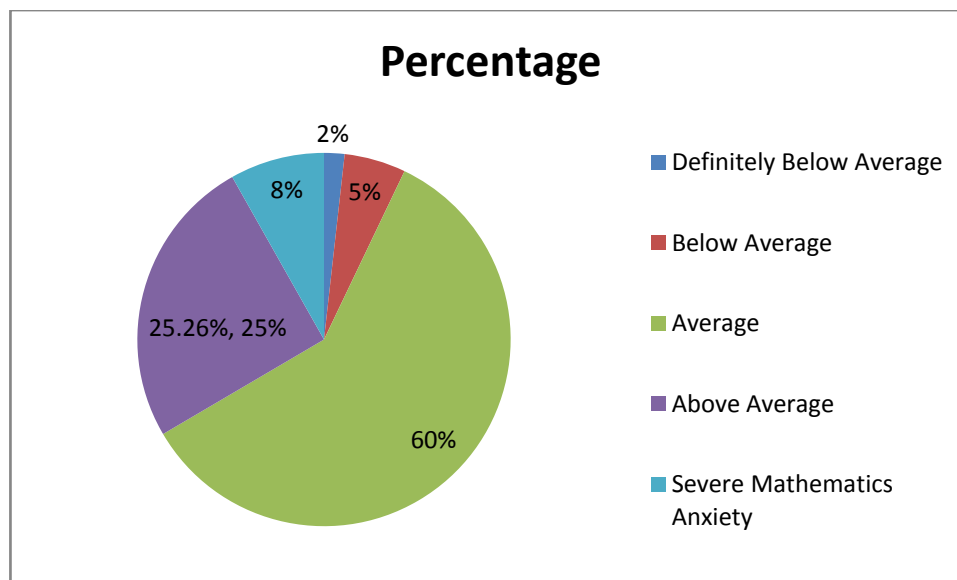
In order to study the level of mathematics anxiety the data was arranged in ascending order and number of students were categorised in different level of mathematics anxiety on the basis of interpretation given in the manual. Finally the percentages of students falling under different categories were calculated as given in the table below.

Table 3.1: Levels of Mathematics Anxiety

Level	Level of Mathematics Anxiety		
	Range	No. of Students	Percentage
Definitely Below Average	Below 46	5	1.77%
Below Average	46-66	15	5.33%
Average	67-110	167	59.43%
Above Average	111-130	71	25.26%
Severe Mathematics Anxiety	130	23	8.18%
Total		281	99.97%

The table 3.1 shows that out of 281 students, only 8.18% exhibits severe level of mathematics anxiety. This means that only 23 students (out of 281 secondary school students who were sampled for the present study) are highly anxious about mathematics. Further, it is clear from the table that 25.26% of the total sample possesses above average level of anxiety and majority of the students (59.43%) fall in average category of mathematics anxiety. Only 5.33% secondary school students have below average anxiety in mathematics and 1.77% is of definitely below average anxiety meaning thereby that only 7% students are less phobic on mathematics. So, it is clear from the data that nearly 33% students are highly anxious about mathematics. So, above results are clearly indicating that maximum sample from the population falls in the centre of normal probability curve and approximately 8% sample fall on the extreme each of the ends of the curve. Hence results are line with the NPC and are indication of the fact that average anxiety is required for good results. Further, students who are less anxious may have sound interest and abilities in mathematics

and students who are exhibiting higher levels may not like and understand mathematics easily and so develop anxiety about learning mathematics.



