In the 21st century and after over 50 years of our independence, the data about our student population raised horrifying questions. By and large, Indian schools are not doing their job. High dropout and stagnation rates are a major cause of our worry. The results of staying in schools are still more disheartening. We still struggle with the two key questions that confront our education system: what must our children know and how can we best help them to learn it?

In the past few years tremendous amount of work has been done in the field of education but all of that work was just for quantitative improvement in education. In our National Policies for Education, objectives were made for the expansion of education. It was for the first time in the National Policy on Education (1986), emphasis was laid on the qualitative improvement of education.

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 goal 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 the learners.

Schools today face unprecedented challenges. They must prepare students for a rapidly changing world. The mission of schooling has become more complex. The students, whom schools serve, are more diverse than ever before. Furthermore, research has added to our understanding of variety of students’ intelligence, experiences and other individual differences, which are all key to the learning process. Schools are struggling to respond to these new developments.
Robinson (1992) states that students’ characteristics as well as societal expectations have changed, while traditional methods and Modes of instruction are still employed by a large number of educators. Expectations for schooling have also grown. Schools are expected to meet world class standards, create model citizens and meet calls for public accountability. It is not acceptable for only an elite few, with high educational ambitions, to benefit from the new knowledge for achieving these goals. Achieving national goals will require that all schools provide stimulating, substantively rigorous opportunities for all the students to learn and achieve higher.

There is a general feeling that the conventional methods of classroom instruction is losing ground in the present context. It is all because the conventional methods are teacher controlled and teacher-paced and there is no provision by which, the teacher could accommodate the individual needs of the slow and fast learners.

There is no doubt, that lecturing can be extremely useful for motivating students for cultivating interest for a subject and for imparting large amount of information to the large number of people in a short time. But it is also true that a large amount of information imparted through lecturing mode cannot be retained by the students for a long time. Lecture method of instruction leads to the habit of cramming and isolation from real life situations. And this sort of situation will continue as long as our teaching is merely based on the conventional method of instruction.

The teacher faced with the job of creating an environment in which each student can develop his potential and attain competence, is confronted with a monumental task. This task may be impossible unless the teacher can employ varied instructional methods and materials sufficiently appropriate for each student to enable him to master the basics of the curriculum. Each student needs access to instruction at the level appropriate for him. Flexible scheduling is needed to allocate the amount of time, each student needs to attain mastery (Torshen, 1977). Students with diverse interests and goals need instructional objectives appropriate for them. And evaluation methods must provide positive evaluation to each student when his performance is competent, even if his peers
also produce work that is competent. Though these conditions appear reasonable they are lacking in many classroom situations at the present time.

Deep and fundamental changes are required to reform schools. Technology can be the catalyst for considering full scale changes in schooling. As a part of the process of planning for the technology implementation, educators need to ask each other questions as:

- How can we teach more effectively using technology?
- What sort of reforms must be made in schools to create an environment suitable for implementing educational technology?

According to Mehlinger, H. D. (1996) our primary goal should be to help schools to become places where students learn more effectively. Educational technology can provide the spark for prompting educators to envision new ways to teach and for creating the kind of schools needed now. It can help educators to evaluate non-traditional methods and modes of instruction. One such method of non-traditional instruction is Mastery Learning.

Mastery Learning (Bloom, 1968) offers a powerful new approach to school learning which can provide almost all students with successful and rewarding learning experiences, now available to only a few. It operates on the proposition that almost every student can learn the basic skills and knowledge that are realm of the school curriculum when the instruction is of good quality and appropriate for him and when he spends adequate time in learning.

1.1 MASTERY LEARNING

The Concept of Mastery Learning

In contrast to traditional approach the Mastery Learning Strategies according to Bloom (1968) begin with the assumption that most students can attain a high level of learning capability:

- If instruction is approached systematically
- If students are helped when and where they have learning difficulty
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- If they are given sufficient time to achieve mastery and
- If there is some clear criterion of what constitutes mastery.

Page and Thomas (1979) in *International Dictionary of Education* defined Mastery Learning as a school of thought which rests on the assumption that mastery of a topic, field of human knowledge or behaviour is theoretically possible for all individuals provided that each learner is given the optimum quality of instruction which is appropriate for his/her particular make and that each learner is the given the time that he/she needs.

The idea of Mastery Learning amounts to radical shift in responsibility for teachers. The blame for a student’s failure rests with the instructions, not a lack of ability on the part of the student. In a Mastery Learning environment, the challenge becomes; providing enough time and employing instructional strategies, so that, all students can achieve the same level of learning. The core theoretical idea of Mastery Learning Strategies is that aptitude is the length of time it takes a person to learn, not how bright a person is, i.e., everyone can learn given the right circumstances (Bloom, 1987). Mastery Learning is a set of old and new individualized instructional ideas and practices that help most students to learn excellently quickly and self confidently.

