“Education is not to reform students or amuse them or to make them expert technicians. It is to unsettle their minds, widen their horizons, inflame their intellects, and teach them to think straight, if possible.”

– Robert M. Hutchins

Education is universally recognized as prime key of moral, cultural, political and socio-economic development of a nation. The nations, which have been taken major initiatives, made revolutionary advances and performed miracles in the last two decades. No doubt, this great achievement is based on their effective educational system (Ahmad, 2001). It is considered that educational system of any country can provide the vouch of success and prosperity for their nations. According to Saeed (2001), “The achievement of a comprehensive and effective educational system is necessary for the survival of nation.” It is often conceived as a systematic action of imparting relevant knowledge, skills and habits to the learners in their preparation for meaningful life and contribution to better society (Oloyede, 2006). A sound and effective system of education results in the enfolding of learner’s potentialities, enlargement of their competencies and values. Recognizing such an enormous potential of education, all progressive societies have committed themselves to the universalization of education with an explicit aim of providing “quality education for all.”

Across the world, education is a vital process in human development and also refine and preserve the collective values embedded in the culture of the society. It is a process of promoting the harmonious development of a person capable of exercising such responsibilities in the society as her powers allow and direct towards the merger of the
individual self with her universal self as the final end. Education is a network of worthwhile knowledge, skills and habits where adequate knowledge for effective citizenship and collective benefits of society is achieved and passed on from one generation to the other. It is a cooperative teaching-learning process of preparing an individual from birth and all through his life for happy and useful living in the society within the culture and resources (Oyekan, 2000). It is a social service which ensures refinement of human behavior in terms of his processes of reasoning, feeling and doing things in a happy expectancy.

“Education may be defined as a systematic process of determining the extent to which instructional objectives are achieved” (Best, 1977). It is a process of human enlightenment and empowerment for the achievement of a better and higher quality of life. T. Raymont defined “Education is that process of development which consists the passage of human being from infancy to maturity, and the process whereby he adapts himself gradually in various ways to his physical and spiritual environment.” Education, in its broadest sense, may be defined as a process designed to inculcate the knowledge, skills and attitudes necessary to enable individuals to cope effectively with their environment. Chief purpose of education is to foster and promote the fullest individual self realization for all people. Achievement of this goal requires understanding of commitment to the proposition that education is a primary instrument for social and economic advancement of human welfare. Education is able to instill in child a sense of maturity and responsibility by bringing in him the desired changes according to his needs and demands of ever changing society, of which he is an integral part.

“Education is the most powerful weapon which you can use to change the world” (Nelson Mandela). The statement not only signifies the vital role of education but also the importance of schools or educational institutions. The purpose of schooling is the transmission of culture, the process by which the culture of a society is passed on to its children. Thus, education paves the path leading to disillusionment as it is a self-enlighten process. It wipes out the wrong beliefs; creates a clear picture of everything
around us; and we no more remain in confusion about the things that we learn. Education brings up questions and also devises ways to find satisfactory answers that lead us to enlightenment. It is education that builds in every individual a confidence to take decisions, to face life, and to accept success & failures. It instills a sense of pride about the knowledge one has and prepares him for life as the true purpose of education is to bring about preparedness to one’s emotions, to broaden one’s perspectives and to lead to a healthier approach of looking at life. As it is defined, it becomes quite clear that it is a form of cooperative teaching-learning process in which the knowledge, skills and habits of a group of people are transferred from one generation to the next through teaching and training.

At present time, Indian Education has made its place in the eyes of the world. If we look into the past, India was known for its education system as well as for Indian philosophy. Earlier education was according to different strata of society but now with the modernization and westernization, the entire concept of education has been changed. The concept of education has never been so important and central in the life of individuals, organizations and societies in the history of our civilization as it is observed in the contemporary times. Today’s societies are living, developing, thriving, competing and improving on the pivot of knowledge only. To satisfy the needs of students of the 21\textsuperscript{st} century new experiments, creative innovations, and appropriate strategies are being developed and tried out to improve education at all levels. Now the sole focus is to accelerate the achievement or more appropriately the academic achievement of the learners.

In the era of tough competition students’ interaction with teachers play a key role in their academic success. It is only the knowledge, skills, and habits of students which decide their academic success. The greater expectation of parents from their children in subjects learning puts a lot of pressure on students and especially on teachers in general education system to use teaching and thinking style in accordance with the learning and thinking style of students and also act as a model in the classroom to develop their meta-cognitive skills. One of the current educational concerns is that of under
achievement of students in scholastic area because of which they are not able to cope with the difficulties which they have to face. In this case their meta-cognitive skills and learning & thinking style play an important role to enhance their academic achievement and to improve their study habits. Meta-cognition involves students’ awareness and understanding of their learning skills, performance, preferences, barriers and goals. Meta-cognitive skills include taking conscious control of learning and selecting strategies, monitoring the progress of learning, correcting errors, analyzing the effectiveness of learning strategies and changing learning behaviors & strategies when necessary. It is fact that effective meta-cognitive skills and hemisphericity dominance of students for learning & thinking style affect their academic achievement and develop healthy and effective study habits among students to surpass the limits circumscribed by their intelligence, bringing them to the category of overachievers. Thus school, teachers and parents spend a lot of time and make efforts for helping students to achieve better position in the scholastic endeavor.

1.1 ACADEMIC ACHIEVEMENT

The word ‘achievement’ refers to the end gain or level of success attained by an individual or group after completion of a task whether it is academic, manual, personal or social. It is the realization, the substance and the tangibility of a dream fulfilled. It is multidimensional students’ ability and performance; and intricately related to human growth and cognitive, emotional, social and physical development. It reflects the whole child and is not related to a single instance. It occurs across time and levels, through a student’s life in school and on into post secondary years and working life. Webster, defines achievement as “the quality and quantity of a student’s work.” On the other hand, academic or scholastic performance means the attainment level of which the students are functioning in school task, the particular subject or a group of subjects. It refers to the degree or level of success or the proficiency attained in some specific area concerning academic work. It is the student’s performance on cognitive tests,
according to the standard set for the class and also a measure of what has been learnt in the academic area.

The definition of academic achievement, however, varies among educators, policymakers and other educational stakeholders. It refers to the level of schooling the students have successfully completed and the ability to attain success in their studies. It generally indicates the learning outcomes of pupil according to which require a series of planned and organized experiences. Crow and Crow (1969) defined that “academic achievement as the extent to which a learner is profiting from instruction in a given area of learning i.e. achievement is reflected by the extent to which skill and knowledge has been imparted to him.” According to Good (1973), “Academic achievement is the knowledge, attitude or skill developed in the school subject usually designed by test scores or by marks assigned by teacher or by both.”

Academic achievement has become an educational touchstone since the passage of the federal No Child Left Behind Act in 2001, requiring all educators - including school counselors to formally define how their jobs and programs impact students’ academic growth and contribute to overall school success. It represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college and university. School systems mostly define cognitive goals that either apply across multiple subject areas i.e. critical thinking or include the acquisition of knowledge and understanding in a specific intellectual domain like numeracy, literacy, science, history etc. Thus, academic achievement should be considered as a multifaceted construct that comprises different domains of learning as its field is very wide-ranging and covers a broad variety of educational outcomes.

Academic achievement plays an important role in one’s life because it pushes an individual towards his/her goal. It is often a sign of a refined intellect, which can help students in all areas of their lives. It enables him/her to choose his/her vocation in the modern era of tough competition. It has also been noticed that an individual who
perform academically high also attains a high status in the society. It also helps in shaping the minds of students. Those who wish to enter the medical field need a thorough educational background in biology, and engineering certification requires adequate educational credentials and those who are looking to enter academia need strong academic achievements.

Good academic achievement tends to help both in improving the personality of the students and their recognition by parents, teachers, neighbors and society at large. It boosts their moral and develops feeling in them that they are useful in the family, school, and society. A well-educated person is known all over the region and able to meet the conflicting challenges and tide over all the difficulties which confront him in day to day living. In this way education develops the individual like a flower which distributes its fragrance all over the environment. According to Lewin, Wasanga and Somerset (2011), “The academic achievement of students at secondary school level is not only a pointer of the effectiveness of schools but also a major determinant of the welfare of youths in particular and the nation in general.”

One of the most persistent puzzle confronting parents and teachers is uneven academic achievement among equally able students. The main reason behind the factors which cause some students to go above and beyond their personal and environmental constraints is the focal interest of current social-cognitive theories of motivation and action (Bandura, 1986; Eccles, 1983; and Markus, Cross & Wurf, 1990). These theorists propose that students’ ability-related conceptions and value-related beliefs mediate their achievement-related behaviors such as choice, persistence and actual performance. Careful evaluation of academic strengths and weaknesses can provide helpful information about academic and school success, as well as significant insight into factors (general and subject-specific) that are having an unfavorable impact on academic achievement, including identification of learning gaps that have not previously been noted.

