CHAPTER - I

1 INTRODUCTION:

Education plays a significant role in building up the society. In modern age, a society cannot achieve the aims of economic growth and development which are the pillars of a country without educating and talenting their citizens. Therefore, it has been recognized that we should start building up a body of knowledge pertaining to education, thought and practice grounded in all fields of education.

The ever broadening spectrum of education and scientific achievement has raised the questions of better learning and better achievement for all. In an highly achieving society of today's success has become an index of attaining position and respect. Greater premium is being laid on the academic achievement of students. A good academic record of students is an index of an effective educational system.

Development of all round personality of child is one of the major aims of modern education. Education plays a paramount role in educating and talenting children.

In our country education is passing through a critical period in its history. Despite great advances in knowledge about student learning and the investment of tremendous amount of time, effort and money, our schools still have not moved very far towards the goals of increased learning for all students. Present policies and practices in schools are
resulting in achievement of learner based upon the principle of normal distribution. Thus, schools still continue to provide successful and rewarding learning experiences for only about two third of learners.

There is a general feeling that the conventional methods of classroom instruction have lost ground in the present context. It is being said that the present educational rot is due to the fact that our classroom instruction is teacher-controlled and teacher-paced. Undoubtedly, in the conventional methods of teaching, there is no provision by which the teacher could accommodate simultaneously the individual needs of the slow learners and fast learners.

There is no doubt that lecturing can be extremely useful for motivating students, for giving feel for a subject, and for imparting large amount of information to a large number of students in a short time. But it is also true, lectures have an initial effect usually in the form of euphoria (Covey, 1974). The reasons for it is that the large amount of information imparted, in the lecturing situation cannot be retained by students for long. Also, the lecture model of instruction leads to too much of cramming and isolation from real life situations (Education Commission, 1964-66). And this sort of situation will continue as long as our teaching is solely based on the lecture method of instruction.
Skinner (1954) lashes out at the lecture model of instruction and suggests its replacement with properly structured learning steps and students advancing through the steps at their own rates. According to Skinner, it seems that one of the factors of inefficiency in the present system of education is because we teach a set of students at the same rate. It is not only unfavourable to the student who can pace himself faster in course of study, but more so to a slow learner. A slow-learner is not necessarily a dullard, but restarts lagging, behind in studies as he is unable to move at the speed of the instructor. With a properly structured self paced course, a slow learner can raise to a good level of performance. For such a course, the grading system would have to be restructured which will signify the mastery and the amount of learning material student has covered.

Thus, the conventional teacher-controlled instruction has many drawbacks. Ginott (1972) hits out at the conventional methods of teaching and observes that in these methods the children are dependent on their teacher, and dependency breeds hostility. To reduce hostility, the opportunities should be provided for self-education. The more autonomy, the less the enmity, and the more the self dependence, the less the resentment of others. Thus, the effective learning takes place when students are given opportunities to participate in their own learning.
With the realization of the fact that each individual is unique and different from others with respect to his intelligence, interest, aptitude, cognitive styles etc., the emphasis is now shifting from teacher-centered and group methods of instructional delivery so as to meet the needs of individual learner and optimize his learning.

With the emergence of growing sophistication in behavioural sciences, efforts are being perpetually made to improve learning and classroom instruction. Mastery learning strategy in this respect opens new vistas for change since the current emphasis in the mastery learning is to intensify the concern for improving the effectiveness of teaching by constructing material which will guide the learner through a series of steps towards the mastery of specific learning problem. Mastery learning strategy is one of the modern techniques of instruction which is based on advanced psychological principles of learning.

Mastery learning (Bloom, 1968) offers a powerful new approach to student learning which can provide almost all students with the successful and rewarding learning experiences now allowed to only a few. It proposes that all or almost all students can master what they are taught. Further, it suggests procedures whereby each student's instruction and learning can be so managed, within the context of ordinary group-based classroom instruction, as to promote his fullest development. Mastery learning enables 75
to 90 percent of the students to achieve the same high level as the top 25 percent learning under typical group-based instructional methods. It also makes student learning more efficient than conventional methods. Students learn more material in less time. Mastery learning produces markedly greater student interest in and attitude towards the subject learned than usual classroom methods.

1.2 Mastery Learning Strategy:

1.2.1 Historical Development:

Mastery learning strategy is increasingly becoming a fascinating method of instruction with psychologists and educators. Although effective mastery strategies have been developed only recently, the idea of learning for mastery is quite old. As early as the 1920's there were at least two major attempts to produce mastery in student learning. One was the Winnetka Plan of Carleton Washburne and his associates (1922), the other was an approach developed by Professor Henry C. Morrison (1926) at the University of Chicago's Laboratory School.

The mastery strategy has been derived primarily from the work of Carroll (1963) supported by the ideas of Morrison (1926), Skinner (1954), Goodlad and Anderson (1959), Bruner (1966), Suppes (1966), and Glaser (1968). In the late sixties and early seventies, the importance was given to the

The concept of mastery learning gained momentum in late sixties and early seventies as a deviation from the teacher-propelled and teacher-controlled instruction. The main contrasting feature of the procedure being that it is a self paced and self selected procedure with a focus on the consolidation of a given learning task by the student before his proceeding on to the next one.

1.2.2 Development of Mastery Learning Strategy:

The principles of apparent conditioning in learning have attracted many educators to apply them to classroom instruction. Mastery learning strategy is an application of apparent condition for classroom teaching. The theoretical model of mastery learning strategy was presented by Carroll (1967) and practical implementation was done by Keller (1968) and Block (1971).

In mastery learning strategy, each student is given the study material comprising of small learning segments called 'study units'. The student assimilates and consolidates on his on-going study unit at his own pace. He is not allowed to move on to the next study unit unless he
passes a criterion test with marks more than the prescribed level of achievement which is generally 80% to 100% marks (see Fig. 1.1). The student is also given enough individual guidance and corrective feedback to enable him to achieve mastery on his on-going unit.

MECHANICS OF MASTERY LEARNING STRATEGY.

