Chapter 2

THEORETICAL VIEWPOINTS ABOUT ACADEMIC ACHIEVEMENT, STYLES OF LEARNING, LOCUS OF CONTROL, ACHIEVEMENT MOTIVATION, AND INTELLIGENCE

Academic Achievement

Academic achievement generally refers to the degree or level of success or proficiency attained in some academic work. There are apparently a good deal of similarities in the views held by different authors on the concept of academic achievement. Gough (1959), Biswas and Aggarwal (1972), and Good (1959) have all placed emphasis on knowledge obtained and skills acquired in the academic subject, which is usually reflected in test scores, marks or grades attained in different examinations. These test scores, marks, or grades determine the status of the pupil with respect to attained skills or knowledge as compared to other pupils. It is the competence actually shown by the pupils in the subjects in which they have received instructions at school.

Trow (1956) defined academic achievement as "the attained ability or degree of competence in school tasks, usually measured by standardized test and expressed in grades or units based on norms derived from a wide sampling of pupils' performance." (P.121). Good (1959) referred to academic achievement as the "knowledge attained or skills developed in the school subjects,
usually designated by test scores or marks assigned by the teacher." (P. 91).

Mehta (1969) opined that the word, 'performance' is a wider term which includes both the academic and co-curricular performance of an individual. (P.26).

Wolman (1973) defined achievement as "the degree or level of success in some specified area or in general. It is the level of proficiency attained in scholastic or academic work." (P.110).

Marschner (1975), in his view recorded in Encyclopedia of Psychology, averred that "achievement is a general term for the successful attainment of some goal requiring a certain effort. It is the degree of success attained in a task, e.g., solving a test. It is also viewed as a result of certain intellectual or physical activity defined according to individual and for objective (organizational) prerequisites, i.e., proficiency." (P.290).

Christian (1980) stated that the word, 'performance' indicates the learning outcome of students. By learning different subjects, the students change their behaviour patterns. Learning affects three major areas of students' behaviour, namely: (a) cognitive, (b) affective, and (c) psychomotor. Christian held the view that these three levels are not affected equally at the same time; a student affected at a higher level in one domain may be
affected at a lower level in another.

Cognitive area is primarily concerned with intellectual development of an individual. It involves acquisition of the basic intellectual skill, such as reading, arithmetic, learning of facts, etc. Bloom (1956) contended that cognitive domain includes all those processes which deal with recall or recognition of knowledge and development of intellectual abilities and skills.

Affective area deals with self-concept, personal growth, and emotional development of the students.

The psychomotor is primarily concerned with the development of muscular skills and co-ordination.

Academic or educational age, accomplishment quotient or achievement are the most commonly used means to interpret the level of academic achievement of pupils in general or in a specific subject-matter. Academic achievement is a complex behaviour. It is not a unidimensional activity. It helps both the students and the teachers to know their stand. It also encourages the students to work hard and learn more. Academic achievement enables the teachers to know whether their teaching is effective or not and thus to bring about improvement accordingly. This proposition was put forth succinctly by Stephens (1956):
Most people would deplore emphasis on academic matters that exclude all other facts of development. Hardly anyone, however, would advocate any real neglect of academic skill. For one thing, the fuller life that we visualize for each child will be impossible unless he has some skill in intellectual and scholastic arts.

The rationale behind the assessment of academic achievement stems from two fundamental assumptions of psychology, namely, there are differences with the same individual from time to time, known as behavioural oscillations, i.e., academic achievement of the same individual differs from time to time, from one class to another, and from one educational level to another; then, there are individual differences, i.e., individuals of same age group, of the same grade, and of the same potential ability usually differ in their academic proficiency, whether measured by standardized tests, or by teacher's grading, or by marks obtained in tests, and examinations. Hence, the concept of high-, average-, and low-achievement has emerged.

'Concept of High-, Average-, and Low-Achievement

The concept of high-, average-, and low-achievement is not of recent origin. In most of the studies, researchers have defined "high-achiever" as one whose average total achievement score lies in the top quartile.
The "low-achiever" is the one who falls in the bottom quartile. However, the term "high-low achievement" should not be confused with the term "over-and under-achievement". According to most of the studies, "over-achiever" is one who exceeds an aptitude-based expectancy of academic performance and the "under-achiever" is one who does not perform as well as would be expected from known characteristics or abilities, particularly from measures of intellectual aptitude. Accordingly, an individual may be a high-achiever but an under-achiever or a low-achiever and still an over-achiever and vice-versa. Gilmore (1968) has cautioned against the oft-repeated confusing of low-achiever with under-achiever as has been done by Goff (1970).