1.1.1 Factors Affecting Academic Achievement
Academic achievement isn’t always an absolute measure of a student’s intelligence. Instead, a variety of factors, such as teachers’ involvement, parental investment, school quality and students’ motivation etc. can affect academic life. Students’ behavior also plays a major role in their academic achievement. A student’s behavior can affect his/her ability to learn as well as other students’ learning environment. Over the past four decades researchers have identified a large number of variables that predict academic achievement of students (Carroll, 1963; Rosenshine & Stevens, 1986; Squires, Huitt & Segars, 1982; and Walberg & Paik, 2000). It is quit that students do not succeed or fail in vacuum. They are continually influencing and being influenced by people and object which form their world. Some of the variables which affect students’ academic achievement have been presented in the fig. 1.1.
Family Environment

Student’s Prior Knowledge

Peers Influence

Motivation

Learning & Thinking Style

Student's Behaviour

Study Habits

School Environment

Teaching Strategies

Teacher's Behaviour

Meta-cognitive Skills

Intelligence

**Fig. 1.1: Factors Affecting Academic Achievement**

- **Family Environment** - As a primary agent of socialization and powerful effect on a child, family environment could in no doubt enhance or hinder the academic
achievement of the child depending on the social climate in the family. Emeke (1984) stressed that the environmental condition and the nature of social interaction that goes on in the family may have some positive or negative influence on the academic achievement of a child. Adenike (2013) explored a significant relationship between academic achievement of students from monogamous families and those from polygamous families.

- **Student’s Prior Knowledge**- Prior knowledge is a multi-dimensional and hierarchical entity that is dynamic in nature and consists of different types of knowledge and skills. It has long been considered the most important factor influencing learning and students’ academic achievement. Both the knowledge acquisition and the capacity to apply higher-order cognitive problem-solving skills are positively influenced by the amount and quality of prior knowledge. Inadequate or fragmented prior knowledge hampered the learning from the beginning of the studies. According to Tyler (1949) “meaningful educational experiences are built on prior knowledge and are sequential to allow the learner to make connections, resulting in retention of new concepts.”

- **Peers Influence**- Peers influence each other in several ways. Peer influence in this context includes the ethnicity of the student, the socio-economic background of the student, family relationship, group interest etc. So far, it is assumed that peer influence can have both positive and negative effects on academic performance and socialization of students. Berndt (1989) observed that peers relationship had both positive and negative effect on the academic performance of the adolescents.

- **Motivation**- Motivation plays an important role in education and may be material or non material which energizes and directs a person’s behaviour towards achieving a set goal. Human beings have an inborn tendency to become self-actualized; a general positive force that is responsible for people achieving their potential and performing good works. Motivation is a psychological process which leads anyone to act in a way that helps him/her to fulfill unsatisfied needs, (Latham, 2011).
Among many variables, motivation is obviously an important one that affects academic achievement of students.

- **Learning & Thinking Style**- The style of learning & thinking is as important as levels of ability and we ignore to identify their learning & thinking style at their earlier and appropriate stage. It is foremost important for the teachers to focus their attention on students’ favourite learning & thinking style before imparting the subject matter because it contribute to their academic achievement. Sharma and Neetu (2012) found that learning-thinking style and academic achievement of secondary school students were positively and significantly related to each other.

- **Student's Behavior**- Concentration, persistence and engagement are important student characteristics. Students’ behavior perseverance is an important component of time needed to teach (Carroll, 1963). Two variables that address the quality of time spent by students in the classroom are content overlap and student success on academic tasks. “The content overlap as an important measure of a student’s opportunity to learn and the extent to which the content objectives measured on the criterion achievement tests that are actually taught,” Brady, Clinton, Sweeney, Peterson and Poynor (1977). The variable success was an important predictor of student achievement that is defined as the how accurately students completed their assigned classroom work (Fisher et al. 1978).

- **Study Habits**- Study habits play a very important role in the life of students. Success or failure of each student depends upon his own study habits. Some students study more but they fail to achieve more. On the other side, some students study less, but achieve more. Aluede and Onolemhemhen (2001) revealed that counseling students on god study habits can bring about improvement their academic performance.

- **School Environment**- It includes good working conditions, responsiveness to pupil needs & good care and decoration of buildings that is associated with better learning outcomes of students. Oginni, Awobodu and Saibu (2013) studied the school factors which predict senior secondary school students’ achievement in
Chemistry. Results showed that school location, laboratory adequacy and frequency of practical classes were strong predictors of academic achievement of chemistry students.

- **Teaching Strategies** - Teaching strategies are related to different approaches to classroom instruction. The two teaching strategies i.e. reciprocal teaching and utilizing meta-cognitive strategies used by the teacher in the classroom affect students’ academic achievement. The use of meta-cognitive strategies positively corresponds with academic achievement (Pintrich, Smith, Garcia and Mckeachie, 1993; Zimmerman and Martinez-Pons, 1986; and Zimmerman & Martinez-Pons, 1988).

- **Teachers’ Behavior** - Behavior is an observable, identifiable phenomenon. Teacher’s qualifications, teaching experience and teacher behavior on the whole appear to be marginally related to academic success. Some behaviours such as teacher enthusiasm, the degree of orientation of teacher task to achievement and the opportunity the student has to learn using media are significantly or consistently related to academic achievement (Cutance, 1980). The prime predictors of students’ academic achievement were teachers’ experience and educational qualifications (Yala and Wanjohi, 2011).

- **Meta-cognitive Skills** - The students, who possess meta-cognitive knowledge and demonstrate a wide range of meta-cognitive skills, tend to be more successful as they can self-regulate their learning, retain information longer, and perform better than others. Eluemuno and Azuka-Obieke (2013) investigated that there was significant effect of meta-cognitive skills on academic performance of senior secondary school students.

- **Intelligence** - The intelligence is a concept which has affected the life of every individual in all spheres of life. It is responsible for the academic outcomes and finally the success in life. The child with high intelligence has better academic achievement than the child with average intelligence. The child with high intelligence will have better grasping power, retention, recall and higher
understandability as compared to an average child. A strong and positive relationship was found between intelligence and academic achievement (Deary, Strand, Smith and Fernandes, 2007).

A glance through the review of related literature reveals that students’ academic achievement is linked with other variables also i.e. school leadership, curriculum implementation, physical health, socio-economic status, parental disciplining behavior, parental education etc. Cano (1998) investigated positive relationship between learning style and academic performance. The result of the study revealed positive relationship between meta-cognitive skills and learning outcomes among university freshmen (Taraban, Rynearson, and Kerr, 2000). Bernardo, Zhang, and Callueng (2002) explored positive relationship between the judicial style and general academic achievement, but no relationship was found between the legislative style and academic achievement. Avinashilingam and Sharma (2005) observed that classroom factors play a major role in affecting the students’ academic performance. Ponnusamy (2006) found that meta-cognitive and problem solving strategies had a significant impact on academic achievement. Albaili (2007) studied that low-achieving students scored significantly lower on executive, hierarchic, anarchic, local, conservative, and internal styles. Low-achieving students scored significantly higher on legislative, oligarchic and liberal styles. One of the studies revealed that that most of male students used verbal and solitary learning styles and most of female students used aural and verbal learning styles (Moeni, Aliapour, and Ghaderi, 2009). Abidin, Rezaee, Abdullah, Kaur, and Singh (2011) found that the high, moderate and low achievers had a similar preference pattern of learning in all learning styles. Amzil and Stine-Morrow (2013) examined both meta-cognitive monitoring and control were good predictors of academic performance of students, while meta-cognitive knowledge was not. A significant relationship was found between students’ academic performance and thinking style (Al-Thani, Al-Thani, and Semmar, 2014). Kristiani, Susilo, Rohman, and Aloysius (2015) showed that meta-cognitive skills contributed 71.42% to students’ academic achievements. Fatemi and Heidarie (2016) examined a significant relationship between
the variables of legislative, executive, oligarchic, monocratic, anarchic, hierarchic, judiciary thinking styles and academic achievement. Khan and Unnisa (2017) found that there was significant difference between the academic achievement of students learned by right & left hemisphere but there was no significant difference between the academic achievement of boys & girls students learned either by right hemisphere or left hemisphere.

In the twenty-first century, there is an ongoing debate about how to best prepare children and youth for adult success (Huitt, 1999, 2007). In the competitive world, quality performance has become the key factor for personal progress. It is the academic achievement of students which also allows them to enter into the competitive fields. In the present age of tough competition, it is the performance of the students on the basis of which they are bracketed good, intelligent or slow which consequently decides their fate. Parents desire their children to climb the ladder of success as high as possible in the field of education. This desire for a high level of achievement puts a lot of pressure on students, teachers, and in general the education system itself. Heads of institutions, curriculum planners, teachers and others who are involved in the task of helping students to achieve better would like to have the knowledge of the extent of influence, these correlates exert on the achievement. Robert & Sampson (2011) observed that the member of educational board should be educated, only then their impact on school will be positive.