Fig. No. 1.1
1.2.3 Features of Mastery Learning Strategy:

The main features of the mastery learning strategy as observed by Mathur (1983) are as follows:

1. Unit-wise Break up of the Subject Matter:

The content is divided into small units such that each unit is covered by an average student in a specified interval of time at a normal rate of learning.

2. Advance Organisers:

These are elements which guide the learner about the learning procedure. The advance organisers in the mastery learning strategy are: performance objectives, course policy and grading policy and these are made clear to students before they start learning the unit content.

3. Self Pacing

Each student is allowed to learn a given study unit at his own rate.

4. Consolidation of Learning

The student is expected to master the subject of his on-going unit before he advances to the next one.
5. Individual Guidance:

The individual guidance from the fast pacers and the instructor is made available for classification, correction and remediations.

6. Mastery Test or Criterion Test:

The student is assessed with respect to an absolute standard of performance called criterion or mastery level.

In mastery learning strategy, the student is expected to take charge of own learning at rate approximate to his capacity and potential. Alexander (1975) says that the subject material can always be developed in terms of conditions for satisfactory terminal behaviour i.e. mastery of the learning material and an error rate of less than 10%.

1.2.4 The Variables for Mastery Learning Strategy:

The model proposed by Carroll (1963) indicates that if students are normally distributed with respect to aptitude for some subject and all students are given exactly the same instruction (in terms of amount and quality of instruction and learning time allowed), then achievement measured at the subject’s completion will be normally distributed. Under such conditions the correlation between aptitude and achievement will be relatively high (r=+.70 or higher). Conversely if students are normally distributed with respect
to aptitude, but the kind and quality of instruction and learning time allowed are made appropriate to the characteristics and needs of each learner, the majority of students will achieve subject mastery. The correlation between aptitude and achievement should approach zero.

1. **Aptitude for Particular kind of Learning**

   Individuals do differ in their aptitudes for particular kinds of learning, and over the years a large number of tests have been developed to measure these individual differences. These aptitude tests have proved relatively good predictors of achievement. According to Carroll's (1963) view the aptitude is the amount of time required by the learner to attain mastery of a learning task. Implicit in this view is the assumption that given enough time, all students can conceivably attain mastery of any learning task. Now it is believed that aptitudes for particular learning task are not completely stable and they may be modified by appropriate environmental conditions.

2. **Quality of Instruction**

   Carroll (1967) defines the quality of instruction, and ordering of elements of the learning task approach the optimum for a given learner. Bloom believes that if every student had well trained tutor, then most of them would be able to master a particular subject. Dave (1963) suggests that the quality of instruction must be developed with respect to the needs and characteristics of individual learners rather than group of learners.
3. **Ability to Understand Instruction**: It can be defined as the ability of the learner to understand the nature of the task he is to learn and the procedures he is to follow in its learning. The use of alternative methods of instruction and instructional materials is an attempt to improve the quality of instruction in relation to the ability of each student to understand that instruction.

4. **Perseverance**: Carroll (1963) defines perseverance as the time the learner is willing to spend in learning. Husen (1967) says that perseverance is related to student attitudes towards and interest in learning. It is believed that perseverance is not fixed; it can be increased by increasing the frequency of reward and evidence of learning success. Furthermore, the need for perseverance can be decreased by high quality instruction.

5. **Time Allowed for Learning**: Assuming that aptitude determines the rate of learning; most students can achieve mastery if they are allowed and do spend the necessary amount of time on a learning task. Husen (1967) supports the Bloom’s view that it is not the sheer amount of time spent in either schools or extra curricular learning that accounts for the level of a student’s learning. The learning time needed will be affected by his aptitudes, his ability to understand the instruction and the quality of instruction.
Despite disclaimer that mastery approaches to the teaching learning process are not panaceas for the many problems plaguing our schools (Block 1973, Fletcher and Tyler 1972, Green 1971, Sheppard and Mac. Barnot 1976). Various approaches have been tried in an enormously large and varied number of subjects, with all sizes of classes and in public and private schools at all levels of education (Block 1971 and various issues of the PSI Newsletter). They have been used to teach basic subjects to disadvantaged learners (Kersh, 1971, Pate and, Crittenden, 1971) and to teach the rudiments of such advanced topics as matrix algebra, mathematical proof and probability and statistics to average and above average elementary school children (Anderson 1973, Block 1972, King 1970, Shepier 1969). The mastery learning strategies are mainly of two types:

(i) The first is a group-based, teacher paced approach. Student learn co-operatively with their classmates and the teacher controls the delivery and flow of instruction the prototype for this approach is Bloom's learning for mastery.

(ii) The second approach is individual based and learner paced. Students learn independently of their classmates and student controls the delivery and flow of instruction. Ideas and practices related to this latter approach lie at the heart of Keller's personalized system of instruction (PSI).
Bloom's (1976) mastery learning strategy is developed upon the assumption that up to 95 percent of students can learn much of what they are taught to the same high levels typically reached by only our best students. The trick, Bloom argues, is being able to define what we mean by mastery of a subject and then being able to provide each student with the time and the quality of instruction he needs to demonstrate this mastery.

Bloom's theory (Figure 1.2) starts with the assumptions about good education. According to Bloom (1976), a good educational system is one which maximizes the percentage of students mastering the substance or content of instruction, where errors are redefined as action that levels some children behind others with respect to the quality of what is known.
Furthermore, Bloom (1976) describes student characteristics in terms of cognitive and effective entry behaviour. The Instructional component of the model includes specific tasks to be learnt and the quality of instruction, especially with respect to presentation, feedback and corrective instruction, learning outcomes including level and type of achievement, rate of learning and effective outcomes.