Approaches to Identify High-and Low-Achievers

A few of the techniques used in identifying high-and low-achievers have only been adapted from the numerous attempts which were made by researchers to identify over-and under-achievers. Such techniques adapted have revealed the possibility of employing different approaches for this purpose.

Angelino and Hall (1960), Shaw and McCuen (1960), and Short (1968) made partial use of percentile method to identify over-and under-achievers. This method has been adopted to identify high-and low-achievers. Short (1968)
had used percentile method to stratify two groups on SCAT scores. Those scoring at the 75th percentile or above were classified as high-ability group; those who scored at the 25th percentile or below were placed in the low-ability group.

Muthayya's (1962) identification of over-achievers and under-achievers was, in essence, a classification of high-and low-achievers. Muthayya had classified the first five ranks in the final promotion examination as over-achievers and the last five ranks as under-achievers while taking the sample of classes 8, 9, and 10 with no difference in intelligence between the high-and low-ranking students.

Okafor (1989) identified the top 27% of the students considered on the basis of their total achievement scores as high-achievers and the bottom 27% of the students considered on the basis of their total achievement scores as low-achievers.

This approach has been adopted by the investigator in the present study to identify high-, average-, and low-achievers. The top 27% of the students [Kelley's (1939) criterion] considered on the basis of their aggregate percentage scores were regarded as high-achievers and the bottom 27% of the students considered on the basis of their aggregate percentage scores have been taken as low-achievers. The rest of the students who were not in the
above two categories have been designated as average-achievers.

**Styles of Learning**

In recent years, there has been a proliferation of research on learning styles of students at various levels of education. The results of this research have led to a number of postulates which are generally accepted by majority of psychologists and others working in the area of learning styles.

Recent research on student learning is employed to illustrate the application of rigorous qualitative analysis in investigating the actual tasks undertaken by students in institutions of higher learning. This analysis has led to the description of qualitative differences in learning outcomes which are related to differing styles of learning adopted by students who either seek out meaning or tend to conform strictly to assessment requirements mainly by memorizing. It has been demonstrated, by establishing a link between qualitative and quantitative analysis, different styles of learning can be identified.

Educating each individual in the classroom through individualized instruction is not a dream now-a-days. To meet the challenges arising from the fact that individuals differ remarkably in all aspects of their life-space, various methods, techniques, etc. have been developed by
researchers, educationists, and psychologists. Identifying students' learning styles is one such method which is used for individualized instruction.

Learning style is a new growing concept. The concept of learning style has been treated as a potential individual difference that might be employed by the teacher to enhance students' learning. Learning style is simply the way, method, or approach by which a student learns.

Aggarwal (1981) defined learning styles "as sum total of physical, social, emotional, and environmental elements which affect and help an individual in the course of learning." (P.19). Since there may be a number of combinations of these factors for different persons, there will always be a unique learning style of every individual.

Garger and Guold (1984) defined learning styles as "stable, persuasive characteristics of an individual expressed through the interaction of one's behaviours and personality as one approaches a learning task." (P.9).

McDermott and Beitman (1984) stated that "learning style defines, therefore, the distinct ways in which a child characteristically goes about the learning process" (P.5). They include the observable problem-solving strategies, decision-making behaviours and the child's reactions to the expectations and limitations of school
learning situations in their analysis.

Gibson (cited in Swain, 1987) defined learning styles "as the different ways in which people process information in the course of learning." (P.21)

Keefe (1987) and Schmeck (1988) opined that the term, learning style customarily refers to the usual cognitive processes through which a learner perceives, codes, organizes and remembers. Styles of learning may also refer to characteristics of the physical environment in which an individual carries on learning (Wauters, 1989, P.53). But for Kaulback (1984), learning styles may refer solely to sensory modality.