1.2 STUDY HABITS

In today’s world of exponential growth of knowledge, the issue of quality education and students’ learning has become a topic of debate. It has resulted in two fundamental changes in the field of educational enterprise: (i) change in the philosophy of education and (ii) change in pedagogical approaches. In the past, knowledge was considered as a body of information to be transmitted to students and the job of the teacher was to present this information to the students in an organized way. But, view of knowledge has now been profoundly changed. Today, the students are no longer required to memorize piece meal facts and isolated bits of information. Now, if they are required to
demonstrate high intellectual abilities to develop proper understanding of the subject matter and also to be able to apply this knowledge in real life situations. It is believed that students have to play much greater and active role in the acquisition of knowledge and also in the development of their cognitive abilities. Since the last few decades, a new pedagogical approach, ‘constructivism’ has become well-established. According to this approach, students should play an active role in their learning. They should be provided with an opportunity to construct their own knowledge and meaning, instead of cramming the factual information. One among chief requirements of constructivism is that the students should adopt desired, effective and efficient study habits, so that they may learn independently at their own pace and as per their requirements. If, the teachers do not believe in constructivism and do not teach accordingly, then the students have to work hard to achieve good marks in examinations.

Study habits typically denotes the degree to which students engages in regular acts of studying that are characterized by appropriate studying retains (review or material) occurring in an environment that is beneficial to studying. Study habits refer to the activities carried out by learners during the learning process for the improvement of learning. Study habits are learning tendencies that enable students to work privately and also intended to elicit and guide one’s own cognitive processes during learning. Narramore (1974) defined habit as “a pattern of activity which, through repetition, has been learned to the point that it has become automatic and can be carried on with a minimum of conscious effort.” Study habit is “The adopted way and manner a student plans his private reading after classroom learning so as to attain mastery of the subject. Good study habits are good asset to learners because study habits helps students to attain mastery in areas of specialization and ensuing excellent performance, while the opposite becomes constraint to learning and achievement leading to failure,” (Azikiwe, 1998). Effective study habit refers to a situation in which a learner studies regularly to achieve maximum success in his school work. Study habits, therefore refer to learning which leads to the achievement of a learner’s goal through a prescribed pattern of steady behaviour. Crede and Kuncel (2008) defined “study habit as study routines
including but not restricted to frequency of studying sessions, review of material, self-testing, rehearsal of learned material, and studying in a conducive environment.”

Study habits are the essence of a dynamic personality. A proper study habit enables an individual to reap a good harvest in future. The present society is a competitive society, where the principle of struggle for existence and survival for fittest exists. Study habit is a process from which an individual gets proper input to feed his hunger and to quench his thirst for knowledge. Study habits are habitual way of exercising and practicing the abilities for learning. These are techniques which a student employs to go about his or her studies, which are consistent and have become stereotyped as a result of long application or practice (Onubugwu, 1990). Study habits are auto-nominally learned behavior patterns that enable the students to acquire how to study.

For students, including children in elementary school, youngsters in secondary schools and adults in colleges or training program, learning from teachers and books becomes a dominant activity in their lives. They are expected to become professional learners and are rarely given any training in how to learn (Weinstein & Mayer, 1986 and Mayer, 1992). Study habits often remain a part of hidden curriculum in spite of their importance. Material that is not heavily taught in the classroom but student is expected to learn it. Successful students, somehow, acquire study strategies even though strategy instruction has not been incorporated into the curriculum on a large scale. To know when, why and where a particular study strategy will be used is a kind of meta-cognitive skill that helps students to improve their study habits. “Successful students show a commitment to maximize learning from educational experiences, monitor their progress, and make adjustments in their efforts when necessary to accomplish their goals,” (Ainley, 2006; Ainley and Patrick, 2006; and Miller & Brickman, 2004).

Our educational system suffers from a lot of hazards and poor study habits is one of them. Poor study habit is one of the important causes of educational backwardness whereas the educational progress of students depends on their study habits. All often, students perform poorly in school simply because they lack good study habits. Lack of effective study habits is a common educational problem among secondary school
students. It has been realized that students who possess adequate mental abilities sometimes do not perform well in their academic work either because they do not know how to study effectively or they do not use the most effective method of studying. In many cases, students do not know where to begin. “Poor habits of study not only retard school progress, but develop frustration, destroy initiative & confidence and make prominent the feeling of worthlessness towards himself & the subject of study whereas effective methods ensure success, happiness and sense of accomplishment,” (Smith, Sammuel, and Field, 1948). Very often, teachers come across such students who appear to have above average scholastic aptitude, yet they are doing very poorly in their courses of study. A great majority of them seem to have faulty study habits. It is expected that with proper guidance, they would change their faulty study habits into desirable ones.

Study habits of the students are affected by several factors i.e. ability, health, self-concept, motivation etc. Motivation is one of the most important components of learning in any educational environment (Miltiadou & Savenye, 2003). Student motivation is particularly important because it can be assessed and changed (Fortune, Mingun, and Cavazos 2005). Students with high level of motivation are very industrious with their school work. Student who has negative thoughts about himself/herself leads to negative result; on the other hand, students with positive thoughts try as much as they can to be very studious. It has been found that positive attitude, proper physical condition and balanced emotional states are important factors that influence study habits of students (Crow & Crow, 1969). According to Emeka (2000), “Intellectual endowment also plays a vital role in students’ study habits because students with low intellectual power cannot study effectively, but students endowed with high intellectual power, with little effort can study well.” Good health, sufficient sleep, appropriate exercise and nutritious diet are essential for better learning outcomes. A healthy student has a stronger drive to learn and work vigorously as compared to unhealthy students. Therefore, to enhance the learning outcomes of students, effective study habits must be developed among them.
1.2.1 Developing Effective Study Habits among Students

Learning occupies very important role in the field of education. The task of learning is not one sided. It is said to be equivalent to change, modification, development, improvement and adjustment. It is not confined to school learning, cycling, reading, writing or typing but it is comprehensive term which leaves a permanent effect or impression on the individuals. Efficient learning depends not only on teaching alone but on satisfactory learning procedures also. The efficient and effective way of learning depends upon the development of efficient study habits and skills (Jamuar, 1961). Study habits are important as they influence the academic achievement of students. Psychologists and educationists believe that good study habits are the gateway of knowledge and wisdom. It is one of the effective means of systematic development of knowledge, language and personality of the individual. If the habits are developed in the young age, they will definitely cherish the joy of its fruits in the rest of their lives. A student who is producing marginal grades may need little more than some guidance on how to maximize study time to achieve the best results. Of course, all students will struggle from time to time with new topics. The problem arises when they progress to a point in their education where the sophistication of the subject cannot be comprehended immediately and needs much more disciplined study. This time most often comes during high school when students face the rigors of trigonometry, calculus or statistics.

As grown up children are already habituated to certain things, so they find it difficult to modify their habits and behavior. It is better to develop study habits among students at secondary level as it is the proper time and age to cultivate study habits. At this age students are quite matured and are able to know what is good and what is bad. They can avoid bad things and invite good things with the help of teachers. For efficiency, students can adopt effective study habits to succeed in their academic life. Effective study consists of much more than merely memorizing fact. It calls for knowing where
and how to obtain facts and the ability to make intelligent use of time. It means that the students must be able to organize, classify and arrange facts in their proper relationship to the subject being studied. Effective study cannot be acquired without the application of effective study techniques that include: goal setting; choose specific time to study; avoid procrastination; tackle the difficult assignments first; listening carefully to lectures; asking questions; taking notes; revising, organizing and rewriting lecture notes; discussing with others; thinking around new ideas and concepts; reflecting on what the subject means; thinking about practical applications; reformulating (putting something into one’s own words); selection of good study environment; and to maintain positive attitude are some of the important study habits that must be developed among students from the very beginning. These effective study habits that children develop at an early age have also been presented in the fig.1.2.
The key to becoming an effective student is learning how to study smarter, not harder. As students develop effective study habits, their ability to assimilate and learn new information will improve. These study habits are a very important part of the learning process. Good study habits are all about keeping to a daily routine and giving all
subjects equal treatment. Hard work and good study habits are assets that should be
nurtured. Motivation and study habits are obviously crucial for all students to protect
investments of time & money and to achieve educational goals. Study habits of the
students are probably very important predictor of high achievement. When students are
proficient in how to study effectively, how to take notes at lectures, how to prepare for
and take examinations, it is very likely that they will perform well in their academic
work.