Bloom (1971) suggests the following steps for implementing the mastery learning strategy:

1. The course is broken down into small units covering one or two weeks of instruction.
2. The instructional objectives are clearly specified for each unit.
3. The learning tasks within each unit are taught using regular group instruction.
4. Diagnostic progress tests (formative tests) are administered at the end of each learning unit to determine whether each student has mastered the unit and if not, what he still has to do to master it.
5. Specific procedures for correcting learning deficiencies, such as working with other students in small groups, rereading specific pages and using programmed materials and audio-visual aids, as well as additional learning time are prescribed for those who did not achieve unit mastery. Retesting may be done after the corrective study.
6. When the unit is completed, a final test (summative test) is administered to determine course grades. All students who perform at or above the predetermined mastery level receive a grade of A in the course. However, grades are also assigned on the basis of absolute standards that have been set for the course. The student is assigned the next study unit only when he demonstrates mastery on his present unit.

Thus, in this mastery learning strategy the student interacts with the printed study units, the fast pacers and the teacher. The interaction with the fast-pacers and the teacher are for individual guidance, correction and remediation (See Fig.1.3)

![Diagram](image_url)
There is a profound relationship between behavioural objectives and learning (Bloom 1971). The students are supposed to achieve mastery on the behavioural objective after interacting with the study unit at their own rates. The mastery test questions should cover the behavioural objectives specified for the study unit. The specification of behavioural objective works as the standard for the instruction. The learning process is the presentation of learning sequence and the students' interaction with it. Mastery tests work as measuring instruments, which helps in deciding about the students moving on to the next unit or repetition of the unit with remedial feedback (Fig. 1.4).

**SEQUENCE OF TASKS IN MASTERY LEARNING STRATEGY.**

Fig. No.1.4
1.3.2 KELLER’S PERSONALIZED SYSTEM OF INSTRUCTION:

The second major approach to mastery learning is Keller’s "Personalized System of Instruction" (PSI). The best way to provide an overview of PSI is to say that it is essential "Programmed" instruction where the frames have been substantially enlarged and a personal - social element has been added. It is an approach to instruction that is explicitly designed to convert the role of the teacher from the dispenser of information to the engineer or contingency manager of all student’s learning.

As in Bloom’s approach, the instruction who wishes to use a Keller approach begins by pre-defining what course objectives each student will be expected to master and then sub-dividing these objectives into a number of learning units. Each unit contains only a few objectives and requires usually a week or less to master the work. For each unit, the instructor then develops a set of procedures whereby the student might master the unit’s objectives. Typically these procedures include a list of the unit’s objectives, a suggested set of study procedures that rely heavily on the enriched material, book and their materials, a set of study questions to stimulate the student’s thinking and to guide his study, and a set of test items over the units objectives.
Each student then proceeds through these units at his own pace. At the completion of one unit, the student is administered a unit examination by his proctor or teaching assistant. The form of these examinations differs from strategy to strategy depending upon the type of behaviours the student is expected to exhibit. Most Keller approaches use multiple choice and short answer essay questions but a few use oral and performance examinations.

Upon completion of the examination, the student turns it into his proctor or teaching assistant for immediate correction. If his performance is judged to be perfect, he is commended by the proctor or teaching assistant and allowed to proceed to the next unit. If not, he is asked to review the unit before returning for retesting. In the early Keller approaches this review was usually accomplished by restudying the original instructional material for the unit.

After completing this review, the student returns to the proctor or the teaching assistant for retesting. If his test performance is now perfect, he is commended and passed on to the next unit. If not, he continues to review. This testing review, re-testing cycle continues until the student can demonstrate perfect performance on the unit.
The personalized system of instruction is a method of training which is based on mastery learning and self pacing. Learners must achieve mastery of a series of written, mastery learning units, assisted by teachers, proctors and enriching lectures, before proceeding to final test.

PSI consists of five basic elements discussed below:

1. **Mastery Learning**:

   The Keller Plan courses are divided into mastery learning units and the learners is required to demonstrate mastery of one unit before being allowed to pass on to the next.

2. **Self-Pacing**:

   Learners proceed through the units of their own pace taking test when they feel ready.

3. **Stress on Written Material**:

   Here due emphasis is given on the use of text books, manuals, programme materials, assignments, and study guide.

4. **Proctors**:

   Students who have taken the course earlier act as proctors for tests, administering tests, discussing answers and providing feedback.
5. Lectures:

Lectures are used for enrichment. Information conveyed through lectures is communicated to learner through learning units.

Preparation and Organization of PSI Programme:

The steps in organising a PSI course would include:
- Selecting and writing objectives
- Selecting course content
- Dividing content in mastery learning units
- Preparing self-assessment tests, and final tests
- Preparing study guides
- Organising a system for keeping records

PSI can be used for all types of subject matter. It suited for content presented through written material. PSI is not suitable subject matter which changes rapidly, for psychomotor, and affective programmes as well as for programmes which must create grade distribution (Malhotra, 1988).

1.3.3 A COMPARISON OF BLOOM’S AND KELLER’S APPROACHES:

The aim of study of this comparison is that to know the similarities and differences between the two methods. Because this comparison will give the right of their degree of similarity which is needed to justify that two methods are equally effective for and the differences to justify their degree of identity. So first of all the similarities of both the methods are given.
1.3.3.1 SIMILARITIES:

First, both strategies start from the assumption that many more students are capable of learning well that which they are taught than has traditionally been the case. And each strategy believes that it is the task of the teacher to design his instruction so that all who can learn well, do learn well. Second, they concur that the instructor must begin to design his mastery learning strategy by pre-specified a set of instructional objectives that each student will be expected to achieve to some high level. Thirdly, they generally agree on how any mastery approach should be designed for reaching these objectives. The course should be broken into a sequence of smaller learning units where each unit is designed to attain only a few of the course's overall objectives and mastery of one unit is required to move on to the next further, each learning unit should be consist of two parts. The first part is the original instructional components. Here the student is to be exposed to the material to be learned for presumably the first time. The second part is the feedback correction component. The function of this component is to monitor the effectiveness of the original instruction on each student's learning and to take appropriate corrective actions when the original instruction has proved to be insufficient.
1.3.3.2 DIFFERENCES:

The major differences between Bloom's and Keller's mastery learning strategy are less obvious than their similarities. These differences may be summarised as follows:

(1) How Mastery is Conceived:

The first difference between the strategies lies in their conception of mastery. For Bloom, mastery is conceived in terms of the student's ability to pull together bits and pieces of instruction into some whole or gestalt. To reach this gestalt, Bloom, like Keller, proposes that each student must master each part of the course but he also believes that mastery of the parts is not synonymous with mastery of the whole. Hence, he bases a student's grade solely on the student's performance over all units taken as a whole. For Bloom, mastery is defined operationally as performance at or above a particular level (usually 80 to 90 per cent correct) on course final examination.