Graph 3.1.1 Levels of Mathematics Anxiety of students

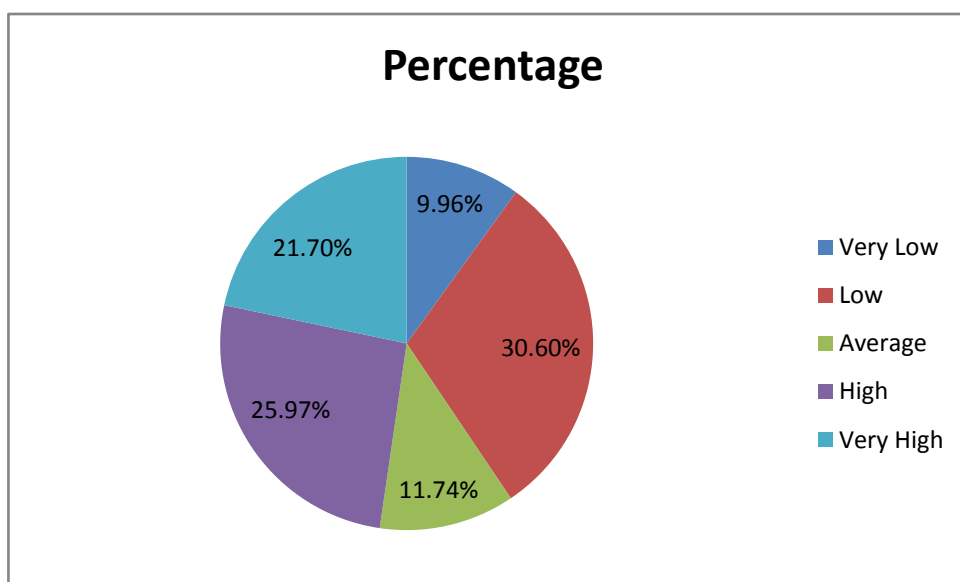
3.2 Objective - To study the levels of Parental Involvement among secondary school students

In order to study the level of parental involvement the data was arranged in ascending order and number of students were categorised in different level of Parental involvement. on the basis of interpretation given in the manual. Finally the percentage of students falling under different categories was calculated as given in the table below.

Table 3.2: Level of Parental Involvement

Level	Level of Parental Involvement		
	Range	No. of Students	Percentage
Very Low	25-75	28	9.96%
Low	76-84	86	30.60%
Average	85-88	33	11.74%
High	89-95	73	25.97%
Very High	96-125	61	21.70%
Total		281	99.97%

The table 3.2 shows that 21.70 % (61) students perceived very high level of parental involvement. Further, it is clear from the table that 25.97 % (73) of the total sample perceived high level of the parental involvement. Only 33 students i.e. 11.74 % perceives that their parents show an average level involvement in their life. Above all, it is clear from the graph that approximately 41% students are of perception that their parents are least involved in their education and life. Although the trend is deviating more towards the higher side but it is obvious from the results that even less than 50% students high perceive levels of involvement and nearby equal to it perceive lower level of involvement.



Graph 3.2.1 Levels of Parental Involvement as perceived by students

3.3 Results pertaining to Mathematics Anxiety with respect to gender and different boards of education.

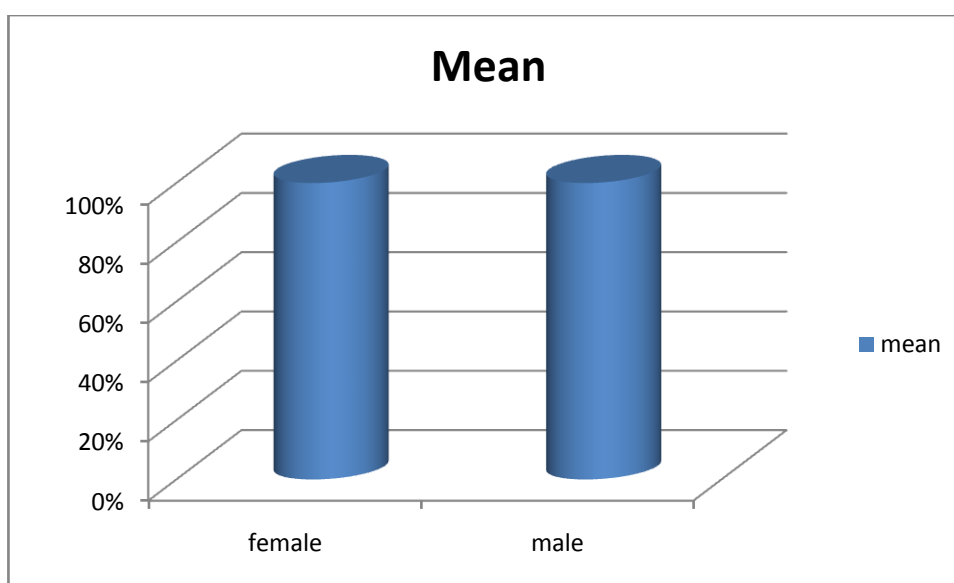
3.3.1 To compare the mathematics anxiety of secondary school students with respect to gender.