Moreover, it is considered that unhealthy study habits become a hurdle in the way of
achievement of the individual and do not let him to make the best use of his
potentialities and dragged him down to poor performance in the academic domain.
Unhealthy study habits among the students may be a possible and pertinent reason for
their failure (Smith, 1961). He further described that what a student learns depends
upon his learning methods, the goal he sets, the time he spends, the degree to which he
becomes actively involved in his work, the breath of the framework within which he
tries to learn and the extent to which he applies what he learns. The ambitious and
intelligent students are more likely to develop effective study habits and bring their
own rewards in the sense of achievement of success. The formation of effective study
habits creates the awareness for regular and steady learning. Hence, study habits of
students’ play important role in learning and fundamental to school success.

Many studies have been conducted on study habits with academic achievement and
some other variables also. Study habits and study attitudes are of paramount
importance in order to predict their academic performance. Jacobson (1980) explored
those students who allotted greater amount of time to study exhibited greater
achievement gains. Tiwari (1982) and Singh (1984) revealed that study habits were
related to academic achievement significantly. Deb, Grewal, and Pal (1990) explored
significant relationship between study habits and academic achievement. Subrahmanyam (2007) examined significant relationship between study habits and academic achievement of students. Gokhan, Aysel, and Turan (2009) revealed that there was no significant relationship between meta-cognition and study habits and attitudes
for low and medium achievers but, there was a significant relationship between meta-cognition levels, and their study habits & attitudes for high achievers. Aanu and Olatoye (2011) found no significant difference between male and female students’ study habits and science achievement. Gupta and Kapoor (2012) found that students with high scholastic achievement had better study habits as compared to the students with low scholastic achievement. Kumar and Sohi (2013) investigated that there was very high and positive relationship between study habits and academic achievement of tenth grade students. O’ Neale and Harrison (2013) found no statistical difference in the study habits of the students based on their learning styles. Sandhu (2014) showed significant positive relationship between academic achievement and all the dimensions of study habits. Agrawal and Teotia (2015) investigated that the study habits and attitude towards education were not correlated with regard to gender, area and type of school.

A strong relationship between the learning style and study habits was found among students (Kiblasan, Abufayed, Sehari, Madamba, and Mhanna, 2016). Kanchan (2017) examined a significant and positive relationship between study habits and family environment of secondary school students.

As we all know, secondary school stage is a turbulent stage of growth and students are prone to make many mistakes if they are not controlled or directed. So good plan for studies is necessary and also students should learn to use their time profitably for the benefit of the school and themselves. A well planned study programme gives students the freedom to pursue their interests in school subjects and such freedom leads to the development of their personalities. During this study period, individuality is developed and recognized. Therefore, parents and teachers must help in improving the study habits of students. Lakshmi and Arora (2006) investigated that parental acceptance and encouragement were positively related with school success and competence. Teachers in schools should become facilitators of learning. The finite treasure within every learner should be discovered and nurtured for the purpose of improving learning effective study skills. As such one of the objectives of teaching should be the improvement of study habits of the students. The task of learning is not related to the
teacher alone but it also requires many things on the part of the learners, like his ability to schedule his time, the plan of the study, concentration, note taking, mental review, mass and part learning etc. to perform better in their academic life. In fact, it appears as if the whole system of education revolves round the academic achievement of students. Thus, a lot of time and effort of the schools are used for helping students to achieve better in their scholastic endeavors.

1.3 META-COGNITIVE SKILLS

“To know that one knows what one knows, and to know that one does not know what one doesn’t know, there lies true wisdom.”

-Confucious (Chinese Sage)

“Learning is considered as a constructive, cumulative, self-regulated, goal-oriented, situated, collaborative, and individually different process of knowledge building and meaning construction,” (Corte, 2000). Students actively process information, using prior knowledge, skills and strategies (Resnick, 1989). Constructivism has changed the traditional view of learning i.e. knowledge absorption into a view of learning i.e. active knowledge construction. Often we hear that one of the most important tasks of education is to teach students; how to learn on their own throughout their lifetimes. But how do we learn? And what have we learned? are the questions that are addressed by the concept of meta-cognition. Education is no longer expected to focus solely on the transfer of knowledge, but also on the development of meta-cognition.

Meta-cognition refers to the actual monitoring and consequent regulation of the processes in relation to the cognition object or data on which they bear, usually in service of some concrete goals or objectives. Controlling thinking processes and becoming more aware of one’s own learning is called meta-cognition. “Meta-cognition is any kind of cognitive transaction with the human or non-human environment, where a variety of information processing activities go on,” (Flavell, 1979). In simple words, meta-cognition means ‘thinking about one’s own thinking.’ It refers to the knowledge of learners about their own cognition, cognitive functioning and possibly that of others. Wenden (1998) considered meta-cognitive knowledge as “a prerequisite for the
self-regulation of learning. It involves planning, decisions taken at the outset of learning and the monitoring processes that regulate the completion of a learning task.” It is considered that these are general skills of planning, monitoring and evaluating through which learners manage, direct, regulate and guide their learning. Hartman (2001) claimed that with high levels of domain specific knowledge may facilitate the acquisition and use of meta-cognition in learning. Winne and Hadwin (1998) also defined “meta-cognition as the knowledge of one’s own cognitive & affective processes and the ability to consciously & deliberately monitor and regulate these processes.”

Meta-cognition involves two main components: a) Knowledge about cognition and b) Regulation of cognition (Flavell, 1979). This conceptualization has led to a widely adopted model of meta-cognition (Brown, 1987; Jacobs & Paris, 1987; Schraw & Dennison, 1994; Schraw & Graham, 1997 and Otani & Widner, 2005). These components of meta-cognition are also represented in fig. 1.3.1.

![Fig. 1.3.1: Components of Meta-cognition](image)

**Knowledge about cognition** corresponds to what students know about themselves, strategies and conditions under which strategies are most useful. This knowledge is of three types: declarative, procedural and conditional (Kuhn, 2000; Schraw, Crippen and Hartley, 2006 and Schraw & Moshman, 1995). These three types of knowledge can be thought of as the building blocks of conceptual knowledge.
**Regulation of cognition** refers to the knowledge about the way in which students plan, implement strategies, monitor, correct comprehension errors and evaluate their learning. These two components of meta-cognition contribute significantly towards the academic performance of adolescents (Narang and Saini, 2013). Himghaempanah, Karimi and Najafi (2014) also found that meta-cognition and academic achievement were significantly correlated with each other.

The chief aim of education is to prepare students to adapt efficiently to new situations and transfer their acquired procedural knowledge to solve novel problems. It is believed that if one only supplies his/her students rigorously with content and academic skills, meta-cognitive skills will emerge naturally as part and parcel of intellectual maturity. But the ability to examine oneself as a cognitive agent will develop naturally only to a pitiful rudimentary level. Meta-cognitive skills are the abilities which are used to understand and analyze one’s own learning especially influenced by educational background and previous experience. Meta-cognitive skills make one aware of one’s own knowledge, the ability to understand, control and manipulate one’s own cognitive process. In other words, we can say that meta-cognitive skills are the techniques that instill meta-cognition allow students a sense of control over their own learning, alleviate anxiety, enhance motivation, reduce incompetence and unwarranted confidence and hopefully generate life-long learners. Meta-cognitive skills refer to an individual’s awareness, evaluation and regulation of their own thinking activity. Brown, Bransford, Ferrara, and Campione (1983) showed that one of the key traits of good problem-solvers is highly developed meta-cognitive skills. They know how to recognize flaws or gaps in their own thinking, articulate their thinking processes, and revise their efforts. The facets of meta-cognitive skills i.e. self-planning, self-awareness, self-monitoring, self-problem-solving, self-regulation, self-reflection and self-evaluation have been identified by the researchers. But it was found that meta-cognitive skills comprise of four main dimensions of planning, implementation, monitoring and evaluation which have been also represented in fig. 1.3.2.
Fig. 1.3.2: Dimensions of Meta-cognitive Skills

When we start something new, orientation and planning play important role. Planning is related with learning plan, setting goals, and prioritizing materials instead of learning itself. Monitoring is related with monitoring of learning and strategies used in self-analysis and assessment of the effectiveness of the implementation of the strategy. During the task monitoring, testing, making a diagnosis and repairing are necessary skills. After the completion of learning task evaluation and reflection come into focus. In our everyday thinking, we actively engage in these skills i.e. planning, monitoring and evaluation. We decide what method to use or when to ask for help to solve a problem. We use meta-cognitive skills to help us decide which elements we understand and which we do not understand. In other words, students with strong meta-cognitive skills can control and manage their own thinking and also the outcome of their thinking process. These allow students to make flexible and efficient adjustment to new situations, and transfer of procedural knowledge to novel settings. These skills help students to be sensitive to external constraints i.e. time, resources, help and internal obstacles i.e. level of expertise, motivation, effort required, affect etc. Understanding of different levels e.g., as demarcated by the abilities to summarize, criticize, analyze, synthesize, etc. is possible through meta-cognitive skills. These skills are also helpful
to reduce well-embedded misconceptions that normally inhibit the acquisition of the academically accepted theories and explanations, and enhance motivation in gaining control of the learning process, and self-regulating problem solving.