Slavin (1987) sums up the defining characteristics of Mastery Learning. According to him the principal defining characteristics of Mastery Learning methods are the establishment of a criterion level of performance held to represent “mastery” of a given skill or concept, frequent assessment of student progress towards the mastery criterion and provision of corrective instruction to enable students who do not initially meet the mastery criterion to do so on later parallel assessment.

According to Slavin (1987) an emphasis on appropriate use of such instructional variables as cues, participation, feedback and reinforcement considered as elements of Mastery Learning by Bloom, are not uniquely defining characteristics rather what defines Mastery Learning Approaches is the organization of time and resources to ensure that most students are able to master instructional objectives.
Essential Features of Mastery Learning

Anderson (1996) quotes six essential features of Mastery Learning and the last seventh added to the list by Guskey, 1987 as follows:

- Clearly specified learning objectives.
- Short, highly valid assessment procedures.
- Present Mastery performance standards.
- A sequence of learning units, each comprised of an integrated set of facts, concepts, principles and skills.
- Provision of feedback of learning progress to students.
- Provision of additional time and help to correct specified errors and misunderstandings of students who are failing to achieve the preset Mastery Learning standards.
- Need of consistency among all of the previous six features

Mastery Learning : A Brief Historical Perspective

Mastery Learning is not a new concept, it was introduced into American education over 70 years ago, in the 1920’s with the work of the Washburne 1922 in the format of Winnekta plan. The Winnekta scheme provided for individualization of instruction in group based teaching. The program flourished during that decade; however, without the technology to sustain a successful program, interest among developers and implementers steadily diminished (Block 1971). Mastery Learning was revived in the form of Programmed Instruction in the late 1950’s in an attempt to provide the students with instructional materials that would allow them to move at their own pace and receive constant feedback on their level of mastery. During 1960’s Bloom’s (1968) Learning for mastery focused new attention on the philosophy of Mastery Learning. Bloom’s (1968) Learning for mastery is now generally recognized as the classic theoretical formulation on the mastery model. He is widely viewed as the major theoretician and promulgator of Mastery Learning

According to Anderson and Block (1989) Bloom based his approach on some of the elements in the Winnekta Plan of Washburne (1922) and of
Morrison’s ideas (1926). The common elements of these two approaches as listed by McNeil (1969) are given below:

- The learner must understand the nature of the task to be learned and the procedure to be followed in learning it.
- The specific learning objectives relating to the learning task must be formulated.
- It is useful to break a course or subject into small units of learning and to test at the end of each unit.
- The teachers should provide feedback as to the learner’s particular errors and difficulties after each test.
- The teacher must find ways to alter the time. Some individuals have at their disposal to learn.
- It may be profitable to provide alternative learning opportunities.
- Students effort is increased when small groups of two or three students meet regularly for as long as an hour to review their test results and to help one another overcome the difficulties identified by means of the test.

From Carroll, J. (1963), Bloom derived a critical and quantitative ingredient of instruction the time. Carroll, J. (1963) in his model of school learning proposed that degree to which a student could be expected to learn is a function of the ratio of the time actually spent in learning to time needed.

\[
\text{Degree of Learning} = f\left(\frac{\text{Time actually spent}}{\text{Time needed}}\right)
\]

The model proposed that, under typical school learning conditions, the time spent and the time needed were functions of certain characteristics of the individual and his instruction.

The time spent was determined by:

- **Perseverance**: It is the amount of time the student was willing to spend actively involved in the learning. Providing high quality of instruction and frequent feedback can increase it.
- **Opportunity to learn**: It is the total learning time the student was
allowed. It is amount of time allocated to the learner for learning of a
given task that is under the control of teacher.

The learning time each student required was determined by:

- **Aptitude for the task**: Aptitude is the amount of time needed to master
  the task under ideal conditions. **Carroll** redefined aptitude as learning
  rate rather than learning level. Traditionally aptitude is considered as a
  relatively fixed and generic ability to perform various kinds of learning
  tasks (Clark, 1987).

- **Quality of instruction**: It was defined in terms of the degree to which
  the presentation, explanation and ordering of the learning task’s
  elements approached the optimum for each learner.

- **Ability to understand the instruction**: It represented the student’s
  ability to generally profit from the instruction and was closely identified
  with general intelligence.