Ho: There exists no significant difference between mathematics anxiety of secondary school students with respect to gender.

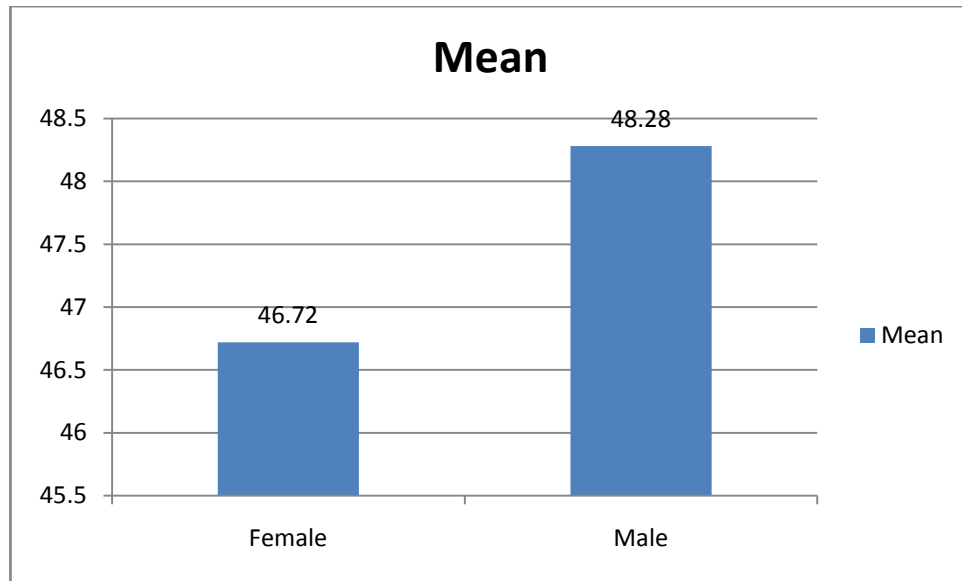
In order to compare the mathematics anxiety of male and female secondary school students the mean value of students falling under different categories was calculated a difference between means was studied by applying t-test.

Table 3.3.1 Gender difference in Mathematics Anxiety

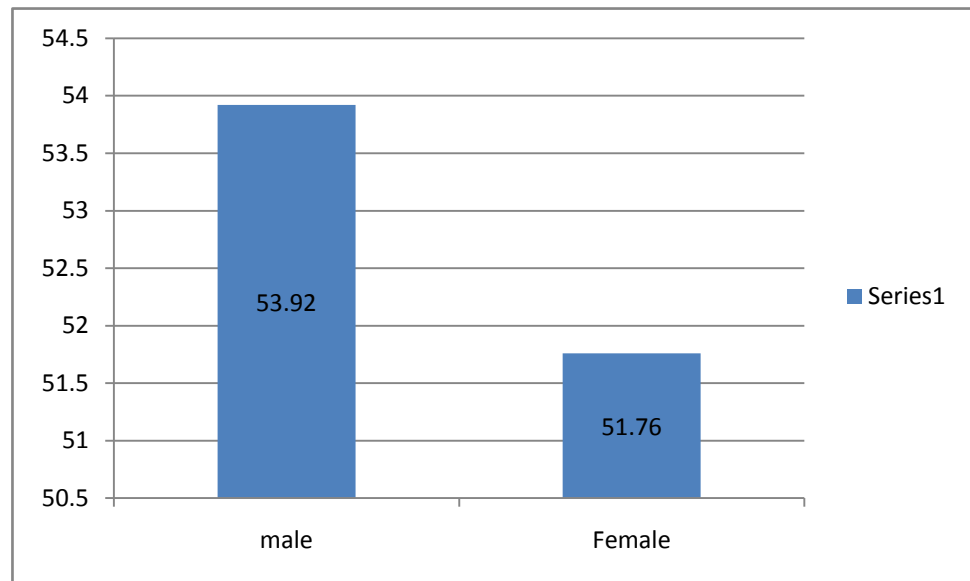
Dimensions	Gender	N	Mean	Stdev.	Mean Difference	df	t	P-value	Remarks
Total Mathematics Anxiety	Female	134	100.84	24.56	-0.56	279	0.21	0.83	Insignificant
	Male	147	100.28	20.44					
Numerical Anxiety	Female	134	46.72	15.32	1.55	279	0.98	0.32	Insignificant
	Male	147	48.28	10.53					
Maths Test Anxiety	Female	134	53.92	12.56	-2.16	279	1.46	0.15	Insignificant
	Male	147	51.76	12.21					