Various studies showed that there is the great importance of meta-cognitive skills in learning process. Maqsud (1997) investigated that meta-cognitive ability tends to associate positively with academic attainment of high school pupils. Everson and Tobias (1998) examined that knowledge monitoring had a significant relationship with school grades and also indicated that accurate monitoring is an important variable in school learning. Xiao (2005) suggested in the study that meta-cognitive skills acquired in reading can promote the acquisition of language skills such as listening, speaking and writing. Annevirta and Vauras (2006) explored that there was no clear developmental relationship between meta-cognitive knowledge and meta-cognitive skills. Ibe (2009) revealed that the meta-cognitive strategies were most effective in enhancing the academic achievement. Sharei, Kazemi and Jafari (2012) found a significant relationship between the general scores of meta-cognitive capabilities and emotional intelligence skills and some of their components with mathematical problem solving ability. Eluemun and Azuka-Obieke (2013) revealed a positive relationship between meta-cognitive skills and academic performance. Mizakhani, Bagheri, Sadeghi, Mizakhani and Modanloo (2014) examined that meta-cognitive skills were more effective in academic achievement of female students. Control skill was the only variable that could predict the academic achievement of students. İsa Yücel İşgör (2016) investigated that there was a positive significant relationship between meta-cognitive skills and academic success average. The effective contribution of meta-cognitive skills and cognitive learning results in each learning strategy was less than fifty percent (Siswati and Corebima (2017).

1.3.1 How to Learn Meta-cognitive Skills in Liberal Education

Meta-cognition is important in every aspect of school life as well as after school life, since it involves self-reflection on one’s current position, future goals, potential actions
& strategies. The development of meta-cognitive skills is not being accentuated because it has been pointed out that the meta-cognitive skills are difficult to learn and also to execute. The difficulties, related with mastering the meta-cognitive skills include some common difficulties for skill learning; and idiosyncratic difficulties for meta-cognitive skill. As we know, mastering a skill is difficult as compared with acquisition of specific (declarative) knowledge, so, it is difficult to explain how to use a skill explicitly even for a person who has already mastered the skills. A learner who wants to master the skill has to use, adjust and coordinate each action which composes the skill after he/she gets outline knowledge about how to use the skill. Moreover, there are some idiosyncratic problems for learning the meta-cognitive skill. If the skill that a learner wants to master is one of motor skills, the learner can observe the process that another person uses. For the meta-cognitive skill, however, its’ monitoring and controlling target is in the person’s mind, and the process to use the skill is also performed in his/her mind, so, the learner cannot observe the process to use the skill and what changes occurred as a result of using the skill. Due to this, it becomes more difficult for the learner to imitate the skill.

There are also difficulties in executing the meta-cognitive skills because meta-cognitive skill uses many resources as compared with basic cognitive skill. Here a person searches his knowledge base and assembles applicable knowledge into action-list in order to change states of the task at cognitive layer and again he searches his knowledge base and assembles applicable knowledge into action-list at meta-cognitive layer in order to control the objects in the cognitive layer. It is difficult for learners to be aware when they should use the meta-cognitive skills, because the learners can sometimes solve problems even if they do not use the meta-cognitive skills.

Meta-cognition does not develop automatically in all students; teachers play an essential role in its development. So, at least teachers should teach students how to regulate their learning processes before they hand over responsibilities for learning to them and for obvious reasons this is especially important for students who do not have
meta-cognition at their disposal without any help (Schoenfeld, 2001). Low achievers need specific teacher support while high achievers develop meta-cognition more easily without any teacher interference (Davidson, Deuser and Sternberg 1995; and Davidson & Sternberg, 1998). Students’ meta-cognitive skills development is a precious educational goal because the skill can help them to be self-regulated learners. Self-regulated learners have a responsibility upon their own learning progress and adopt learning strategies to pursue the demand of their work. It is believed that meta-cognitive skills play an important role on much type of cognitive activity including comprehension, communication, attention, memory and problem solving. The ultimate goal in enhancing students’ meta-cognitive skills is to create self-directed and autonomous learners (Victori and Lockhart, 1995).

Despite the magnitude of meta-cognitive skills in the learning process, the development of meta-cognitive skills is not being emphasized in many classrooms today (Woolfolk, 2008; and Rahman, Mahmud, Yassin, Amir & Ilias, 2010). Most teachers focus on content and ignore the learning process used while teaching the content. In other words, students are assumed that they can learn on their own the necessary skills needed to learn effectively. Students and novices often lack these skills or fail to recognize when to use them (Flavell and Wellman, 1977). Most students do not engage in meaningful learning and most of the students use rote learning as a main strategy (McGilly, 1996). He further claimed that the students should be provided with the necessary skills such as learning skills, social skills, problem solving skills and information organizations skills that should be taught and integrated across the curriculum.

As educators, it is important for us to foster the development of meta-cognitive skills among students. These are the skills that will help students to learn how to learn. On the whole, teacher education programs should involve the study of meta-cognitive awareness because pre-service teachers seldom apply their knowledge of meta-cognition when working with students in their field experiences (Freeman and Johnson,
1998; Freeman, 2001; and Joseph, 2003). Considering this fundamental role of meta-cognitive skills in education, prudent teachers should understand and employ the available information on meta-cognitive skills and then design a curriculum and learning environment that reflect such insights. In this regard, the role of teachers is very important in helping students to improve their meta-cognitive skills. To be an efficient and effective thinker, the learner should be able to monitor his or her degree of understanding, be aware of the knowledge possessed, be conscious of the task demanded, and know the strategies that facilitate thinking. There are various meta-cognitive strategies for the development of meta-cognitive skills. These meta-cognitive strategies include: predicting outcomes, questioning by the teacher, self-questioning, self-planning, using discourse, using directed or selective thinking, selecting strategies, evaluation of work, and revision (Darling-Hammond, Austin, Cheung and Martin, 2008). These strategies can be defined as:

- **Predicting outcomes** - Teachers help students to understand what kinds of information they might need to solve a problem successfully. It indicates a conscious effort of teachers to guide students to think about how they learn.

- **Self-questioning and questioning by the teacher** - During their learning, students use questions to check their own knowledge. The teacher also asks students what they are working on now. Why they are working on it? And how does it help them?

- **Self-planning** - Students can be taught to make plans for learning activities including estimating time requirements, organizing materials and scheduling procedures necessary to complete an activity. Students should know the limits of their own memory for a particular task and should create a mean of external support.

- **Using discourse** - In the classroom, there is a discussion between students & students and students & teacher. One student talks through a problem describing his thinking processes. His partner listens and asks questions to help clarify thinking. Student-teacher discourse focuses on how they can improve their learning.

- **Using directed or selective thinking** - Students consciously choose to follow a specific line of thinking. Through the use of learning log, students reflect upon their
thinking, make note of their awareness of ambiguities & inconsistencies and comment on how they have dealt with difficulties.

- **Selecting strategies** - Closure activities focus student discussion on thinking processes to develop awareness of strategies that can be applied to other learning situations. Students must understand available strategies and their essence in an effort to develop meta-cognitive skills.

- **Evaluation of work** - Students reflect on their learning and determine how well they have learned something. When students recognize that learning activities in different disciplines are similar, they will begin to transfer learning strategies to new situations. Guided self-evaluation experiences can be introduced through individual conferences and checklists focusing on thinking processes.

- **Revision** - Students review their work to determine where their strengths and weaknesses lie within their work. Repeatedly rehearsing a skill will help to gain proficiency and to do self-test periodically will help to see how well they learned something. Students return their work after receiving feedback.

In this way, meta-cognitive strategies refer to methods used to help students understand the way they learn. These strategies are designed for students to ‘think’ about their ‘thinking’. These strategies facilitate learning how to learn and ensure that a cognitive objective has been reached. Nevertheless, the strategies of planning, monitoring and evaluation can be clearly differentiated from a theoretical perspective in that the observed empirical overlap between them may be due to temporal as opposed to functional similarities. More specifically, as suggested in a model of self-regulated learning proposed by Schmitz (2006), these strategies are assumed to be utilized in a cyclical manner, and thus, are likely to co-occur during the learning process due to earlier strategy (e.g., planning) prompting later strategy (e.g., monitoring) that recursively influence the preceding strategy (e.g., modified plans) through feedback loops. Teachers who use meta-cognitive strategies can positively impact students who have learning disabilities by helping them to develop an appropriate plan for learning information, which can be memorized and eventually routine. When students become
aware of how they learn, they will use these processes to efficiently acquire new information and consequently, become more of an independent thinker. Furthermore, it can be concluded that the most important reason for developing meta-cognition is that it can improve the application of knowledge, skills and character qualities in realms beyond the immediate context in which they are learned. This can result in the transfer of competencies across disciplines important for students preparing for their real-life situations. Transfer of learning is the ultimate goal of education, as students are expected to internalize what they learn in school and apply it to life.