The connotation of "style" is not consistent throughout the literature. Sometimes, even within one and the same study, there is remarkable inconsistency in the connotation of "style" (e.g., Kaulback, 1984). Operationally, style is used in at least four different ways:

1. The usual (or characteristic) cognitive or learning process (e.g., (1976) Messick, 1990).
2. The preferred (e.g., preference stated by subject) process (e.g., Kolb, 1985).
3. The strongest (similar to a cognitive ability) process (e.g., Ramirez and Castaneda, 1974), or
4. A specific cognitive or learning process (e.g., Kirby, Moore, and Schofield, 1988).
There is often an implicit assumption that the process for which an individual reveals a preference is the same as his usual process, and is also same as his strongest process. However, there is no evidence in the literature to support such an assumption. Conceptually, the meanings are different, albeit related. (More, 1990, P.3).

The common theme of all these definitions, as well as several others that exist, is that an individual's learning style is primarily an interactive process between that individual, child, or adult and his interaction between the biologically inherent and/or learned propensities, and the specific environmental demands of the particular situation with which the individual is confronted. It is, therefore, clear from the definitions, that, in general, learning style is a way in which a learner approaches a problem or deals with learning situation. Approaches to learning draw attention to the crucial importance of intentionality in academic learning and so also to the influence of personal motives for studying not just on the degree of effort exerted but also on the direction and quality of the effort (Taylor, 1983).

Learning Styles And Cognitive Styles

A deliberate attempt has been made here to examine the relationship between learning styles and cognitive
styles. Drever's (1952) "Dictionary of Psychology" defined cognition in a way which covers various modes of knowing, perceiving, imagining, remembering, conceiving, judging and reasoning. Many psychologists have defined cognition as that part of perceiving, learning, and thinking that is conscious. Cognition is a mediating process that is the centre of resurgence of interest.

Every individual has different ways of organizing all that he sees and remembers and thinks about. Consistent individual differences occur in the ways of arranging and processing information and styles represent consistencies in the manner or form of cognition, as distinct from the content of cognition or the level of skill displayed in the cognitive performance. They are conceptualized as special attitudes, preferences, or habitual strategies determining a person's typical mode of perceiving, remembering, thinking, and problem-solving.

Broverman and Lazarus (1958) suggested that cognitive style might manifest in two ways: (a) as a directive influence on behaviour, and (b) as an ability to resist disruption under interfering conditions. The cognitive style may be "perceptual motor" dominant or "conceptual" dominant. Although cognitive styles are viewed as habitual modes of information processing, yet they are not simple habits in the technical sense of learning theory as they are not directly responsive to principles of acquisition.
and extinction. They develop slowly and do not seem to be easily modified by specific tuition or training.

Harvey (1963) viewed cognitive style as the way an individual filters and processes stimuli so that the environment takes on psychological meaning and is representative of the mediation. As such, cognitive representations modify the one-to-one relationship between stimulus and response. If it were not for these cognitive representations, stimuli would be irrelevant for the individual or the individual would respond to stimulation in a robot-like fashion. Bieri (1971) also noted that a process of information is a basic assumption of the cognitive theorists. He maintained that individuals learn "strategies" programmes or other transformation operations to translate objective stimuli into meaningful dimensions. Bieri termed these strategies as 'cognitive structures'.

Coop and Siegel (1971), referring to cognitive styles as consistencies in the individuals' mode of functioning in a variety of behavioural situations seemed to equate cognitive style with behaviour rather than mediation process. This definition is similar to the earlier use of the term, 'style' by Allport (1937) to describe the consistencies in behaviour; the earlier concept of silent organization used by the Gestalists to describe cognitive structures that are not tied to specific content but to rather guide behaviour (Scheerer, 1954, P.91).
Messick (1976) defined cognitive style in terms of consistent individual differences and averred that cognitive structures harmonize between environmental input and the output. He added that cognitive structures organize behaviour as well as input.

Schilling (1981) conceptualized cognitive styles as the characteristic preference that individuals show for different types of information. It refers to the methods employed by an individual in perceiving, organizing and labelling various dimensions of the environment.

Ohnamacht and McMorris (1971) defined cognitive styles as those dimensions that characterize a person's manner of perceiving, thinking, and problem-solving.

Witkin (1971) considered cognitive style as the characteristic, self-consistent modes of functioning which individuals show in their perceptual and intellectual activities.

The common theme of all these definitions is strategy-method adopted in processing information. It is at this point that learning style and cognitive style meet. It is clear, by now, that cognitive style is usually defined in a manner very similar to the definition of learning styles (Messick, 1984; Shipman and Shipman, 1985) or used interchangeably (Kyllonen and Shute, 1989), except when it refers specifically to Witkin's notion of field independence (Witkin and Good-enough, 1977). Generally,
learning style is used with learning tasks and cognitive style with broader cognitive task.

