



## A BRIEF STUDY OF ACADEMIC ACHIEVEMENT IN MATHEMATICS

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**ABSTRACT:** - The study of mathematics is given a significant amount of time and attention in educational settings. It is helpful for pupils to build habits of creative thinking, self-confidence, and problem-solving via participation in mathematics instruction at the secondary school level. Despite the subject's relevance in day-to-day living, mathematics is often seen as a challenging field of study. Mathematical accomplishment is always a source of significant concern for teachers and administrators, because it is influenced by a wide variety of variables, including pupils' problem-solving abilities, their fear of mathematics, their level of self-confidence, and many more. Students will not do well in mathematics if they do not have confidence in themselves or do not have a lot of confidence in themselves. If a student doesn't like mathematics and finds it unpleasant, they are more likely to become anxious when dealing with mathematics, which leads to a lower level of mathematics achievement. On the other hand, if a student likes mathematics and finds it enjoyable to do, they are more likely to acquire a high level of problem-solving ability in mathematics as well as scores high in mathematics. Anxiety over mathematics was shown to be the primary cause of poor mathematical success, according to certain study from the past. In addition, the pupils' lack of problem-solving abilities, together with their lack of self-confidence, is another source of stress that contributes to their poor performance in mathematics. Therefore, among all of their academic pursuits, students should place a significant emphasis on developing their mathematical skills and understanding.

**KEYWORDS:-** Academic Achievement, Mathematics etc

### **Academic Achievement in Mathematics**

The term "academic" is derived from the word "academy," which refers to institutions that give a certain kind of education, and the word "achievement" refers to the accomplishment or acquisition of something. Together, these words form the word "academic." The phenomena known as achievement consists of many different aspects and layers. The success of a student is intrinsically tied to his or her growth and



development in the realm of education, which is assisted by the learning and teaching process that takes place in the classroom. It is decided by the mix of a child's innate features and the talents that they have gained via their schooling. Accomplishment may be defined as the state or degree of a person's learning and their capacity to put what they have learned into practise (Pressey, Robinson & Horrock,1959). The word "achievement" refers to the degree to which a learner advances their knowledge as a result of the instructions provided in a certain field of research (Crow & Crow, 1956). According to Webster's New World Dictionary (1994), the definition of the word "accomplishment" is the act of achieving one's goals, often by the application of one's skills, hard effort, or other methods.

Research on education has traditionally concentrated its attention on students' academic performance. The term "academic accomplishment" refers, in its broadest sense, to the degree or level of success or expertise that one has obtained in a specific area of study or body of literature. An individual's level of academic accomplishment may be measured by how well they do in a variety of academic domains and environments, including the classroom and extracurricular activities. It involves behaviour that is a model for others to follow, confidence, the ability to communicate effectively, skills, timeliness, assertiveness, and a respect for the performing and visual arts, as well as culture and history. Achieving academic success is essential for teaching teenagers about their skills, capabilities, and competences, all of which are required for the process of forming ambitions for a certain line of work (Lentet al., 2000). It is a measurement of how well a student or an educational institution has accomplished their short-term or long-term educational goals. A student's grade point average or an educational institution's graduation rate may both be used to measure success. Achievement can also be measured in terms of both of these metrics. Standardized exams are the most common method used to evaluate students' academic performance, and the results are reported either as letter grades or numerical units (Trow, 2004). According to Good (1959), the phrase "academic accomplishment" refers to "knowledge gained or abilities developed in school courses, which are normally measured by test results, teacher-assigned grades, or a combination of the two." "Achievement encompasses a student's ability and performance; it is multidimensional; it reflects the entire child; and it is not tied to a single instance, but occurs over time and levels throughout the pupil's school, postsecondary, and working lives." [Citation needed] "Achievement encompasses a student's ability and performance; it is multidimensional; it reflects the entire child; and it is not tied to a single (Steinberger, 1997).