  **Bloom** (1968) transformed **Carroll’s** model into a working model for
  Mastery Learning, wherein in the context of group based teaching,
  individualization of instruction is attempted. An effort is also made to reduce
  the amount of time the student needs to learn school related content. In short
  the focus of Learning for Mastery is to optimize instruction for ensuring
  Mastery. The focus of Learning for Mastery has been represented
  diagrammatically in figure 1.1.

  While Bloom turned his attention to theory (Bloom, 1976), a number of
  his students and colleagues devoted their attention to developing the practice of
  Mastery Learning. Efforts for system-wide application of Mastery Learning
  Strategies led to the formation of the network of Outcome-Based Schools
  affiliated with the American Association of school administrators. The primary
  purpose of the network was to encourage the discussion, summarization and
  dissemination of Mastery related strategies, practices and materials. Since the
  mid 1970’s, Mastery Learning has been applied to an ever increasing variety of
  subject areas (many technical in nature and extended beyond the secondary
  school level.
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Mastery Learning

Fig. 1.1: Figure showing focus of Learning for Mastery.
Two prototypes of Mastery Learning Strategies are most popularly known:

- **Group-based and Teacher-paced Bloom’s Mastery Learning Strategy and**
- **Individual based and learner-paced Keller’s Personalized System of Instruction.**

**Components of Mastery Learning Strategies**

Whether Bloom’s Group-based and Teacher-paced Mastery Learning Strategy or Keller’s Individual-based and Learner-paced Personalized System of Instruction, each Mastery Learning Strategy has four components listed by Anderson and Block (1987) as follows:

- Defining Mastery
- Planning for Mastery
- Teaching for Mastery
- Grading for Mastery

Each component encircles some definite tasks to be performed by Mastery Learning implementers. The above mentioned tasks have been summed up by Ahuja, M. (2000) as follows:

**Defining Mastery**

**Main tasks**

The teacher defines operationally and precisely what is meant by Mastery. Two main tasks for such a definition are to:

- Specify long-term and short term objectives.
- Specify abstract outcomes and concrete representations of these abstract outcomes.

**Sub Tasks**

For defining Mastery, following sub tasks will be essential

- Identify most essential and critical learning outcomes.
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- Prepare a final summative test.
- Set the level of acceptable performance.
- Divide the entire course content into a series of smaller learning units.
- Sequence the units.
- Decide what constitutes Mastery for each unit.

Planning for Mastery

Main tasks

- Prepare the plan which includes teaching learning activities and materials related to unit objectives.
- Plan additional supplementary activities/materials for students failing to attain the performance standard on unit formative test.
- Monitors student learning on a unit-by-unit basis.
- Plan and design steps/measures to overcome errors (it is done to avoid interference in future learning because of accumulation of errors).

Sub tasks

To accomplish these major tasks the teacher is required to undertake following sub tasks

- Design a general plan for students to master the unit objectives.
- Prepare methods for interpreting and using information of formative test.
- Develop a set of alternative instructional material and learning activities, keyed to each objective on the units formative test.
- Plan for time.

Teaching for Mastery

The focus of the teacher here is management of learning and rather than managing learning:

Main tasks

- Specify what is to be learned (mastery performance)
Introduction

• Motivate students to learn it
• Provide them with instructional material
• Administer these materials at a rate suitable for each pupil
• Monitor student’s progress
• Diagnose difficulties.
• Give proper remediation.
• Give praise and encouragement for good performance (feedback procedure to be planned well in advance).
• Give review and practice.

Sub tasks

For accomplishing the sequence of the main tasks, the teacher has to undertake following sub tasks:

• Provide orientation to students.
• Teach each learning unit in sequence.
• Administer unit’s formative test.
• Announce the day on which initial instruction relative to the next unit will begin.
• Analyse the adequacy of corrective instruction.
• Pace this cycle.

Grading for Mastery

Main tasks

The purpose of grading after implementing teaching is to reward students for the acquisition of essential and critical course objectives.

Sub tasks

Administer a summative test.

The sequence of Mastery Learning tasks has been shown in figure 1.2.
**Introduction**

Defining Mastery

Planning for Mastery

Grad in a Framework

Formative tests and correctives

Plan for time

Present the new learning sequence i.e. study unit

Administer the unit formative test

Get the formative test result

Does the result meet the set mastery criterion?

Was it the result of first trial?

Provide corrective feedback through mode 1

Provide corrective feedback through mode 2

Is there any other sub-unit to be taught?

Administer the Summative test

Assign the grades

Stop

Fig. 1.2: Figure showing the Sequence of Mastery Learning Tasks.
Types of Mastery Learning Strategies

Mastery Learning can be broadly conceived in two formats: group based teacher-paced and individual-based students paced. Bloom's (1968) Learning for mastery approach and Keller's (1968) Personalized System of Instruction exemplify the above two formats respectively. And from these two basic strategies most contemporary approaches to Mastery Learning have been derived (Block, 1974). The Eclectic Mastery Learning Strategy has also been derived from these two strategies.