In the present study, learning style and cognitive style are used interchangeably to refer to individual differences in how one perceives, thinks, solves problems and learns. Both refer to the usual cognitive processes employed by an individual in performing a cognitive task.

Classification of Styles of Learning

Different styles of learning are classified under two major groups—physiological and psychological. Both groups are relevant to the proper approach to remediation. It is recognized that some styles of learning may be both physiologically and psychologically induced. If the perceptual problem has its source in emotional trauma, emphasis in the remediation should include psychotherapeutic intervention, as in playtherapy, drama, music, and arttherapy, and behavioural management. If the source of the perceptual problem is a physiological lag, the intervention technique should emphasize an elaboration of sensory stimulation.

Different styles of learning are difficult to isolate within any one person. It is, however, possible to categorize broad bases of visual and auditory styles (Border, 1973; Myklebust, 1967; Kirk and McCarthy, 1968). Styles of learning can also be classified in terms of
brain hemisphericity. This is conceived on the notion that the human brain is lateralized into the right- and left-hemispheres. Those who process information through the right hemisphere are said to possess right-hemispheric style of learning, while those who process information through the left hemisphere are said to possess left-hemispheric style of learning. Psychologically based styles may be categorized as co-operative Vs. resistant or active Vs. lethargic (Swain, 1987).

It is believed that there are no limits to the different styles of learning (Guilford, 1959). In their monumental work, Entwistle and Waterson (1985) have identified 16 styles of learning (subscales) across four domains and have produced four main factors, which, most recently, have been described as deep, surface, organised, and strategic approaches to learning. The deep and surface factors contain, among their component items, the defining features derived from the qualitative research, while the remaining two factors are less stable and represent the two main facets of the strategic approach.

**TABLE 2** Defining Features of Approaches to Learning

**DEEP APPROACH**

- Intention to understand
- Vigorous Interaction with content
- Relate New Ideas to Previous Knowledge
- Relate Concepts to Everyday Experience
- Relate Evidence to Conclusions
- Examine the Logic of the Argument
SURFACE APPROACH
- Intention to complete Task Requirements
- Memorize Information Needed for Assessments
- Failure to Distinguish Principles from Examples
- Treat Task as an External Imposition
- Focus on discrete Elements Without Integration
- Unreflectiveness about purpose or strategies

STRATEGIC APPROACH
- Intention to Obtain Highest Possible Grades
- Organize Time and Distribute Effort to the Greatest Effect
- Ensure conditions and materials for studying Appropriately
- Use previous Exam Papers to Predict Questions.
- Be Alert to Cues about marking Schemes.

The defining features of each category can be established only by assembling a wide range of interview extracts which exhibit the varying nuances of the category which 'delimit' it. From that 'pool of meanings', the criteria for identifying each approach can be identified, which then allow other judges to check the reliability of categorizations. It is these rigorous analytic procedures which differentiate this research from other more impressionistic qualitative research.

In Marton's (1976) view, the categories he identified describe only a single event - a student's approach to a specific task in a specific situation. He had not visualized that the approach would be transferred to other similar tasks or situations. A deep approach should, therefore, not be regarded as an individual difference, but as a category of response. Marton had argued that, for this reason, his conceptualization takes one 'beyond individual differences'. 
By indicating the crucial importance of intentionality, Marton's conceptualization does, indeed, accelerate research on individual differences, but the Gothenburg group's own evidence also demonstrates that an approach involves a certain consistency across tasks and across situations (Svensson, 1977). And that consistency necessitates the use of the concept as a salient individual difference in the explanation of general learning outcomes.

Since Marton's pioneering research, a large volume of other studies have been published which portray the far-reaching explanatory value of his main concept. It can be used, with appropriate variations in the definition of categories, to describe learning across subject areas ranging across arts and social sciences (Entwistle and Ramsden, 1983; Van Rossum and Schenk, 1984) to medicine (Newble and Entwistle, 1986), and across the different types of learning involved in lecture (Hodgson, 1984), essay writing (Hounsell, 1984), and problem solving (Laurillard, 1984).

In an attempt to extend the original research to describe day-to-day studying in the normal institutional setting, Ramsden (Entwistle and Ramsden, 1983) found it essential to introduce an additional concept describing a strategic approach to studying which involves the clear intention on the part of a student to obtain maximum grade
by use of whatever learning processes that are perceived as most rewarding.