### **Factors Affecting Academic Achievement**

"Intelligence, personality, motivation, school environment, heredity, home environment, learning experiences, interests, aptitude, family history, and parents' socioeconomic status are some of the many factors that contribute to academic success". Other factors include family background, interests, and

aptitude. In a number of different ways, educators defined the characteristics that determine students' levels of accomplishment. Some educators place themselves in one of the following categories:

**Aggarwal (1994)** discovered four primary factors that determine academic success; they, together with their component elements, are summarised in the following paragraphs:

1. **Affective factors** The cognitive style, dependent variables, persistence, consciousness, emotional control, attitude, readjustment, interest, needs, and curiosity are all important factors to consider.
2. **Cognitive factors:** aptitude, intellect, creativity, problem-solving ability, cognitive capacity, and learning rate are all important aspects of a person.
3. **Factors specific to the school setting:** school type, school atmosphere, teacher personalities, homework, disengagement, objectives and attitude, described, teachers' background, the medium of instruction, classroom management and competence, and school climate are some of the factors that are taken into consideration.
4. **Home-related factors** Consider factors such as the size of the family, the order in which children were born, the family's socioeconomic standing, any gender bias, the degree to which parents are involved in their children's lives, the amount of support and assistance they provide, child reasoning methods, parental employment networking, and parental abilities and expectations.

Sharma (2018) notes that high and poor success levels among pupils might be attributed to a variety of reasons. These factors may be broken down into three categories: psychological, economic, and individual.

1. **Psychological factors:** A person's intellect, learning capacity, motivation, desire for self, ways of learning, study skills, creative potential, aspirations, identity, and curiosity are among the many factors that influence academic success.
2. **Environmental factors:** The financial level of a person, the system of education, the upbringing, the value system, the efficacy of the instructor, the assessment system, the educational scenario, and the atmosphere are all elements that might effect an user's surrounds and environment.
3. **Individual factors:** The factors of age, gender, heredity, and health that may influence academic success fall under this group.

These elements may either have a beneficial or detrimental impact on a student's academic performance. A more loving and caring attitude towards children has been linked to higher levels of academic accomplishment (Epstein 2000). Therefore, we can identify a school's student excellence as the total value of the scorecards or marks that they earned over all subjects throughout the course of an academic year, whereas a student's algebraic attainment refers here to scorecards or marks that they recently acquired in algebra throughout the course of an academic year.



### **Mathematics Achievement**

The successful completion of mathematical tasks is an essential component in reaching goals related to harmonic development. The term "achievement in mathematics" refers to the extent, level, or standard of accomplishment or skill attained in mathematics. A student's level of success in mathematics is a reflection of both the breadth and depth of their educational experiences, as well as the level of mastery they have shown in the topics that they have studied in classroom settings. The study of mathematics is not limited to just those with exceptional abilities. Every student has to put in effort to improve their mathematical performance. The accomplishment in mathematics is mostly cognitive, which means that it relates to the comprehension of mathematical ideas and the information that has been acquired in the field of mathematics. In addition to this, it refers to the amount of expertise attained as well as the ability to apply acquired information to different scenarios. It comprises the students' capacity to solve problems, clearly explain their views, and reason logically, among other things. "Number Power, Logical Power, Spatial Ability, Numerical Ability, Problem Solving Ability, Reorganization, Abstract Reasoning, Pattern Power, Computer Power, Measurement Ability, Arithmetic Ability, Visualization, Judgment, and Number Fluency" are some of the skills or capabilities that can be attained with its assistance.

**Good's Dictionary of Education (1973)** "Mathematics accomplishment" is defined as "knowledge obtained or abilities acquired in the area of mathematics," and it is often characterised by the test results or marks awarded by instructors or both.

"The capacity to do mathematics is either innate or inherited." Imagine for a moment that kids are incapable of correctly assimilating mathematical ideas. In such instance, their continued study of arithmetic may be adversely impacted, and as a consequence, pupils may develop an increased perception of difficulty and dread in relation to the subject (Goodbye, 1997).

According to Pandey (2017), mathematics accomplishment is defined as the level of mathematical ability shown by the learner. It is the product of previously learned mathematical data or information, as well as understanding, abilities, and practises that were formed during a certain period. The number of points earned on the mathematics test exam serves as its indicator.