Keller's conception of mastery is almost the exact opposite of Bloom's. In Keller's approach mastery of the parts of a course is synonymous with mastery of the course taken as a whole. Hence, Keller bases the student's grade largely on his performance on each unit. Mastery is defined operationally as perfect performance on a particular number of units by a certain point in time.
2. **Size of the Learning Unit:**

A second difference between the strategies is the size of the learning unit into which the course is broken. Bloom's strategy tends to use larger learning units than does Keller's strategy. Bloom's units usually correspond to two week's worth of instruction, Keller's units usually correspond to roughly one week's worth of instruction or even less.

3. **Sequence of Learning Units:**

A third difference between the strategies lies in how sequence their learning units. In both Bloom's and Keller's strategies, the teacher is encouraged to sequence his learning units. But in Bloom's strategy, the teacher systematically attempts to sequence the units hierarchically so that the material in one unit builds as directly as possible on the materials from the preceding units.

4. **Form of Original Instruction on a Unit:**

A fourth way the strategies differ lies in the form in which unit is presented. Bloom's units are taught using primarily group based methods while Keller's units are taught using almost purely individual based method.
5. The mode of Original Instruction on a Unit:

The strategies differ not only in the number of modes used, but also the types of modes. The Keller strategy typically asks students to learn by a single mode and mode is reading. Lectures and discussions are used sparingly and students are typically not held responsible for the material presented. The Bloom strategy asks its students to learn by several modes. Primarily, by reading, hearing lectures, and/or participating in discussion. Students are held responsible for the material presented in each mode.

6. Pacing the Original Instruction on a Unit:

In Bloom's strategy, the original instruction is teacher paced, in Keller's approach, it is student or self paced, though teacher pacing is being used more and more to overcome the persistent problem of student procrastination in beginning to learn.

7. Unit Feedback Instruments:

The instruments used in Bloom's strategy, the formative tests, seem to provide more detailed feedback about what the student has or has not learned than the instruments used in Keller's approach. They are constructed directly from the objectives covered in each unit and they are criterion referenced. Since each objective is tested by one or more test items, the teacher can identify what objectives the student has and has not learned in each unit, and he can
investigate how the student's failure to master one objectives effected his learning of other objectives. This enables the teacher to return each student to those particular points in the learning unit where the student began to have problems rather than to require the student to waste valuable time searching out the source of his learning difficulties.

Keller's feedback instruments seem to provide far less detailed information about what a student has or has not learned in the unit. Typically, these instruments consists of a few items randomly selected from the item pool designed to test the unit's objectives. The student's performance on this sample is then assumed to be representative of his probable performance over the whole item pool. However, Keller's feedback instruments are more descriptive than Bloom's in one important respect. Bloom's feedback instrument tend to be the multiple choice, pencil and paper type. Keller's feedback instruments employ a much wider variety of testing forms and items types, including multiple choice, essay, performance, and oral questions.

8. Per Unit Mastery Requirement :-

An eight difference lies in the level of performance the student is expected to exhibit on one learning unit before being allowed to attempt the next. Bloom's approach does not demand perfect performance on each formative evaluation instrument. This procedure stem out of recognition
that perfect performance may be an unrealistic expectation. Keller's approach does demand perfect performance on one unit for movement to the next. That is, each student must attain a perfect score on each unit's feedback instrument. This requirement has proved to be problematic in some application of Keller's ideas.

Mode of Correction:

Bloom's remediation strategy differs from Keller's approach in three respects. First, the formative instruments provides such explicit information about how students are changing as a result of the original group-based instruction that the tests can be used not only to describe a student's learning problems, but also to prescribe an appropriate remedial learning sequence. Keller's feedback instruments typically describe only a random position of what the student has or has not learned as the result of the original instruction. Accordingly, in Keller's approach, it is sometimes more difficult to prescribe an appropriate and efficient remedial sequence.

Second Bloom's strategy tends to employ a greater variety of instructional correctives than Keller's approach. While Keller uses tutors as his primary mode of corrective instruction. Bloom uses tutors small group learning activities, alternative text-books, work books, programmed instruction, audio-visual materials and academic games and puzzles.
Third, and most important, Bloom's strategy tends to employ a variety of instructional correctives that have been explicitly selected because they present the unit's material, involve the student and reinforce his learning in ways that very different from the original instruction. The basic idea underlying Bloom's correction strategy is that it is not useful to return the student to the original instructional material to help him overcome his learning problems. If these materials had been well suited to the student's learning requirements in the first place, the student would have had no learning problems to overcome. In Keller's strategy, the instructional correctives tend to be very similar to the original instruction. In fact, with the exception of some tutoring by the proctor, the typical correction procedure in the Keller strategies is to return the student to the original instructional materials for review and re-study. The assumption is that the student does not need a different set of instructional materials, only more practice with the old set.

Both of these mastery learning approaches attempt to modify the instructional setting so that students possessing differential entering behaviours can succeed.

1.4 Importance of Mastery Learning Strategy:

The conventional methods of class-room instruction are under fire from all sides. Therefore, it becomes important to look for a strategy of instruction which would replace a
method of instruction without enrolling extra expenditure and waiting for new technology. Mastery learning strategy is being advocated as a viable alternative to the conventional methods of instructions.

Pangotra and Kishore (1982) have enlisted the following plus points of mastery learning strategy for its viability to lecture method of instruction.