Graph 3.3.1.1 Overall Maths Anxiety of male and female students



Graph 3.3.1.2 Numerical Anxiety of male and female students



Graph 3.3.1.3 Maths Test Anxiety of male and female students

The table 3.3 shows dimension wise and overall difference between genders in mathematic anxiety. Looking at the overall mathematics anxiety, the mean value of females (M=1.84, S.D= 24.56) is only a bit higher than the mean value of males (M=100.28, SD=20.44). Also p-value (p= 0.83) *being* greater than 0.05, indicates that the difference is statistically insignificant. So, accepting the null hypotheses

stated as “there exists no significant difference between mathematics anxiety of male and female secondary school students” is rejected. It is clear that male and female secondary schools students are statistically equal in mathematics anxiety. Further, exploring the difference between the males and females on dimensions of mathematics anxiety, it is clear that mean score of males ($M=48.28$, $SD= 10.53$) is higher than mean score of females on numerical anxiety but this difference is again statistically insignificant as p-value (0.32) is greater than 0.05. Also for another dimension of mathematics anxiety i.e. maths test anxiety p-value ($p=0.15$) is greater than 0.05 indicating insignificant difference between genders but female students ($M=53.92$, $SD=12.56$) are on the higher side on this dimension than males ($M=51.76$, $SD=12.21$) which is vice versa to numerical anxiety. This may be due to the reason that all the students whether male or female are getting same kind of instruction. So, gender has not any impact on mathematics anxiety of secondary students. The result is in line with the results of study conducted by Zakaria and Erlina (2012) showed that mathematics achievement in students is influenced by psychological factors such as mathematics anxiety. The finding of the study revealed that mean difference between mathematics anxiety of males and females are not significant. Who found insignificant difference between genders on mathematics anxiety in their study on influenced of psychological factors such as mathematics anxiety on achievement in mathematics.

3.3.2 To compare the mathematics anxiety of secondary school students with respect to different boards of education.

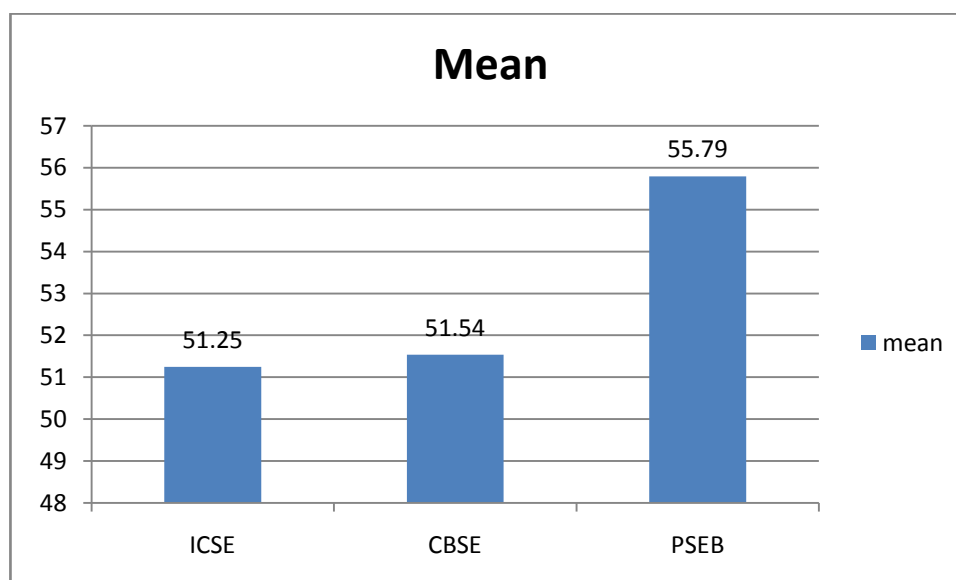
Ho: There exists no significant difference between mathematics anxiety of secondary school students studying in school affiliated to ICSE, CBSE and PSEB boards.