Some correlation studies showed that the use of meta-cognitive strategies positively correspond with academic achievement (Pintrich, Smith, Garcia and McKeachie, 1993; Zimmerman and Martinez-Pons, 1986; and Zimmerman & Martinez-Pons, 1988). The promotion of self-regulated learning strategies typically had a positive impact on academic achievement, particularly when meta-cognitive awareness is encouraged (Dignath, Buettner and Langfeldt, 2008; and Hattie, Biggs & Purdie, 1996). Conversely, some studies revealed notably weak or no significant relationships between the use of meta-cognitive strategies and academic achievement (Sinkavich 1994). Successful learners typically use meta-cognitive strategies whenever they learn but they may fail to use the best strategy for each type of learning situation. In effective classrooms, teachers are responsible for helping students to develop better meta-cognitive skills by incorporating active reflection throughout the learning process.

It is believed that meta-cognitive skills play an important role in much type of cognitive activities including comprehension, communication, attention, memory and problem solving to make self-regulated, positive, confident and mature learners who take responsibility for their learning experiences. A person cannot learn all things by himself. Facilitators, simply teacher play a very huge and important role in moulding one’s attitude, developing someone’s skills and enhancing the knowledge of every school child. In short, a teacher is essential in putting up a brighter future for someone. Learners critically analyze their own assumptions and know how this may have
influenced their learning. Teachers are responsible for helping students to develop better meta-cognitive skills by incorporating active reflection throughout the learning process. The importance of personal reflection during and after learning experiences should be emphasized by the teacher. It is proposed that teachers can enhance students’ meta-cognitive skills by giving directions and explaining to them how to think about what they do (White, 1992). The collaborative efforts of teachers and students to plan a course of study can grow students as independent learners. It was asserted by Schraw and Graham (1997) that “meta-cognition is an important component of effective learning because it enables individuals to plan, monitor and regulate their cognitive performance.” Thus, meta-cognitive skills instill meta-cognition enable learners to become aware of how they learn and to evaluate and adapt these skills to become increasingly effective at learning.

1.4 LEARNING & THINKING STYLE

All individuals are more different than they are alike. They have different backgrounds; strengths & weaknesses; needs; levels of attitudes & motivations; and approaches to studying. They adopt approaches to learning which they are most comfortable with and leave behind the ones with which they are not comfortable. They also differ in how successfully they respond to and profit from instruction practices. Mind plays a flexible role in accomplishing variety of tasks. It is therefore important for parents and teachers to understand the nature of student’s mind and its functions in different styles of learning and thinking.

The term ‘learning style’ refers to an individual’s natural, habitual and preferred way of absorbing, processing and retaining new information and skills (Reid, 1998). They are characterized as the way people acquire and understand new knowledge and skills. These are typical approaches or patterns i. e. visual, auditory and kinesthetic that gives direction to learning behavior (Cornett, 1983). Each learner has distinct and consistent preferred ways of perceptions, organization and retention. Every learner follows its own unique way to learn and process information. Some learn by oral repetition, some
may learn by writing it out, while others may learn through practical work. Learning style can be described as a set of factors, behaviors and attitudes that facilitate learning for an individual in a given situation. Gregorc (1979) defines learning style as “distinctive behaviors which serve as indicators of how a person learns from and adapts to the environment. It also gives clues as to how a person’s mind operates.” The Dunn and Dunn Learning-Style Model focuses on understanding how individuals learn best and also defines learning styles as the way in which individuals begin to concentrate on, process, internalize, and retain new and difficult information (Dunn and Dunn, 1992). Liu (2008) defined it as “approaches to learning which refer to information processed in a preferred way in accordance to learner’s habitual characteristics.” Sarasin (2006) described learning style as “a certain specified pattern of behavior or performance according to which the individual approaches a learning experience.”

Learning styles are cognitive, affective and physiological traits and influenced by personality type, educational specialization, career choice and current job role and tasks (Kolb, Boyatzis, & Mainemelis, 2001). A good strategic learner must understand how to identify their learning goal, integrate the learning style, apply proper skills and be self-regulated to achieve the best results from learning (Paris & Wingrad, 1990; Zimmerman & Schunk, 2001; and Wardsworth et al., 2007). Learning problems are frequently not related to the difficulty of the subject matter but rather to the type and level of the cognitive processes required to learn the material (Keefe and Ferrell, 1990). Kolb and Kolb (2005) stated that there is no such thing as a fixed learning style; rather, learning occurs on a continuum ranging from concrete to abstract, or from reflective observation to active experimentation. A significant number of theorists and researchers have argued that learning styles are not determined by inherited characteristics but develop through experience. Styles are therefore not necessarily fixed, but can change overtime, even from one learning situation to the next. Some theorists, on the other hand are more interested in how learners tackle a specific learning task with their learning strategy than any habitual preference or style. That is why, it seems as an easier and more effective way to select and organize teaching
methods & strategies and teaching material in the classroom environment according to learning styles rather than expecting the students to adapt to the existent organization. Accommodating teaching to learning styles improves students’ overall learning results, increases both motivation & efficiency and enables a positive attitude towards the subject being learned. Harmony between learning style and teaching style increased academic achievement and satisfaction with learning (Lindsay, 1999).

In accordance with the learning style of students, their thinking style also contributes a lot in their learning outcomes. But in today’s era, growing generation believes that machine is more powerful and better than a live thinking human being. The machine has acquired status, become a symbol of power and modernity with viable future. They are going to occupy increasing physical space and psychological space, particularly for the younger generation. But the fact is that computers will only do things that are told to do. Human beings can do things which he has not been told to do because he can think frankly. Capacity to think is a human virtue that is valued from ancient times. This unbeatable human virtue is still relevant. Qatami (2001) defined that “thinking is considered a mental process in which the learner develops through mental interaction processes between the individual and the experiences that he acquires to develop structures of knowledge and access to new assumptions and expectations.” It includes making many mental and knowledge processes, such as attention, cognition, memory, classification, reasoning, analysis, comparing & generalizing and synthesis (Abu El-Maati, 2005).

A ‘thinking style’ is defined as an individual’s preference for a specific thinking process (Zang and Sternberg, 2006). Thinking styles have two dimensions: Cognitive and Affective. The cognitive dimension is related to the use of strategies for reasoning and problem solving acquired by experience. The affective dimension has to do with how the person’s interests and attitudes affect them (Zhang, Sternberg and Rayner, 2012). “Thinking style is the individual’s preferred way of thinking when doing business; and describes how the individual uses or exploits the capacities that he owns i.e. knowledge which is not an ability but it is located between the character and capacities,”
(Sternberg, 2002). Thinking styles may be defined as the mental frameworks that enable individuals to process information and solve problems in specific contexts. It is not ability but rather a preferred way of using the abilities one has. Ability refers to how well one can do something. A style refers to how some one likes to do something. Styles help us to understand why some people succeed in their chosen careers and others don’t.

In classrooms, the process of teaching and learning mostly depends on remembrance of facts and figures in the order given in the text books. Few pupils with certain thinking preferences get advantage out of this and others are considered as dull. Those who are failed in the school examinations are viewed as stupid and lack the ability to succeed. But many of these students are not actually stupid or dull. In a changed teaching - learning atmosphere or in a different situation, they may perform well. Many of them have the ability to succeed. Many of the others thought to be dump are not so at all but rather simply did not learn in a way that was compatible with the way teachers were teaching. What is seen as stupidity or intransigence may actually be nothing but a mismatch between the style of one individual and the style of another. What is attributed to ability is really in part a question of styles of thinking. Due to the mismatch in styles among the students and teachers, so many students derail from their preferred areas of studies. Students whose styles don’t match the expectations of their parents or teachers are derogated for wrong reasons. Countless students study something that they like well enough but that is not what they love, because they or others believe these students lack the ability to study what really interesting to them. Thus, it is necessary that schools take into account student’s style of thinking and consider the chances between the way of teaching a subject and the way the student thinks. The awareness of style of thinking is useful in perceiving the students as she/he is. Teachers should teach students how to think instead of teaching what to think.