The level of success that students have in mathematics while they are still in high school has a substantial bearing on how well they do in college (Ismail and Awang, 2008). Student performance in mathematics is influenced by a number of factors, including general intelligence, ability to solve problems (Bhat, 2014), teaching strategy, participation of parents, participant's soul, incentive, sex variance, pupil's perception of math (Kaur, 2011 & Rao, 2015), study habits, anxiety, and so on. Some of these factors are listed below. In addition to this, it is affected by elements such as assessment, the availability of adequate textbooks,

sufficient mathematics instructors, and sufficient amounts of time. Achievement in mathematics among students may be broken down into two groups of contributing factors:

### 1. Psychological Factors

‘Attitude towards Mathematics’

‘Interest in Mathematics’

‘Memory’

### 2. Mathematical Factors

‘Ability of logical thinking and problem solving’

‘Computational skills’

‘Mathematical language’

‘Mathematical concept’

### Steps to Become an Expert in Mathematics

**Concentration:** Taking care of this vital component is something that has to be done whenever one is working with mathematics. Take care not to allow your thoughts to stray while you're in class. To get the most out of your time in class, empty your thoughts and focus entirely on the material being covered. Avoid becoming sidetracked in every way possible. If you discover that your buddies are too distracting, go for an another suitable area that is somewhat quiet.

**Take notes:** Maintain a separate notebook for your math work in class. Take careful notes on all of the essential mathematical concepts that have been covered in the lesson. It would be wonderful if one could write down everything that the instructor stated, but it is almost certainly not going to be feasible. Although you should take extra care to make certain that notes are readable and comprehensible, you should aim to write as rapidly as possible while excluding words that are either very short or have no significance. Utilize the information provided by the instructor to your advantage if they are kind enough to explain what will appear on the exam.

Calculators shouldn't be utilized to do math assignments; instead, they should only be used to verify the answers. The calculation is not the brain figuring through how to solve the issue; rather, the calculator is the one actually carrying out all of the work. Using a calculation makes it difficult to become proficient in mathematics, with the exception of geometry-related problems, such as determining the aspect of a triangular or even the root of a high number.

**Find an after-school tutor:** This might either be a buddy or a paid tutor.

Find a tutor as soon as you suspect you may need one; don't wait until you're getting failing marks to start looking for one. You should not be scared to make use of any assistance that is offered to you.

**Get a study partner:** Find a classmate who shares your commitment to achieving well academically and study with them. Make it a routine to do your assignments with a group of people, either in person or over the phone, and discuss what you've read. When worked through with companions, math problems might seem less daunting. It may be a lot of fun when you and a buddy work together to find solutions to issues.

Formulas are a crucial tool for problem solving, thus it is important to study them and commit them to memory. Should it be forgotten, the whole lesson may have been for nothing. Therefore, it is essential to acquire formulae by practise rather than through rote memorisation. Not only should you memorise the formulas, but you should also try to comprehend where the processes came from in the first place.

Establish a schedule for yourself in which you always study at the same time. Set aside a certain amount of time each day to work on mathematical problems. It could just be half an hour, but it will have a significant impact nevertheless. People are often resistant to change; nevertheless, if you make a practise of studying in a certain study location, you will find it much simpler to settle in and get to work.

**Stay calm:** "Math anxiety" affects a significant portion of the population. They report feeling less than assured and more frightened whenever they think about arithmetic. Because of this, they are more likely to put off study and doing their schoolwork until it is far too late. Math may be challenging to learn, and if you struggle with it, you could have a poor feeling about yourself.

**Don't wait until the last minute.** You should make an effort to study even a little bit each night till the exam. If the individual waits until the last minute to study, there is a good chance that they will get exhausted, forget stuff, and be inadequate. It is in your best interest to go over the fundamental ideas that will be on the test.

### **Self-confidence**

*It has been said that "a guy who questions himself is comparable to a man who joins the ranks of the enemy and carries weapons against himself." [Citation needed] He sets himself up for failure by being the first person to acknowledge it.'*

### **Alexandre Dumas**

*"Men often transform themselves into what they think themselves to be. When I tell myself I can't accomplish anything, it really makes it harder for me to do the task. When I tell myself that I can accomplish something, I really give myself the capacity to do it, although if I didn't have it before."*

### **Mahatma Gandhi**



In our world, no one else is born with a healthy dose of self-confidence. It's a skill that you pick up from your parents or older siblings. It can be your environment, your friends, your professors, or even a sad event that prompts you to listen to your inner voice. Although there is considerable overlap between "self-confidence, self-esteem, and self-efficacy", these three concepts are nevertheless distinct in many ways;

**Self-esteem:** The ideas that we have about ourselves constitute our self-esteem. Because a man that doesn't comprehend it can never have confidence in themselves, it is a crucial component in the process of developing self-confidence. It is essential to have a firm grasp of your standing in the world and the value you provide to it.