In order to check the difference between mathematics anxiety of secondary school students in school affiliated to ICSE, CBSE and PSEB boards. The mean value of students falling under different categories was calculated and difference between means was studied by applying One way Anova. Results are given in the table below:

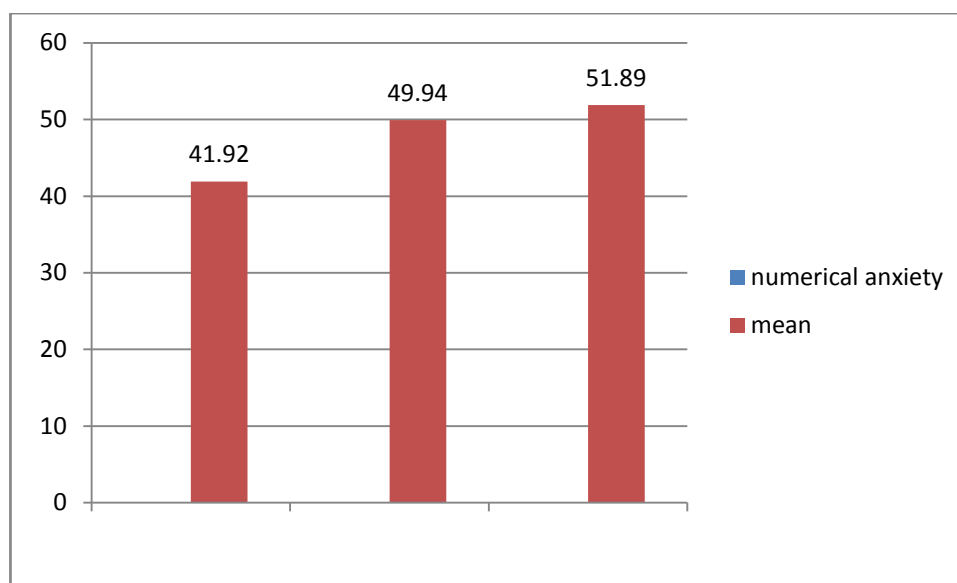
Table 3.3.2.1 Descriptive Statistics

Dimensions	Types of school	N	Mean	Std. D.
Maths Test Anxiety	ICSE	107	51.25	14.91
	CBSE	80	51.54	10.69
	PSEB	94	55.60	10.05
	Total	281	52.79	
Numerical Anxiety	ICSE	107	41.92	15.27
	CBSE	80	49.94	11.05
	PSEB	94	51.89	9.02
	Total	281	47.54	13.04

It is clear from the table – that mean score of the students on both the dimensions of mathematics anxiety i.e. test anxiety and numerical anxiety is highest for PSEB school students and lowest for ICSE school students.



Graph 3.3.2.1 Overall Mathematics Test Anxiety



Graph 3.3.2.2 Mathematics Numerical Anxiety

Table 3.3.2.2 One –Way Anova

Dimension	Sov	Sum of Square	Df	Mean sq.	F	p-value	Remarks
Math Test Anxiety		1118.48	2	559.24	3.70	0.026	Significant
		41982.71	278	151.02			
	Total	43101.19	281				
Numerical Anxiety		5625.99	2	2812.99	18.64	0.000	Significant
		41953.81	278	150.91			
	Total	47579.86	281				

The p-value for mathematics anxiety as perceived by ICSE, CBSE and PSEB school students is 0.00 (F- value 3.70) which is less than 0.05. So the null hypothesis, i.e. “There exists no significant difference in mathematics anxiety of secondary school students studying in schools affiliated to ICSE, CBSE and PSEB board” is

rejected. Hence, there is significant difference among the groups. In order to find the significant difference between groups Tukey post-hoc test was applied and results are presented below.