Within the deep approach category, stylistic differences have been identified (Pask, 1976; Entwistle, 1981) which represent characteristic preferences for serialist or holist strategies for relying predominantly on relating ideas or assembling evidence. In other words 'style' is intended to be a more general term than 'strategy' carrying with it also implications of stability rooted in underlying personality differences. Alloted sufficient time, students reach a deep level of understanding adopting either style, but under time constraints, characteristic pathologies of learning emerge. The descriptions of these distinctive styles seem to parallel the functions of the two cerebral hemispheres-sequential, analytic, and time dependent (serialist); and holistic and visuospatial.

The defining features of these learning styles and approaches have been employed to write items for an 'Approaches to Studying Inventory' (Entwistle and Ramsden, 1981) which, from a large-scale factor analysis, confirmed the existence of three main factors describing deep-, surface-, and strategic- approaches to studying. As in the independent work of Biggs (1986) these approaches were associated with distinctive forms of motivation. A deep approach is closely related to intrinsic motivation or a
perception of interest or relevance. A surface approach is mainly associated with fear of failure or test anxiety (Fransson, 1977), while a strategic approach involves both achievement motivation and vocational motives.

Pupils at the top end of secondary school tend to describe their experiences in ways which can again be recognized as involving deep and surface approaches (Selmes, 1985), while the three main factors in the Approaches to Studying Inventory have been clearly identified among pupils aged 12 and 18 years (Entwistle, 1986). These three factors have been produced, not only in a large British sample, but also in an equivalent Hungarian sample, thus confirming that this way of describing approaches to studying is not specific to a particular educational or social system (Entwistle and Kozeki, 1985). Among school children, the familiar associations of approaches to learning with forms of motivation are found, and there are also clear links with perceptions of adult pressure (Entwistle and Kozeki, 1985), teaching method, task requirements, assessment procedures, dependency, and time constraints (Selmes, 1986).

Locus of Control

The largest body of empirical data about perceived control, however, derives from Rotter's (1966) social learning theory. Perceived control occupies a central
place within a systematic formulation in Rotter's theory. Rotter's theory suggests that a person's actions are predicted on the basis of his values, his expectations and situation in which he finds himself. The variable of locus of control is of major significance in understanding the very nature of learning processes in different learning situations.

There is an equal emphasis upon value, expectancy of reinforcement and situation specificity that makes Rotter's theory unique among learning theories. Rotter's (1954) Social Learning Theory provides the general theoretical background for this conception of the nature and effects of reinforcement and his work on levels of expectancies. According to this theory, the unit of investigation for the study of personality is the interaction of the individual and his meaningful reinforcement, and it is the study of learned behaviour. Behaviour, as described by personality theorists, has directional aspect which is inferred from the effects of reinforcing conditions. The occurrence of a person's behaviour is determined, not only by the nature or importance of goals or reinforcements, but also by the anticipation or expectancy of the person that their goals will occur. Thus, the three basic constructs in Rotter's social learning theory include behaviour potential, expectancy, and reinforcement value.
Locus of control is a measure of a person's perception of the determinants of the reinforcement he receives. If a person believes that the event is contingent upon his own behaviour or his own relatively permanent characteristics, he has belief in 'internal control'. But if he believes that reinforcement is not due to his actions and so is contingent upon luck, fate, chance or as under the control of powerful others, the individual has a belief in 'external control' (Rotter, 1966). Rotter (1975) defined locus of control thus:

When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his actions, then in our culture it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual we have labelled this a belief in external control. If the person perceives that the event is contingent upon his own behaviour or his own relatively permanent characteristics, we have termed this a belief in internal control (P.56-7).

DuCette and Wolk (1972) opined that an internal person
perceives that he is in control of his fate, and that effort and reward will be correlated. But an external person perceives that powerful others or the systems determine how well he can do and that rewards are distributed by such powerful others in a random fashion.