1. It has the individual variability in terms of rate of learning.

2. It lays emphasis on the consolidation of learning.

3. It involves a constant interaction between the learner and learning material. Therefore, the learner is always alert and busy.

4. The self-testing exercises under the mastery learning procedure enable the student to chart his progress towards the prescribed performance objectives.

5. It minimises failure and maximises the chances of success.

6. It lays emphasis on independent study and self direction.

7. It increases the student motivation and produces greater resourcefulness on the part of the student.

8. It results in better retention of subject matter.

9. It involves team-learning in the form of peer-tutoring and individual guidance and hence builds up student's self-concept.
Mastery learning strategy lays emphasis on structuring and sequencing the subject matter which has been advocated strongly by Bruner (1967) in his learning theory. In his report, Bruner maintains that it is necessary to understand how a student perceives what he or she is learning. An economical mode of instruction is to divide learning into series of steps.

It is always worthwhile for a student to achieve a good level of performance for a learning task prior to his moving on to the next one. For this, one can easily make classroom instruction pace centered. Mastery Learning dispenses with the lecturing situation and could be thought of producing better understanding of the subject matter and inducing positive attitudes among students.

1.5 SELF - CONCEPT :

Self-Concept is a person's ideas about himself/herself. It is one of the most important factors affecting behaviour. An individual's behaviour in the classroom and level of his achievement are influenced by the kind of self-concept he
has and also his self-esteem. Self-concept is picture of individual has of himself. It is thought to be an image of oneself.

The 'self' organised in terms of the individual's unique talents and temperament and moulded by society's conventions - emerges out of social experience.

Self-concept is a technical expression given to the definition of oneself. It is the concept by which the individual relates himself to his social environment. This concept includes physical and Psychological images of the self. While the former is quite positive and apparent, the latter is based on his thoughts, feelings and emotions which give rise to qualities such as coverage, honesty, independence, self-confidence and aspirations. The physical and psychological images gradually fuse to make a unified self-concept, while the child grows to be an adult.

The 'self' is the sum total of the person's ideas about who and what he is, what he appears to be, what he thinks himself to be and what others judge him to be. The self is the person's essence of his existence that he known to him. It includes the entire structure of his being.

Self-concept is not hereditary, rather, it develops in a person as a result of his interactions with the environment. It is a life long process and develops continuously in a social setting. It is not taught to him by others, but a child acquire it as by-product of learning experiences.
To Mead (1934), self is a socially formed self. It arises only in a social setting and is an object of awareness rather than a system of processes. He claims that the person responds to himself with certain feelings and attitudes as other responds to him. He becomes self conscious by the way people react to him as an object. Mead suggests that a person may develop many selves in different settings, e.g. a family self, a school self and a social self.

Symonds (1951) opines that self consists of four aspects: how a person perceives himself, what he thinks of himself, how he values himself, and how he attempts through various activities to enhance or defend himself.

Rogers (1961) perceives man as rational, forward moving and social entity. He poses a self-actuating tendency; an inherent tendency or organism to develop all his capacities to his fullest. Based on this ideas Rogers gives the following properties of the self:

- Self emerges and develops through interaction with significant others in the environment.
- Self strives for consistancy. The need for self-regard leads to selective perception of experience. Organism believes in the ways that are incongruent with the self structure are perceived as threatening and a state of anxiety may exist.
- Self-changes as a result of maturation and learning.
Cooper Smith (1967) conceives of self as an obstruction which an individual develops about attributes, capacities objects and activities which he possesses and pursues. He then goes on to distinguish between positive and negative self esteem. Persons with positive self esteem view themselves as 'I' consider myself a valuable and important person and an atleast as good as others of my age training. I am regarded as someone worthy of respect and consideration....... I am to exert an influence on people and events, partly because my views are sought and expected and partly because I am able and willing to present and defend those views....". At the same time, an individual with negative self-esteem might perceive himself as : I don't think I am a very important or likeable person, and I do not see much reason for any one else' to like me. I cannot do many of the things. I would like to do or do them the way, I think they should be done. I am not sure of my ideas and abilities and there is a good likelihood that other pupils' ideas and work are better than my own".

Smith (1961) thinks that self is a person as perceived, felt and thought of by himself. He feels that self has following dimensions:
**The Perceived self**: This is an individual's concept of the kind of person he is. It is influenced by his physical self, his physical appearance, dress and groom, by his abilities and dispositions, his values, beliefs and aspirations.

**The Real self**: Real self means one's nature with all its potentialities. A person is aware of some aspects but unaware of other aspects of his ownself. The real self includes he is aware of and he is not aware of its is perceived self plus unconscious self.

**The ideal self**: Butler & Haig (1954) define the ideal self a "the organism's conceptual patterns of characteristics and emotional status which an individual consciously holds desirable for himself". The assumption is that individual is able to order his self-perception along a line of value form "what I like to be" to "what I would at least like to be".

Self-concept is very important for teacher because self-concept are not unalterably fixed, but rather are modified by life experiences. Self-concept is not static and might change from situation to situation. So self-concept should be seen as a development form. It is also important for teachers because the students concept of self i.e. whether positive or negative which affects academic achievement.
Many students, have difficulty in school, not because of low intelligence or bad hearing but because they have learnt to consider themselves unable to do academic work. A learner who says, "I will never pass that test" is reflecting about how he feels about academic achievement may be related to a student's conception of himself as being unable to learn academic achievement.

Self-concept can be conceived as a set of beliefs about the self that are presumed to be a dominant feature in social perception and the resulting attributional and self-evaluation processes.
Cognitive style is a broad dimension of individual differences that extends across both perceptual and intellectual activities. Cognition covers various modes of knowing, perceiving, imagining, remembering, conceiving, judging and reasoning. The term style is used because what is at issue is the characteristic approach the individual brings with him to a wide range of situations. Since the approach encompasses both perceptual and intellectual activities, it is called his 'cognitive style'.