Table 3.3.2.3 Post- hoc Analysis

	Type of School (I)	Type of School (j)	Mean diff.	p-value	Remarks
Math Test Anxiety		CBSE	-0.29	0.99	Insignificant
	ICSE	PSEB	-4.34	0.04	Significant
		CBSE	PSEB	-4.06	0.08
Numerical Anxiety		CBSE	-8.02	0.000	Significant
	ICSE	PSEB	-9.98	0.0000	Significant
		CBSE	PSEB	-1.96	0.548

It is clear from the Table that pair wise comparison has been found to be significant at 0.05 levels for all the three pairs i.e. ICSE-CBSE, ICSE- PSEB and CBSE-PSEB. Looking at p-value (0.04) of interaction between ICSE and PSEB students. It can be concluded that ICSE and PSEB students are different from each other on both of the dimensions of mathematics anxiety. ICSE students are also different from CBSE students on numerical anxiety dimensions of mathematics anxiety. Further, from the table of means of dimensions of anxiety it is clear that PSEB students are more anxious on both the dimensions than CBSE and ICSE students. On the dimensions of numerical anxiety ICSE, CBSE and PSEB students are in the sequence from least to highest respectively.

3.4: Results pertaining to perception of students towards parental involvement with respect to gender and different boards of education.

3.4.1 To compare the patterns parental involvement of secondary school students with respect to gender.

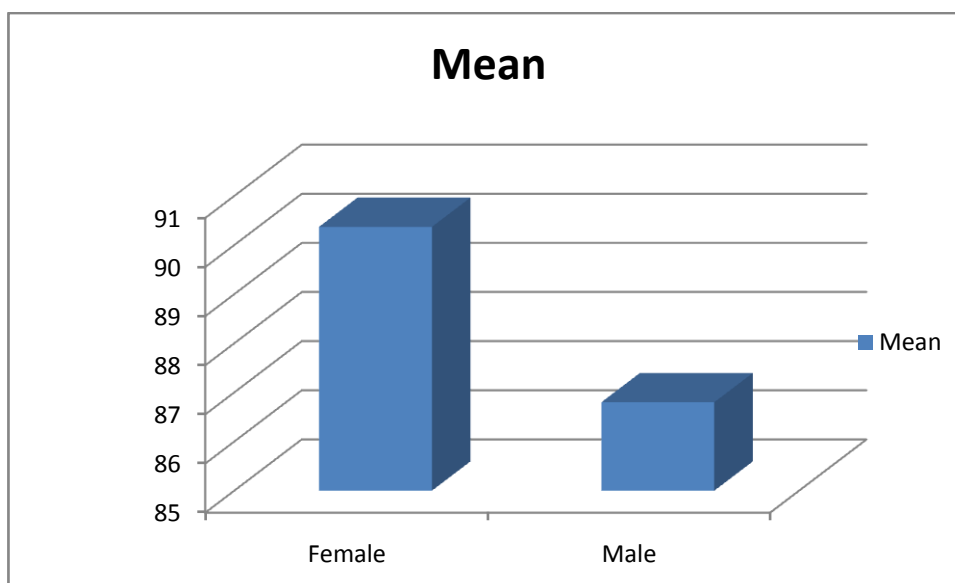
Ho: There exists no significant between parental involvement of secondary school students with respect to gender.

In order to compare the parental of male and female secondary school students the mean value of students falling under different categories was calculated a difference between means was studied by applying t-test.

Table 3.4.1 Gender difference between parental involvement

Gender	N	Mean	Std. Deviation	Mean Difference	Df	T	p-value	Remarks
Female	134	90.37	9.985	-3.570	279	-2.841	0.005	Significant
Male	147	86.80	10.990					

From the table 3.4 it is clear that p-value of the difference between means of males and females on parental involvement are 0.005 which at less than 0.05. So, the null hypotheses i.e. “There exists no significance difference between parental involvement of male and female secondary school students” is rejected. Hence there is significant difference between males and females students.



Graph 3.4.1.1 Mean score of the male and female students

Looking at the graph, it is further clear that females perceive more involvement of their parents than males. The reason for this may be that in our society generally parents are more involved in the lives of their daughters and sons got freedom and hence feel less involvement comparatively.