In most research on internal-external control, perceived locus of control has been considered as unidimensional, bipolar construct, i.e., an individual's general expectancy for reinforcement has been defined as internal or external. However, Levenson (1972), Hersch and Schiebe (1967), and Procuik and Breen (1974) have stated that this theoretical formulation may be too simplistic because of the diversity in the meaning of external control. Locus of control refers to the extent to which a person believes that he has control over the reinforcements being experienced by him. Those who believe, report, or act as though forces beyond their control are the determinant factors of the occurrence of reinforcing events are referred to as having an external locus of control. Such forces may include fate, chance, powerful others, social constraints, the complexity in unpredictability of the World, etc. On the other hand, those who believe and act as though they control their own future and believe that they are the effective agents in determining the occurrence of reinforcing events are regarded as having an internal locus of control. This
hypothesized continuum of individual differences is conceptualized as generalized expectancy or belief regarding the nature of the casual relationship between one's own behaviour and its consequences. The perception of causal relationships is, further, hypothesized to vary within the limits set by a given individual's learning history from one situation to another. Thus, individuals are conceived to vary along a locus of control dimension with the end-points labelled 'internal' and 'external'.

Research and theoretical literature indicates that the construct of Locus of Control is an important psychological variable and a personality dimension which appears to differentiate individuals according to a generalized belief or expectancy attitude about control, that this expectancy can be measured, and that these measures are predictive of behaviour in a variety of circumstances. (In a recent report on equality of educational opportunity, it was pointed out that locus of control was a better predictor of behaviour than any other attitudinal, familiar school and teacher variable studied (Coleman, et al. 1966) Report of research findings indicates that locus of control has proved to be extremely useful in the prediction of a variety of behaviour. Its significance is revealed in a variety of predictive areas including attempts at controlling the environment (Davis & Phares, 1967), social influence (Ritchie & Phares,
1969), risk-taking (Liverant and Scodel, 1960), and socio-cultural phenomena (Battle and Rotter, 1963). Relationships which have been found between locus of control and certain important social variables have, no doubt, contributed significantly to its present popularity as a research variable.

**Achievement Motivation**

Motivation is expressed through various motives. In the area of learning or scholastic attainments, achievement or academic motive can be singled out as the most prominent.

Achievement motivation or 'self-actualization' (Maslow, 1954), or 'need-achievement', n-Ach (Murray, 1938), or 'fantasized achievement' as Reiter (1965) envisaged it, has been the subject of great deal of interest to educators and psychologists in recent years. Every student is required to possess or develop it in order to strive for success and thus, actualize his potentialities. In the face of the tremendous wastage and stagnation, educators and psychologists have strongly felt that achievement motivation may, after all, be the key to success.

Theory of achievement motivation was developed by McClelland (1953) at the Harvard University and Atkinson (1958) at the University of Michigan. Some psychologists
argue that all human behaviour is intended to reduce tension and reach a state of psychological and physiological equilibrium. But McClelland (1953) concluded that motives, rather than being essentially tension states, are also drives towards notions based on expectation. There is a great need to create a "need" in a child to learn. He has to be motivated for learning. "Achievement motivation is the desire to do better, to achieve unique accomplishment, to compete with standard of excellence and to involve one's self with long-term achievement goals". (McClelland, 1953, P.58).

The achievement motive develops out of the expectations based on various experience that individual had with the common problems of life, from learning to walk to learning a profession. Achievement motivation can be identified as the basis of individual's expectation of success, provided that he is personally involved.

"Achievement motivation (n-Ach) is the desire to excel some standard of behaviours; it is an effect in connection with evaluated performance, in which competition with standard of excellence is paramount", (McClelland, 1965, P.389). In 'Achieving Society', the future of it depends upon the present level of achievement motivation of the pupils. (McClelland, 1961). McClelland had found that 83% of entrepreneurs were high in achievement motivation and that the growth rate of the companies which
were led by these entrepreneurs with high achievement motivation, was almost 200% higher.

The concept of achievement motivation or need-achievement (n-Ach) has been prevalent in one form or another, since the beginning of the present century.

"Achievement motivation is a construct designed to explain inter-and intra-individual differences in the orientation, intensity and consistency for achievement behaviour in terms of content. It may be characterized as a tendency to maintain and increase individual proficiency in all areas in which the standard of quality is taken as binding". (Heckhauson, 1967, P.61).

Murray (1935) referred to achievement motive as the need for achievement, (abbreviated as n-Ach) and defined it as the desire to accomplish something difficult, to rival and surpass others. In the area of motivation, several experiments have been conducted on need achievement. Murray (1938) opined that need achievement means to accomplish something difficult to master, manipulate, or energize physical objects, human beings or ideas.

Sears (1940) and Allport (1955) considered the concept of achievement motivation as synonymous to 'success or failure', 'ego involvement', and the "level of aspiration'. The level of aspiration is also a type of motive but it differs from person to person and is called
motive of aspiration' and this motive spurs a man on until it satisfies his aspiration.