Cognitive style refers to the modes an individual employs in perceiving, organizing and labeling various dimensions of the environment. Thus, it may be said cognitive styles appear to reflect consistencies in the manner or form of cognition, as distinct from the content of cognition or the level of cognitive skill displayed. Kagan (1964a) conceives cognitive style as the preferred use of a specific class of conceptual responses, whereas for Shuell (1981), cognitive style refers to the "preferred ways that different individuals have for processing and organizing information and for responding to environmental stimuli".

It has been observed that certain individuals tend to respond very quickly in most situations (impulsive cognitive style), others and more reflective and slower to respond (reflective cognitive style), even though both types of individuals are equally knowledgeable about the task at hand.
cognitive styles thus suggest that individuals approach the same task in different ways but these variations don't reflect level of intelligence or patterns of general abilities. They are often described as falling on the borderline between mental abilities and personality traits (Shuell, 1981), are style of thinking" and thus influence and are, in turn, influenced by cognitive abilities (Brodzinsky, 1982).

Although defined as modes of information processing, cognitive styles are not simple habits in the technical sense of learning theory for they are not directly responsive to principles of acquisition and extinction. They develop slowly and don't appear to be easily modified by specific tuition or training. Research reveals that cognitive styles exhibit stability and pervasiveness across diverse spheres of behaviours, that though they entail generalized habits of information processing, they are intimately interwoven with affective, temperamental and motivational structures as part of the total personality. Thus, it may be said that the manifestation of a core personality structure in cognition is cognitive style.

Characteristics of Cognitive Styles:

The essential characteristics of Cognitive Styles in general have been given by Witkin et al (1977). According to them, cognitive styles are concerned with the form rather than the content of Cognitive activity. (1) These refer to
individual differences in how we perceive, think, solve problems, learn, relate to others etc; (ii) are pervasive dimensions that cut across the boundaries traditionally used in compartmentalizing the human psyche and so help restore the psyche to its proper status as a holistic entity; (iii) are stable over time; it is not that they are unchangeable, some may be rather easily altered. This stability makes stylistic dimensions particularly useful in long range guidance and counseling. Additionally, with regard to Value judgements, Cognitive styles are bipolar and range from one extreme to the opposite extreme wherein each end of the dimension has different implications for cognitive functioning. Each pole, thus, has adaptive value under specified circumstances and may be judged positively in relation to those circumstances.

Therefore, conceptualised as information-processing habits that develop in harmony with underlying personality characteristics, cognitive styles appear in the form of stable preferences, attitudes or habitual strategies which characterize a person's modes of perceiving, remembering, thinking and problem solving. As such, their influence extends such almost all human activities that implicate cognition including social and interpersonal functioning.

**Field dependence - independence cognitive style:**
Research evidence accumulating on the field dependence - independence cognitive styles ever since the year 1952, when it was first identified by Witkin et al, (1954), suggests
that a cognitive style approach may be profitably applied to a variety of educational issues (Witkin et al., 1954/1972; Witkin, 1976). Work on cognitive styles of field dependence-independence has resulted in the formulation of various concepts and methods and these are increasingly being applied to research on problems of education. The construct has been related to intellectual functioning and to hemispheric functioning and these two variables have been related to each other. Research evidence reveals that individuals demonstrate pervasive self-consistency in cognitive functioning and so the division into the perceptual and intellectual is hardly of value in the study of cognitive styles. Measures of field-dependence have been reported to be significantly related to total standard intelligence test scores and this significant relationship is carried largely by those portions of intelligence tests which require analytical functioning. Thus, the relation is based on the expression of a particular style of field approach in both.

A detailed look on how work on field dependence-independence evolved will not be out of context here to serve as a basis for an analysis of its nature. Before Witkin et al. (1954) became interested in the field, experimental literature had already succeeded in establishing significant relationships between the individuals attitudinal, motivational, or emotional characteristics and his/her performance on perceptual or cognitive tasks. Witkin et al. (1954) approached the problem from a different angle. They
identified the ability to resist the disruptive influence of conflicting contextual cues as an important variable in a long-term study of perceptual spatial orientation. The concept of field dependence emerged initially from their studies of perception of the upright in space. Studies of RAT (room-adjustment test), BAT (body-adjustment test), and RFT (rod-and-frame test) performance demonstrated striking individual differences in the extent to which location of the perceived upright is determined with reference to the axes of the prevailing visual field. Through these various tasks, they showed that individuals differed widely in their field dependence or the extent to which their perception of the upright is influenced by the surrounding visual field.

Witkin et al (1954) could gather enough evidence to indicate that field-dependence (FD) is a relatively stable, consistent trait, having a certain amount of generality. Their tests demonstrated that an individual tends to be consistent in his perceptual functioning from test to test. Thus, the person who is unable to maintain the 'separateness' of his body from the surrounding field in the BAT cannot also determine the position of the rod independently of the titled frame in RFT. A little later, they found significant correlations between these orientation tests and EFT (Embedded figures test) which measures field dependence in a purely visual paper and pencil situation. This test features the ability to perceive an item independently of its context and doesn't involve body position. With the accumulation of
research data, field dependence soon came to be regarded as the perceptual component of a broader personality dimension designated as global versus articulated cognitive style or psychological differentiation (Witkin, Dyk, Faterson, Goodenough and Karp, 1962). Evidence indicates that this cognitive style exhibits considerable stability through childhood and early adulthood and is related to a number of personality variables such as leadership (Weissenberg and Gruenfeld 1966) and social conformity (Witkin et al 1974). Field dependence-independence refers to a consistent mode of approaching the environment in analytical as against global terms. It entails a tendency to experience items as discrete from their backgrounds, and reflects ability to overcome the influence of an embedding context.