3.4.2 To compare the patterns parental involvement of secondary school students with respect to different boards of education.

Ho: There exists no significant difference between parental involvement as perceived by students studying in schools affiliated to ICSE, CBSE and PSEB boards.

In order to check the difference between of parental involvement secondary school students in school affiliated to ICSE, CBSE and PSEB boards. The mean value of students falling under different categories was calculated and difference between means was studied by applying one way Anova. Results are given in the table below:

Table 3.4.2.1 Descriptive Statistics

Types of school	N	Mean	SD
ICSE	107	93.99	11.73
CBSE	80	88.43	7.86
PSEB	94	82.33	7.70
Total	281	88.57	10.66

It is clear that from table 3.4.2.1 –that mean score of students as perceived on involvement of parents is highest for ICSE school students and lowest for PSEB school students and lies in between for CBSE students.

Table 3.4.2.2 One way ANOVA

Source of Variance	Sum of Squ.	Df.	Mean Sq.	F	p-value	Remarks
Between Groups	6804.93	2	3402.46	37.86	0.00	Significant
Within Groups	24981.32	278	89.86			
Total	31786.24	281				

The p-value for parental involvement as perceived by ICSE, CBSE and PSEB school students is 0.00 (F- value 37.86) which is less than 0.05. So the null hypothesis “There exists no significant difference in patterns of parental involvement as perceived by school students studying in schools affiliated to ICSE, CBSE and PSEB boards.” is rejected. Hence, there is significant difference among the groups on perception towards parental involvement. In order to find the significant difference between groups Tukey post-hoc test is applied and results are presented below.

Table 3.4.2.3 Post- hoc Analysis

Types of School (I)	Types of School (J)	Mean diff.	p-value	Remarks
ICSE	CBSE	5.57	.000	Significant
CBSE	PSEB	11.66	.000	Significant
PSEB	PSEB	6.09	.000	Significant

It is clear from the table that pair wise comparison has been found to be significant at 0.05 levels for all the three pairs i.e. ICSE-CBSE, ICSE- PSEB and CBSE-PSEB as p-value in all cases is less than 0.00. Further, from table – it is clear

that students of ICSE perceive that their parents are more involved than parents of CBSE and PSEB students. Also on comparing CBSE and PSEB students, it is clear the parents of PSEB students are less involved than parents of CBSE students as per their perception. This may be due to reason that ICSE board is perceived as toughest of all boards under comparison and PSEB board is the easiest board and moreover as a general perception parents who are sending their children to PSEB schools are less educated and of poor economic status so they are least involved in the life of students and specifically in their education.

3.5 Result pertaining to explore the relationship between mathematics Anxiety and parental involvement

Ho: There exists no significant relation between mathematics anxiety and parental involvement of secondary school students.

In order to check the relationship between mathematics Anxiety and parental involvement test hypothesis correlation was applied and result were analyzed as given below:

Table 3.5: Correlation

Variables	No. of students	Mean	r- value	p-value
Parental Involvement	281	88.50	-0.06	0.36
Mathematics Anxiety	281	100.55		

From the table 3.5, it is quite clear from p-value (0.36) that there is insignificant relation between mathematics anxiety and parental involvement. This means the null hypothesis “There exists no significant relation between mathematics anxiety and parental involvement of secondary school students” is accepted. Also from the r-value (-0.06), it can be seen that there is negligible correlation between the variables under study and negative sign indicates that with increase in parental involvement, there will be decrease in mathematics anxiety students. The reason of negligible correlation may be that there might not be only parental involvement

which affects the anxiety of students anxiety may be caused due to other school, students and learning environment related factors. On the contrary, Roberts and Vukovic (2013) examined whether mathematics anxiety of students serves as an underlying pathway between parental involvement and mathematics achievement of their children. Through mediation analyses it was found that parental support and expectations influenced children's performance on word problems and algebraic reasoning by reducing their mathematics anxiety.