People are selected into various jobs mainly on the basis of their academic performance. Good memorizers who got high marks, ranks and grades are selected. But they need not necessarily think in ways that are compatible with the requirements of the job that a given field offers. At the same time, students who think in ways that are fully
compatible with the job but not with the requirements of the selection may be derailed. Those who fit particularly well the demands of the career are thrown out and those who do not, are taken. This phenomenon can be addressed through an understanding of styles of thinking. Thinking styles help us to understand why with given equal abilities, one person chooses one career and another person chooses another career. Thinking styles might be the source of unexplained variations of ability tests about future performance. Students need to find careers that match not only their abilities but their styles as well. Sternberg (1997) argued that thinking styles are more important than abilities, no matter how broadly abilities are defined. How people prefer to think might be more important than how well they think.

“Styles depend upon cerebral dominance of an individual in retaining and processing different modes of information in his/her own style of learning and thinking. Style indicates the hemisphericity functions of the brain and students’ learning strategy and information processing are based on the preferences of the brain area,” (Venkataraman, 1994). Clemen and Lochhead (1979) argued that styles contribute to achievement beyond what can be expected by student’s intelligence. Brain hemisphericity is the tendency of an individual to process information through the left hemisphere or the right hemisphere or in combination (Bradshaw & Nettleton, 1981 and Springer & Deutsch, 1993). Iaccino (1993) and Torrance (1988) demonstrated that the left hemisphere operates in a linear, sequential manner with logical, analytical and propositional thought whereas right hemisphere operates in a nonlinear, simultaneous fashion and deals with non-verbal information as well as dreams and fantasy. The left hemisphere appears to be specialized for language, whereas the right hemisphere is specialized for visual-spatial and appositional thought. Kinsella (1995); and Oxford, Ehrman and Lavine (1991) also examined that right-hemispheric dominants are highly global, visual, relational, and intuitive learners whereas left hemispheric dominants are highly analytic, verbal, linear and logical learners. McCarthy (1996) observed that whole-brain dominants have flexible use of both hemispheres as they process information through both hemispheres equally and exhibit characteristics of both
hemispheres. The difference in preference of hemispheres for information processing has been referred to as style of learning and thinking.

One of the most significant advances in education has come from a considerable amount of research done in the area of learning & thinking style which recognizes that the students in classrooms have variety of differences in their learning & thinking style. The styles of learning & thinking are as important as the levels of ability. Learning and thinking style is an ability of learners to perceive and process information in various learning situations. To teach and learn more effectively, instructors and learners need to better understand individual differences and also these individual differences how affect the learning process. Understanding individual learning & thinking style preferences has significant implications for learners as it helps them be aware of themselves, their abilities, how they learn, how they think and why they differ from peers. It has been determined that brain structure strongly influences language structure acquisition. It has also been found that different hemispheres of the brain contain different perceptions avenues. There are major functions of each cerebral hemisphere that assist in the teaching-learning process. The two brain hemispheres and their functions have been shown in fig. 1.4.
Fig. 1.4: Brain Hemispheres and their Functions

Source: http://www.alamy.com/stock-photo/left-hemisphere-humancerebrum.html?imgt=8&sortby=1

Style of learning & thinking is cerebral dominance of an individual in retaining and processing modes of information. It identifies hemisphericity dominance by way of studying the hemisphere functions and indicates a student’s learning strategy and brain hemisphere preference in problem solving. Kolb (1979) and McCarthy (1996) have suggested that brain hemisphericity is associated with different occupations and academic majors. Academic subjects such as science, engineering and language emphasize logic and verbal analysis, which make them a better fit for left-brain
dominant students. Whereas other subjects such as arts, the humanities and architecture are believed by several researchers to require a more global, synthetic and spatial orientation which make them more suitable for right-brain dominant student (Katz, 1983). Lavach (1991) examined brain hemisphericity of students with different majors. He reported natural science students demonstrated a left-hemispheric mode. Humanities students showed preference for the right-hemispheric dominance, while social science majors showed preference for left-hemispheric dominance.

One of the researches has demonstrated that if students are taught through instructional methods that complement their hemispheric preference, then they are more capable of mastering new skills (Boyle & Dunn, 1998). Various studies have showed that students taught through methods that matched their hemispheric styles achieved statistically significant better test scores than when they were taught through other teaching methods (Brennan, 1984 and Jarsonbeck, 1984). Therefore, it is necessary for the teachers to know the students preferred styles, so that the teachers can capitalize the opportunities for students learning. Styles like abilities are not formed by birth, but are partly developed due to environmental condition. The choice of style depends on the person’s learning experience, the environment and abilities. He further suggested that if the content of learning is in consistent with students’ preferred learning & thinking style, then their learning improves better than before. Teachers must eventually come forward to understand and identify the preferred style of learning and thinking in students and also assess the styles of students for developing intelligence and creativity in the fields of their preferred styles in academic areas.

Various studies have been conducted on learning & thinking style with different variables. A significant relationship was found between learning style and academic achievement (Cano, 1998; Collison, 2000; Moeni, Aliapour & Ghaderi, 2009; and Abidin, Rezaee, Abdullah, Kaur & Singh, 2011). Bernardo, Zhang and Callueng (2002) indicated a high positive correlation between the executive style and academic achievement, but no significant correlation was found between the legislative style and
academic achievement. Albaili (2007) found that executive and conservative thinking styles were the most discriminating factors that separated low-achieving students from their high-achieving peers. Cano-Garcia, Hughes (2010) investigated that students’ academic achievement was significantly related to students’ learning & thinking style. Sharma and Neetu (2012) observed that students’ learning & thinking style and academic achievement were positively and significantly related to each other. Vengopal and Mridula (2013) investigated a significant difference in the right hemisphere and left (brain) hemisphere preference for information processing among students. It was also found that there was significant difference between right and left hemisphere preference for information processing in boys and girls. Kaur and Lal (2014) explored that there was a significant difference between that high and low achievement of school children on style of learning and thinking scale. Humera (2015) revealed in the study that majority of the students had right hemispheric dominant style of learning and thinking. Garima (2016) found no significant effect of learning and thinking style on academic achievement of senior secondary schools students. Khan and Unnisa (2017) investigated a significant difference in academic achievement of students learned by right & left hemisphere, but no significant difference was found between academic achievement of boys & girls students learned either by right hemisphere or left hemisphere.

1.5 RATIONALE OF THE STUDY
During the last few decades, there has been a radical change in every field on account of scientific inventions and technological advancement. In the field of education often we hear that one of the most important tasks of education is to teach students how to learn on their own throughout their lifetimes. In this process of teaching-learning teachers play an important role. It is foremost important for the teachers to focus their attention on students’ favourite learning and thinking style and develop their meta-cognitive skills before imparting the subject matter. If they fail to do so, the consequences may be serious, because the teachers may tend to confuse styles of students mind. Since the
method of teaching adopted by teachers often reflects their personal thinking style, the students who have the same thinking style of the teachers are only benefited and rewarded. Measuring the achievements of students should not be enough as bases in evaluating how students got their course. There are so many factors which affect students’ academic achievement, but their meta-cognitive skills and learning & thinking style are great factors to look at their academic achievement. These factors of meta-cognitive skills and learning & thinking style) are usually the reasons that made the achievements low or high, study habits good or bad when these are not discovered and used to strengthen the learners’ level of learning.

Researchers like Alam (2001); Sahu & Sood (2005); Mittal (2008); Gakhar, (2008); Yala & Wanjoji (2011); Adodo and Oyeniyi (2013); Himghaempanah, Karimi, and Najafi (2014); Owo and Ikwut (2015); Panchu, Bahuleyan, and Seethalakshmi (2016); and Lee, Makara, Fishman & Teasley (2017) studied academic achievement in relation to socio-economic status, internet addiction learning & thinking style, learning strategies, anxiety level and achievement motivation, mental health and locality, meta-cognitive regulation students’ perception of their teachers’ attitude towards them, teachers’ experience and educational qualifications at secondary level. The results indicated significant relationship between these variables and academic achievement. Thathong (2002); Deborah and Brian (2006); Young (2008); Nuthana and Yenagi (2009); Hassanbeigi et.al (2011); Kumar (2013); Chandra & Reddy (2014); Chris (2015); Sherafat & Murthy (2016); and Kanchan (2017) investigated study habits and other related variables at different levels. Adewole (2001); Xiao (2005); Cubukcu (2008); Kummin and Rahman (2010); Rani and Govil (2013); Kristiani, Susilo, Rohman and Aloysius (2015); Aghayousefi, Yaghoobian and Arsanjani (2016); and Siswati & Corebima (2017) conducted studies on meta-cognitive skills and other variables at different levels. Steward (1979); Moore (1984); Diskowski (1991); Flores-Fist (1995); Hansen (2000); Wang, Hinn and Kanfer (2001); Gafoor (2008); Khalid, Mokhtar, Omar-Fauzee, Kasim, Don (2013); Bhakhshayesh (2014); Bhadawkar &
Padmanabhan (2016); and Khan & Unnisa (2017) studied learning & thinking style separately and in combination with other variables at different levels. Review of related literature revealed that various studies have been conducted in area of meta-cognitive skills at different levels. But the fact is that a very little amount of research has been carried out in Indian context related to meta-cognitive skills at secondary level as majority of researches have been conducted in abroad. Further, it was found that the variable learning and thinking style has been studied separately in most of the researches. There were very few studies on combined learning & thinking style. Therefore, it was identified that various studies were conducted on meta-cognitive skills and learning & thinking style including students, teachers and prospective teachers with respect to a number of variables. But no studies were conducted on academic achievement and study habits among school students in relation to their meta-cognitive skills, learning & thinking style. Thus, the lack of researches in the present area motivated the researcher to take up the present topic and to study the effect of meta-cognitive skills and learning & thinking style on academic achievement and study habits of school students. This study would be relevant to policy makers and curriculum experts in the education sector that it will help to review our present educational policy and curriculum with the aim of introducing meta-cognitive skills and hemisphere preference for learning & thinking style as a core component of teaching-learning process to improve learning abilities of students. The findings of this study would be of immense benefit to the teachers, students and educational researchers to enhance assessment in planning, instruction and conducting classroom research in the educational sector.