**Self-efficacy:** Self-efficacy is the awareness that one is capable and compatible with themselves. It is also a vital factor in one's level of self-confidence since one cannot exert control over a situation if one is unaware of the power that is available to them. According to the definition offered by Albert Bandura, personality is an individual's set of beliefs instead on their power to affect the outcomes of their own life.

It is impossible to have self-confidence without also having self-esteem (also known as self-knowing) and self-efficacy (self-capability). Self-efficacy is a belief that is more focused on the future, while self-esteem is more concerned with the here and now. " Self-confidence is an optimistic scenario of oneself and refers to an individual's professed ability to deal with situations effectively without relying on others and to conduct constructive self-evaluation. Self-confidence refers to an individual's professed ability to deal with situations effectively without relying on others. Bandura's theory of social learning posits that the factors of motivation, reinforcement, and experience are three of the most important factors in the development of confidence". Individuals are able to have a realistic but reasonable perspective on themselves and their situations when they have a mental state known as self-confidence. This helps them to make better decisions. People in general feel as if they have some degree of control over their lives and have faith in their own capabilities. They have the expectation that, if the circumstances are reasonable, they will be able to carry out, organise, and plan for what they want. People's levels of self-confidence are not always correlated to their actual levels of success in life. People who are secure in themselves have goals that are attainable (Ampadu, 2009). Even if some of their aspirations are not fulfilled, they still accept who they are and are sure of their own convictions. Self-assurance is an essential component of individual happiness, as well as a great indicator of mental conformity and a powerful factor in both adults and children. When referring to an individual's judgements, the term "self-confidence" is sometimes used. Children who have high



self-ideas on the whole are confident that they will achieve their goals, be successful in school, and have positive relationships with their friends and parents. Children have a propensity to shy away from attracting attention and to be anxious about speaking opinions that are out of the ordinary or that are not appreciated. The understudies' futures are largely determined by the degree to which they believe in themselves (Asghari, Sadeghi, & Aslani, 2013). The most important aspect of one's identity is their level of self-assurance. The understudies have the ability to describe the difficulties that are present in the personally instructional and social areas. Having confidence in oneself not only boosts a person's achievements and academic performance but also brings them closer to themselves. People who lack self-confidence put a significant amount of stock on the approval of others, always with the ultimate objective in mind. They tend to avoid taking chances because they are afraid of being let down, which contributes to this tendency. They do not anticipate, for the most part, that they will be successful. They are always putting themselves down, and they have a tendency to dismiss or ignore compliments. Individuals are more likely to be dissatisfied with others when they are different from them because they have a greater degree of faith in their own capabilities. They are more likely to confess themselves; they are not required to provide assistance while bearing in mind the ultimate purpose of confessing (Dhall & Thukral, 2009).

#### **CONCLUSION:-**

Self-confidence may be defined as the faith, beliefs, and judgements that an individual has in themselves. That we are deserving of what we now have and of what we will go on to accomplish in the future is communicated to us by a feeling deep inside. It is the belief that what we are doing is right; it is the conviction that what we are doing is the best option we can make; it is the emotion of love for oneself. It is the faith in ourselves that what we will select is the finest choice we can make (Fatima, 2020). A person's anticipation that they will be able to do a job in a certain setting is what is meant when they speak of having self-confidence. It is one of the most important factors in determining whether or not a person is able to realise their full potential (Stevens, 2005). Self-confidence is defined as "confidence in oneself or one's unassisted talents, judgement, or abilities," as stated in the New Webster's Dictionary (2004). According to Sieler (1998), an individual's level of self-confidence may be defined as a personality attribute that allows them to have a positive or realistic perspective of themselves or the situations in which they find themselves. A person's thoughts and emotions, aspirations and dreams, fears and fantasies, impressions of who he is, who he has been, and who he could become in the future, as well as his perspective on the value he has, are all components that make up the self. A positive attitude towards one's own self-concept might be



defined as self-confidence. It is a quality of the self in the way that it is understood. Self-confidence may be characterised as an individual's perception of their own capacity to effectively navigate challenging circumstances without the assistance of others, in addition to a positive assessment of themselves (Agnihotri, 1987). One of the factors that is thought to motivate a person and regulate their behaviour in their day-to-day existence is their level of self-confidence (Bandura, 1986). According to Basavanna (1975), "In general terms, self-confidence refers to an individual's perceived ability to act effectively in a situation to overcome obstacles and to get things to go all right." [Citation needed] "Self-confidence can be defined as the belief that one has the ability to act effectively in a situation to get things to go all right."

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