CHAPTER 4

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

4.1 CONCLUSIONS

Every research work leads to concluding of something worthwhile. Though written almost at the last, it somehow forms the heart and soul of the task or activity because it is here in the conclusion part that the facts found are brought into light. For the present study, conclusions are as follows:

1. Out of 281 secondary school students sampled for the study, only 23 students making a total of just 8.18% falls in high level of mathematics anxiety and maximum number of students (59%) were of average category.
2. Out of 281 secondary school students, only 61 students exhibited very high level of parental involvement making a total of just 21.70%. Even in the high category of parental involvement, only 73 students fall making merely a total of 25.97%. A total of 33 students making 11.74% falls in average level and 30% and 9% are of students perceive low and very low level of parental involvement.
3. Also, it can be concluded from the study that male and female secondary school students exhibited equal levels of mathematics anxiety.
4. (a) From the study, it can also be concluded that the mean difference among the students studying in schools affiliated to different boards is insignificant for ICSE and CBSE schools, CBSE and PSEB schools and significant for ICSE and PSEB students on maths test anxiety with PSEB students feeling more anxiety in comparison to ICSE students.

4. (b) On the other hand, difference between ICSE, CBSE and PSEB schools students is significant on numerical anxiety with PSEB students highest level of anxiety and CBSE and ICSE students following them respectively. Difference between CBSE and PSEB students is insignificant on this dimension.

5. Between male and female students, difference was found their perception towards parental involvement with females students perceiving more involvement than males students.
6. Further, exploring the difference between means on perception of students towards parents involvement with respect to it was different school boards found that difference was significant for all the boards. ICSE students feel highest level of parental involvement and CBSE and PSEB students follow them in perception respectively.
7. Moving on to relation between the variables, mathematics anxiety exhibited negative but negligible correlation ($r = -0.06$) with parental involvement.

4.2: LIMITATIONS

Every research work has some limitations and these limitations usually results from the factors like time, locations, problem under consideration, money, and many other matters. The limitations affect the reliability and validity of the research. The major limitations crops up from the sample during the collection of required data from the field. The respondents either show unwillingness to fill up the questionnaires or try to conceal their negative aspects – do not spell out their true feelings. And, for the purpose of timely completion, the research needs to be focused on certain aspects only keeping other aspects aside. Basically, all these lead to the list of limitations. For the present study, the limitations are:

1. The size of the sample taken for the study was small.
2. Only three districts, Gurdaspur, Jalandhar and Kapurthala of Punjab were considered for the study.
3. The study was carried out with secondary school students only
4. The mathematics anxiety was studied only in relation parental involvement, all other influencing variables were controlled.
5. Students belonging to 3 boards i.e. ICSE, CBSE and PSEB were taken to the study.

4.3: SUGGESTIONS

There is no end to research works. The more one works on a topic, the more doors of research area gets opened up. The more areas we explore, the better answers we get to our daily problems in the society. Research is like a chain or rather like a

fusion reaction (nuclear reaction) and it is a main source of knowledge. The end result of every research work is an addition of a piece of research based information on the existing body of knowledge. Therefore, research work needs to be taken up with positive attitude. With regard to the present work, a few suggestions can be offered which could be undertaken by future researchers.

1. The same study could be conducted by increasing the size of the sample and expending it to whole Punjab state.
2. The same study could also be carried out on primary/elementary schools or on students of higher educational institutions.
3. Mathematics anxiety could be studied with its other covariates like – achievement, teacher competencies and some psychological variables.
4. The same variables could be used by future researchers for conducting study to compare government schools and private schools.
5. Knowing the trends further studies can be conducted to develop and intervention to reduce mathematics anxiety among students.

4.4: RECOMMENDATIONS

1. School should facilitate involvement of parents by assigning tasks to students in which they must seek help from their parents and do not develop anxiety about learning mathematics.
2. Schools should take initiatives to aware parents regarding the importance of their involvement in students success.
3. Teachers should intimate parents about the progress of their ward so that they should feel attached with school programs and guide their children accordingly.
4. Parents should always keep a track on the progress of their children and give their valuable suggestion to overcome anxiety.
5. Parents should diagnose the problem of students in mathematics and develop some strategies like taking external help to facilitate their children in overcoming subject related programs.
6. Schools and parents should work collaboratively to design interventions to overcome the individual problems of the children in mathematics which will ultimately make the subject interesting and enjoyable for them.

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