1.6 STATEMENT OF THE PROBLEM
A STUDY OF ACADEMIC ACHIEVEMENT AND STUDY HABITS AMONG SCHOOL STUDENTS IN RELATION TO THEIR META-COGNITIVE SKILLS, LEARNING AND THINKING STYLE.
1.7 OPERATIONAL DEFINITIONS OF THE KEY TERMS USED

❖ Academic Achievement

Academic achievement is the knowledge attained or skills developed in the school subjects, usually designated by test scores or by marks assigned by teachers. It is the indication of performance or achievement in a test performed to measure one’s achievement. In the present study, academic achievement of the students was determined on the basis of their previous examination marks. For the purpose of the study, the investigator obtained 8th class board examination total marks of the students from their school records. Thus, the obtained marks of the students acted as the scores of dependent variable (academic achievement) in the study.

❖ Study Habits

Study habit is auto nominally, learned behavior pattern that enables the student to acquire how to study. Study habits typically denote degree to which students engages in regular acts of studying that are characterized by appropriate studying retains (review or material) occurring in an environment that is beneficial to studying. Study habits are learning tendencies that enable students to work privately and also intended to elicit and guide one’s own cognitive processes during learning.

❖ Meta-cognitive Skills

Meta-cognitive skills are knowledge about one’s own learning process. The term also refers to an individual’s awareness, monitoring, evaluation and regulation of their own thinking activity. These skills are the abilities which are used to understand and analyze one’s own learning especially influenced by educational background and previous experiences.

❖ Learning & Thinking Style

Learning & Thinking Style is that which describes the variations among learners in using one or more senses to understand, organize and retain experience. It depend upon cerebral dominance of an individual in retaining and processing different modes of information in his own style of learning & thinking. Brain hemisphericity is the tendency of an individual to process information through the right hemisphere.
or the left hemisphere or in combination. Right-hemispheric dominants are highly global, visual, relational and intuitive learners, whereas left hemispheric dominants are highly analytic, verbal, linear and logical learners. Whole-brain dominants have flexible use of both hemispheres as they process information through both hemispheres equally and exhibit characteristics of both hemispheres.

1.8 VARIABLES INVOLVED

1. Dependent Variables
   - Academic Achievement
   - Study Habits

2. Independent Variables
   - Meta-cognitive Skills
     - High Meta-cognitive Skills
     - Low Meta-cognitive Skills
   - Learning & Thinking Style
     - Right Hemisphericity
     - Left Hemisphericity
   - Locality
     - Urban
     - Rural
   - Gender
     - Male
     - Female

1.9 OBJECTIVES OF THE STUDY

A. Objectives related to Academic Achievement of School Students with respect to their Meta-cognitive Skills, Locality and Gender

1) To study the effect of (a) meta-cognitive skills, (b) locality, and (c) gender on academic achievement of school students.
To study the interaction effect of (a) meta-cognitive skills and locality; (b) meta-cognitive skills and gender; and (c) locality and gender on academic achievement of school students.

To find out the interaction effect of meta-cognitive skills, locality and gender on academic achievement of school students.

B. Objectives related to Academic Achievement of School Students with respect to their Learning & Thinking Style, Locality and Gender

To study the effect of (a) learning & thinking style, (b) locality, and (c) gender on academic achievement of school students.

To study the interaction effect of (a) learning & thinking style and locality; (b) learning & thinking style and gender; and (c) locality and gender on academic achievement of school students.

To find out the interaction effect of learning & thinking style, locality and gender on academic achievement of school students.

C. Objectives related to Study Habits of School Students with respect to their Meta-cognitive Skills, Locality and Gender

To study the effect of (a) meta-cognitive skills, (b) locality, and (c) gender on study habits of school students.

To study the interaction effect of (a) meta-cognitive skills and locality; (b) meta-cognitive skills and gender; and (c) locality and gender on study habits of school students.

To find out the interaction effect of meta-cognitive skills, locality and gender on study habits of school students.

D. Objectives related to Study Habits of School Students with respect to their Learning & Thinking Style, Locality and Gender

To study the effect of (a) learning & thinking style, (b) locality, and (c) gender on study habits of school students.

To study the interaction effect of (a) learning & thinking style and locality; (b) learning & thinking style and gender; and (c) locality and gender on study habits of school students.
12) To find out the interaction effect of learning & thinking style, locality and gender on study habits of school students.

E. Objectives related to Prediction of Academic Achievement and Study Habits among School Students on the basis of their Meta-cognitive Skills and Learning & Thinking Style

13) To predict academic achievement among school students on the basis of their meta-cognitive skills and learning & thinking style.

14) To predict study habits among school students on the basis of their meta-cognitive skills and learning & thinking style.

1.10 HYPOTHESES OF THE STUDY

A. Hypotheses related to Academic Achievement of School Students with respect to their Meta-cognitive Skills, Locality and Gender

H_{01} There exists no significant effect of (a) meta-cognitive skills, (b) locality, and (c) gender on academic achievement of school students.

H_{02} There exists no significant interaction effect of (a) meta-cognitive skills and locality; (b) meta-cognitive skills and gender; and (c) locality and gender on academic achievement of school students.

H_{03} There exists no significant interaction effect of meta-cognitive skills, locality and gender on academic achievement of school students.

B. Hypotheses related to Academic Achievement of School Students with respect to their Learning & Thinking Style, Locality and Gender

H_{04} There exists no significant effect of (a) learning & thinking style, (b) locality, and (c) gender on academic achievement of school students.

H_{05} There exists no significant interaction effect of (a) learning & thinking style and locality; (b) learning & thinking style and gender; and (c) locality and gender on academic achievement of school students.

H_{06} There exists no significant interaction effect of learning & thinking style, locality and gender on academic achievement of school students.

C. Hypotheses related to Study Habits of School Students with respect to their Meta-cognitive Skills, Locality and Gender
H₀₇ There exists no significant effect of (a) meta-cognitive skills, (b) locality, and (c) gender on study habits of school students.

H₀₈ There exists no significant interaction effect of (a) meta-cognitive skills and locality; (b) meta-cognitive skills and gender; and (c) locality and gender on study habits of school students.

H₀₉ There exists no significant interaction effect of meta-cognitive skills, locality and gender on study habits of school students.

D. Hypotheses related to Study Habits of School Students with respect to their Learning & Thinking Style, Locality and Gender

H₀₁₀ There exists no significant effect of (a) learning & thinking style, (b) locality, and (c) gender on study habits of school students.

H₀₁₁ There exists no significant interaction effect of (a) learning & thinking style and locality; (b) learning & thinking style and gender; and (c) locality and gender on study habits of school students.

H₀₁₂ There exists no significant interaction effect of learning & thinking style, locality, and gender on study habits of school students.

1.11 DELIMITATIONS OF THE STUDY

Due to paucity of time & resources and to make it more meaningful, the present study is delimited in the following aspects:

1) The present investigation is confined to school students at secondary level only.

2) The study is delimited to the students studying in 9th class only.

3) The study is restricted to private schools affiliated to Central Board of Secondary Education (CBSE) only.

4) The present study is delimitied to two districts (Jind & Rohtak) of Haryana state only.

1.12 CHAPTERISATION SCHEME

The present study has been divided into six chapters. Out of the six Chapters, Chapter I is Introduction which includes a theoretical overview of essential beginning of the research study i.e. academic achievement, study habits, meta-cognitive skills and