Some clear developmental trends are visible in cognitive styles. As children grow older, they generally become more field-independent, at least until the middle of their teens. Then development levels of until later adult life, when there is a tendency to become more field dependent. Even with these changes, over the years people remain fairly stable in comparison with others their age. So a person who tends to be field-dependent as a child may become more field independent with age but may still be less field-independent than peers who have also changed with age. People differ in the extent to which their perception is analytical. The field-independent person is able to break up
the total field and attend to the relevant items while withholding attention from irrelevant items. They, thus, tend to perceive figures as discrete from their backgrounds. They are generally more facile on tasks requiring differentiation and analysis, whether in identifying the presence of logical errors or in understanding the point of a joke. This analytical penchant leads as well to a high degree of differentiation of the self from its context. Field-dependent persons have trouble breaking information down into units and recombining the parts into new patterns. So the task of organizing information from many different sources can be difficult for students who have a field-dependent cognitive style. Such individuals cannot withhold attention from the context in which the relevant figure is embedded. Accumulating research data points out that field dependence-independence extends into psychological domains beyond cognition (Witkin, 1976). Such individuals differ from each other in important personal characteristics and in interpersonal relations. Field dependent individuals are more influenced by the attitude of an authority figure or peer group but the field independent individuals are less responsive to the human content of the environment.

Evidence of differences in characteristics falling in the domain of social behaviour between field-dependent and field-independent individuals is impressive. Field-dependent (global) individuals tend to identify more with a group, are susceptible to external influence and markedly affected by
isolation from other people. Thus, they tend to more oriented towards people and social relationships, are better at recalling such social information as conversations and relationships, work best in groups and prefer such subjects as history and literature while field-independent individuals are more likely to do well with numbers, science and problem solving tasks (Shuell, 1981). Taken collectively, the social characteristics that distinguish persons, with contrasting styles suggest that relatively field-dependent persons are likely to be attentive to and make use of prevailing social frames of reference.

Since field-dependent persons are seen to be relatively sensitive to social cues and interested in what others say or do, it is hardly surprising that they should be generally better liked; perceived as being warm, tactful, considerate, socially outgoing and affectionate. These social qualities taken together seem likely to contribute to greater skill in getting along with people.

On the other hand, field-independent individuals tend to have a more impersonal orientation, 'not sensitive to social undercurrents', 'cold and distant with others', 'unaware of their social stimulus value' and individualistic. There is additional evidence that along with their impersonal orientation field-independent persons are more likely to be interested in the abstract and theoretical (Stidham, 1967).
That field-dependent/independent persons differ in social and impersonal orientations is further found in the tendency of field-dependent students to favor educational-vocational areas in which involvement with others is a central feature and in which subject matter of the discipline features human content, and the tendency of field-independent students to favor areas that are more solitary in their work requirements and more abstract in their substantive content. Teachers also have their own cognitive styles that affect their approaches to teaching. Field-dependent teachers often have a more interpersonal style in teaching and may be less critical of wrong answers. Field-independent teachers may prefer to organise the classroom and materials themselves, with less input from students and may be more focused on wrong answers. Thus, these social domain characteristics of field-dependence/independence can be linked up with classroom situations so as to produce differences in achievement. Research evidence has more or less established match-mismatch in cognitive-styles as a factor in teacher-student and other kinds of social interactions also but whether it makes for better student learning is still an issue.

To summarize, field-independence is a manifestation in the perceptual sphere of a broad dimension of personal functioning which extends into the sphere of social behavior and of personality as well (Witkin and others, 1954; Witkin, 1965). In other words, there is a broad dimension of
cognitive functioning the field dependence-independence dimension that runs through the perceptual and intellectual domains, as well as domains commonly conceived of as 'personality. Experts are of the considered view that cognitive characteristics for both must be considered in making predictions and interpreting findings on how cognitive style figures in various aspects of the educational process since these styles show themselves in perception, they are readily accessible to observation and assessment by controlled laboratory techniques. Because scores from any test of field-dependence/independence form a continuous distribution, these labels reflect a tendency in varying degrees of strength, towards one mode of perception or the other. There is no implication that there exist two distinct types of human beings. Nor is there any implication that field-dependents are better or worse than field-independents; rather each type may be judged positively in relation to certain circumstances.

There is clearly evident in the case of field dependence-independence dimension, where the cluster of competence in cognitive articulation plus an impersonal orientation at one pole and the cluster of a social-orientation and social-skills plus less competence in articulation at the other pole, may each be seen as specially suited to meet the requirements of particular tasks. Although teachers cannot determine all the variations in students, cognitive styles, they should be aware that students approach
problems and process information in different ways. Woolfolk (1987) observes that some may need help in learning to pick out important features and to ignore irrelevant details. This does not mean that they are less intelligent but simply that they tend to perceive patterns as whole and have trouble analyzing. They may seem lost in less structured situations and need clear, step-by-step instructions. They may work best in social situations and be less motivated by individual contracts or projects. Other students may be great at organizing but less sensitive to the feelings of others and not as effective in social situations. Learning characteristics of field-dependent and field-independent individuals are summarized in table 1.1.

One valuable use of knowledge about the effects of students' cognitive styles, studied individually or in interaction with instructional strategies, may be to provide guidelines on how to adapt teaching strategies to match the learning needs of dissimilar students. Witkin et al (1977) observe - "Teachers' adaptation will be a realizable goal if we are able to identify particular teaching strategies which teachers may use, either spontaneously or with training, when teaching students with different cognitive styles".
### Table 1.1

#### Learning Characteristics of Field-dependent And Field-independent Students

<table>
<thead>
<tr>
<th>Field-Dependent</th>
<th>Field-Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Are better at learning material with social content</td>
<td>o May need help in focusing attention on material with social content</td>
</tr>
<tr>
<td>o Have better memory for social information</td>
<td>o May have to be taught how to use context in understanding social information</td>
</tr>
<tr>
<td>o Require externally defined structure, goals, and reinforcement</td>
<td>o Tend to have self-defined goals and reinforcement</td>
</tr>
<tr>
<td>o Are more affected by criticism</td>
<td>o Are less affected by criticism</td>
</tr>
<tr>
<td>o Have greater difficulty learning unstructured material</td>
<td>o Can impose their own structure on unstructured situations</td>
</tr>
<tr>
<td>o May need to be taught to use memory aids</td>
<td>o Can analyze a situation and reorganize it</td>
</tr>
<tr>
<td>o Tend to accept the organization given and be unable to reorganize</td>
<td>o Are more likely to be able to solve problems without explicit instructions and guidance</td>
</tr>
<tr>
<td>o May need more explicit instruction on how to solve problems</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from 'Field-dependent and Field-independent cognitive styles and their educational implications', Witkin et al, 1977.
1.7 NEED OF THE STUDY