McClelland (1951) proposed that 'need-achievement' or 'need-mastery' is a competition with a standard of excellence. The standard of excellence may be self related, task related, or both. Furthermore, he added that it is a need which is presumably aroused by inducing ego involvement experimentally, and that while some people are more strongly motivated by the expectation of success, others may be more strongly motivated by the expectations of failure. McClelland called these subforms of the achievement motivation as 'need achievement' and 'fear of failure'.

Clark and Lowell (1958) opined that achievement motive is acquired through the reinforcement of responses made in achievement-related activities during childhood. They held the view that in case of achievement motivation, this situation should involve 'standard of excellence' presumably imposed on the child by the culture or more particularly by the parents as representative of culture, and the behaviour should involve either 'competition' with those standards of excellence or attempts to meet them, which if successful would produce positive effect or if unsuccessful, would produce negative effect. It follows that those cultures or families which emphasize competition with standard of excellence or which insist
that the child should be able to do certain tasks well by himself, could produce children with high achievement motivation.

This implies that students must be motivated to learn. As a matter of fact, motivation is at the heart of learning. Without motivation, no learning is possible at any significant age level. Therefore, the role of motivation in learning cannot be ignored if learning is to be promoted.

Rosen (1955) stated that achievement motive is the persisting characteristic or disposition to strive for achievement goals. Achievement motive is strengthened as a result of successive reward for attaining certain imposed standard of excellence. When one pursues the activity for the sake of some external reward, one is extrinsically motivated. Extrinsic motivation is considered to be inferior to intrinsic motivation as a learning device. Intrinsic motivation seems to be the best and the most enjoyable approach to the learning process, but when it is not possible, sensible extrinsic motivation is an acceptable substitute.

Heckhausen (1963) expressed the opinion that in terms of content, achievement motivation may be characterized as the tendency to maintain and improve individual proficiency in all areas in which a standard of quality is regarded as binding. Heckhausen (1967) stated further that
motivation is a universal fact of life just as the maturation stages in cognitive development. He was of the view that achievement motivation could be conceptualized as the quest to increase or keep, as high as possible, one's own capabilities in all activities in which a standard of excellence is considered to apply and where the execution of such activities can, therefore, either succeed or fail.

Farquhar (1963) stressed that achievement motive is a combination of forces which initiate, direct and sustain behaviour towards a scholarly goal. Learning is a process by which an organism in satisfying its motivation, adapts or adjusts to a situation in which it must modify its behaviour in order to overcome obstacles or barrier. It is an open secret that activity is basic to learning and motivation.

Atkinson (1964) defined achievement motivation as the inner force, desire, or need. Experimentally, it is the conscious experience of desire, emotion, feeling of determination, and the inclination to act, whereas behaviourally it is the description of the direction (vigour) and persistence of observable behaviour in relation to observable and experimental conditions.

Mukherjee (1965) expressed the view that an achievement-motivated person has conscious high desire for achievement with a high desire for excellence, zest for
striving or restriving in order to make up for a failure and makes a deliberate effort to maintain self-respect and pride on a high level. Motive or need is a strong desire to strive for a particular kind of goal, state, or aim, i.e., achievement, affiliation, power, etc.

Sharma (1981) opined that the demand forced on the individual by his social environment contributes to the development of his desire for success. As the social environment is found to be different in all the three subcultures, viz., tribal, rural, and urban, so also are the demand put by the environment on individuals different. Since need achievement is learned and acquired motive, there is possibility of increasing it.

From the various definitions, it can be safely concluded that achievement motivation is an innate disposition towards the implementation of one's goal, a tendency to work with determination towards specific end, a desire to learn, a motive to achieve or a need for achievement.

Intelligence

The concept of intelligence has captured the attention of educators, psychologists, neurophysiologists, philosophers and theologians and has confounded them all alike throughout the ages (Shute, 1985). Galton (1892,
1943) and Binet (1903, 1907) were pioneers in the field of intelligence. It was Galton who introduced the scientific concept of intelligence and the general factor of cognitive ability while attributing the individual differences in intelligence to genetic factors. Binet had considered intelligence as a statistical artifact, the average of a number of separate and independent mental abilities which are the offspring of environmental factors.