Education plays a paramount role in educating and talenting learner. In one's life academic success is highly valued. Academic achievement plays significant role in shaping the career of the individual and planning for future education. Success in academic subjects acts as an emotional tonic damage done to a learner in the home and neighbourhood may be partially repaired by the success of school. High achievement in school creates self-esteem and self-confidence in the learner which leads to better adjustment in the society. Various aspects have shown that the attainment of success in the school subjects causes learners to set high goals for themselves.

In the class, no two students are alike. They differ in as many number of ways as there are students in the class. To be effective, teaching should be directed to the needs of individual students.

The mastery learning ideas and practices can be obviously made use of in the Indian class room. In India, the public confidence in the teaching profession is very low. In order to regain the lost public confidence, the Indian teacher can make use of mastery learning for talented development. This strategy is based on technology except the technology of developing instructional materials (Textual, formative evaluation and summative evaluation) and indigenous
organisational models for providing alternative instructional channels within our existing schools and class structure. In this approach the prescribed curriculum can be dealt within a fixed period of time. This approach relies primarily on human beings for their success rather than on machines and technological devices which a developing country like ours, can hardly afford. In this approach the teacher decides what goes on in the classroom and when a particular activity will be taken in the classroom. The teacher is free to use his own instructional techniques and materials, which suit the needs of his students. The student is also free to guide his learning and also help others in learning. The group based/teacher paced mastery learning strategy can be implemented with minor structural changes in our school and classroom organisation.

Besides this, a good number of factors such as personality characteristics of the learner, intelligence his motivational techniques, self-concept, cognitive style, methods of instruction, organisational climate of school etc. influence the achievement of the learner. Research which is concerned in knowing the relationship and effect of such type of psychological and sociological variables on the achievement of students, can provide a theoretical knowledge and background about the causes of variation in the achievement of students. A knowledge of significant or non-significant correlation between the different factors and achievement can help a teacher in ascertaining causes of high
and low achievement and consequently help in promoting the achievement of students which is of great concern to parents, teachers and society as a whole.

Very little research has been done in the field of mastery learning strategy. So there is an immediate and urgent need for a number of research studies which may provide some data on the comparison of different mastery learning strategies for economics. It is all the more desirable since no such in depth study has been conducted and ones completed abroad are scantily and none has been done with the cognitive style, self-concept and sex.

The present study is aimed at comparing the effectiveness between mastery learning strategies (Bloom and Keller) in economics in relation to students' cognitive style, self-concept and sex.

1.8 STATEMENT OF THE PROBLEM
EFFECTIVENESS OF MASTERY LEARNING STRATEGIES ON ACHIEVEMENT IN ECONOMICS IN RELATION TO SEX, SELF-CONCEPT AND COGNITIVE STYLE

1.9 OBJECTIVES OF THE STUDY

1. To compare the effects of Bloom's mastery learning strategy and Keller's mastery learning strategy on achievement in learning of concepts in Economics.

2. To study the sex differences in learning of concepts in economics.
3. To know whether the students having differential cognitive style differ in attaining the concepts.

4. To know whether students having differential self-concept differ in attaining the concepts.

5. To study the interaction between mastery learning strategies and sex of the students.

6. To study the interaction between mastery learning strategies and cognitive style of the students.

7. To study the interaction between strategies of mastery learning concepts and self-concept of the students.

8. To know whether there is any interaction between sex and cognitive style, sex and self-concept, and self-concept and cognitive style of the students.

9. To know whether there is any interaction among mastery learning strategies, sex and cognitive style, mastery learning strategies, sex and self-concept, mastery learning strategies, self-concept and cognitive style, and sex, self-concept and cognitive style.

10. To know whether there is any interaction between mastery learning strategies, sex, self-concept and cognitive style.
1. There will be no significant difference in the acquisition of economics concepts by the groups trained through Keller’s mastery learning strategy and Bloom’s mastery learning strategy.

2. Cognitive style will not significantly affect the achievement of students in economics irrespective of mastery learning strategies.

3. Sex does not account for differential achievement in economics.

4. Self-concept will not affect the achievement of the students in economics irrespective of mastery learning strategies.

5. There will be no significant interaction between sex and mastery learning strategies for acquisition of economics concepts.

6. There will be no significant interaction between sex and cognitive style for acquisition of economics concepts.

7. There will be no significant interaction between cognitive style and self-concept for acquisition of economics concepts.
8. There will be no significant interaction between mastery learning strategies and self-concept for acquisition of economics concepts.

9. There will be no significant interaction between mastery learning strategies and cognitive style for acquisition of economics concepts.

10. There will be no significant interaction between sex and self-concept for acquisition of economics concepts.

11. There will be no significant interaction between sex and cognitive style and mastery learning strategies.

12. There will be no significant interaction between sex and self-concept and mastery learning strategies.

13. There will be no significant interaction between mastery learning strategies, cognitive style and self-concept.

14. There will be no significant interaction between sex, cognitive style and self-concept.

15. There will be no significant interaction between sex, self-concept, cognitive style and mastery learning strategies.
1.11 DELIMITATIONS OF THE STUDY:

1. The finding of this study will be limited by the restricted population and will be applicable only to similarly defined population.

2. The statistical significance of the results is restricted by the limited population size.

3. The study was restricted to the learning of thirteen concepts in economics of class 10 + 2.

4. The effect of mastery learning strategies (Bloom and Keller) was seen in relation to cognitive style, self-concept and sex only.

5. The study was limited to the students studying in different schools of Ambala district.