Numerous definitions of intelligence have been put forth by different psychologists among whom are Terman (1906) who defined intelligence roughly as a general ability to learn, to reason, to grasp concepts, and to deal with abstraction.

Thorndike (1927) believed that the distribution of intelligence should be normal provided that intelligence quotient is measured on a scale of 'truly equal units'. However, research of the recent years has disproved Thorndike's contention. A detailed analysis of test results obtained by Burt (1963) from a large sample of English children (N=4665), supplemented by a study of meagre data already available, demonstrated beyond reasonable doubt that the distribution of individual differences in general intelligence, by no means, conformed with strict exactitude to the so-called normal
Piaget (1960) expressed the view that intelligence is both the content and process of developmental adaptation, i.e., intelligence is a structural and functional development of knowing behaviour which results from the adaptive interaction of the learner with the environment over time.

Guilford (1967) has put forward a three-dimensional box-like model which he has termed as the 'structure-of-intellect model' or SI model. He has attempted to simplify the picture of intellectual traits along three dimensions—contents, operations, and products. Contents refer to the area to which the items belong on the basis of which the operations are performed. Operations describe the nature of the task to be carried out by the examinees. The SI model comprises of five kinds of mental functions to be done with various kinds of contents. They include cognition labelled C, memory labelled M, divergent production labelled D, convergent production labelled N, and evaluation labelled E. Products describe the kind of outcomes after the operation is performed by the examinees. Mental operations yield products which are categorized into six parts: units of information (U), classes of units (C), relations between units (R), systems of information (S), transformation (T), and implications
Thus, with four kinds of content, five kinds of operation, and six kinds of product, Guilford's box-like model produces 4x5x6 cells.

Anastasi (1979) believed that the identification of component traits of intelligence is based on a study of interrelationship of behaviour. For example, if each person performs equally well (or equally poorly) on all sorts of verbal tests such as vocabulary, verbal analogies, and reading comprehension, a single score could be substituted for the separate scores on all these tests.

Kimmel (1985) proposed that the concept of function stability of central nervous system provides a neurobiological basis for the intellectual dimension of human behaviour. He has presented the evidence that individuals whose central nervous system is more functionally stable have higher level of measured IQ while those whose central nervous system is less functionally stable have lower IQ. It has also been established by Kimmel that functional stability of the central nervous system may be modifiable by experience. Moller and Sorenson (1985) describe three types of intelligence: (a) Symbolic, (b) semantic, and (c) potentially semantic.

On examination of these and several other definitions, it becomes evidently clear that there are conflicting views on the concept of intelligence. The
debate, as to what intelligence really is, continues. However, for the purpose of the present study, intelligence is construed as the ability to deal with numbers, analogies, opposites, and synonyms, to make categories, follow directions, and draw inferences. Its measure (verbal) is the total score on the English version of Jalota's (1977) Group Test of General Mental Ability. In addition, a nonverbal measure of intelligence was obtained from the total score on Raven's (1950) Standard Progressive Matrices (SPM), following the definitions of intelligence given by Terman (1925) and Stoddard (1943). Terman had defined intelligence as the ability to think in abstract terms; Stoddard defined it as the ability to undertake activities that are characterized by difficulty, complexity, abstractness, economy, speed, adaptiveness to those activities under the conditions that ask for a concentration of energy and resistance to emotional forces. The idea is that an intelligent person, when compared to a less intelligent one, is able to do difficult mental tasks which are both complex and abstract.

The elements of intelligence, as given in the operational definitions, are also relevant to academic achievement. Therefore, it seems likely that a significant positive correlation exists between intelligence and academic achievement. An intelligent child does more work
with less effort and in less time than his less intelligent counterpart, thereby achieving higher grades. Bright children have greater capacity to concentrate than their dull mates.

Levels of intelligence

While considering intelligence and its levels, both verbal and nonverbal intelligence have been taken into account. Scores on both verbal test of General Mental Ability (Jalota, 1971) and nonverbal test of Standard Progressive Matrices (Raven, 1960) have been converted into the DIQs (deviation IQs) and the average of the composite DIQ scores has been found for each student included in the sample.

Then, identification of three levels of intelligence has been done on the basis of Kelley's (1939) criterion of top and bottom 27% cases on the DIQ scores. Cases above top 27% have been considered as high-IQ group, while the bottom 27% cases were considered as low-IQ group. The rest of students who were not classified into either of the above groups have been regarded as the average-level IQ group.