- Bloom's (1968) Mastery Learning Strategy (BMLS)

Bloom's (1968) Learning for mastery strategy has evolved from within the field of education and has had a major impact at the elementary and secondary levels of schooling. It is primarily designed for use in group-based instructional situation where the time allowed for learning is relatively fixed; although the basic ideas are equally applicable in individual based instructional situations. Bloom’s strategy attempt to minimize that the time, a student needs to learn so that it is well within the fixed amount of calendar instructional time available. Students learn cooperatively with their classmates and the teacher control, the delivery and flow of instruction. Hence it is a group-based and teacher-paced approach.

The conceptual framework of Bloom’s Mastery Learning Strategy has been summarized by Block and Anderson (1975) as:

Defining Mastery

- Formulating a set of course instructional objectives
- Preparing a ‘final’ or ‘summative’ examination over these objectives and determining the course mastery performance standard which the student will be expected to achieve on this examination.
- Sequencing their learning units and determining the course objectives to be covered in each unit
Planning for Mastery

- Preparation of lesson plans by teachers using customary group-based teaching methods.
- Developing feedback/ corrective Procedure.
- Developing a set of alternative instructional materials.

Teaching for Mastery

- Provide orientation to the students regarding Mastery Learning procedure.
- Teaching the first learning unit, administering the unit criterion/ for native test, identifying the non achievers and asking them to use the appropriate corrective measures to complete their unit learning.

Grading for Mastery

- Administering of summative/ criterion test.
- Awarding A’s to the students who performed equal to or above the course mastery performance level.
- Competition of students is with themselves rather than with their classmates.

The sequence of Mastery Learning tasks for BMLS is shown in the figure 1.3.

- Keller’s (1968) Personalized System of Instruction (KPSI)

Keller’s (1968) Personalised System of Instruction evolved from the field of psychology and biology and has had its major impact at the college and university levels (Anderson and Block 1989). According to PSI gets its name from the fact, that each student is served as an individual by another person, face to face and one to one.
Introduction

Defining Mastery
- Specify objectives and outcomes in behavioural terms
- Set the mastery criterion
- Plan teaching learning activities & materials

Planning for Mastery
- Plan formative tests and correctives
- Plan for time

Teaching for Mastery
- Present the new learning, e.g. sequence i.e. study unit using group-based teacher-placed methods
- Administer the unit formative test
- Get the formative test result
- Does the result meet the set mastery criterion?
  - Yes
  - Is there any other sub-unit to be taught?
    - Yes
    - Administer the summative test
    - Assign the grades
    - Stop
  - No
  - Provide corrective feedback through teacher explanation using alternative materials

Grading for Mastery
- Provide corrective feedback through class monitors
- Was it the result of first trial?
  - Yes
  - Administer the summative test
  - Assign the grades
  - Stop
  - No
This approach to instruction, according to (Block, 1974) is explicitly designed to convert the role of the teacher from the dispenser of information to the engineer or contingency manager of all student learning. Hence it is Individual-based and Learner-paced approach.

Keller (1968) summarized the essential features of Personalized System of Instruction as:

- The go-at-your-own-pace feature, which permits a student move through the course at a speed commensurate with his ability and other demands upon his time.
- The unit perfection requirement for advancement which lets the student go ahead to new material only after demonstrating mastery of that which preceded it.
- The use of lectures and demonstrations as vehicles of motivation, rather than sources of critical information.
- The related stress upon the written word in teacher-student communications.
- The use of proctors, which permits, repeated testing, immediate scoring, almost unavoidable tutoring and a marked enhancement of the personal social aspect of the educational process.

The basic features of this technique include: detailed instructional objectives, frequent test or evaluations, proctors who help student work through modules, an emphasis on subject-matter mastery of each subject attempted and students determined progress.

The operating procedures for the Personalized System of Instruction, as discussed by Block (1971) are as follows:

**Defining Mastery**

- Mastery for PSI is operationally defined as perfect performances on a particular number of units by a certain point of time.
- Mastery of a unit is synonymous with the mastery of whole course.
Introduction

- Predefining course objectives and then sub-dividing these objectives into a number of learning units.

Planning for Mastery

- The instructor develops a set of procedures whereby the student might master the unit’s objectives. These procedures include a list of unit’s objectives, a suggested set of study procedures, a set of study questions and a set of tests items.

Teaching for Mastery

- The teacher presents basic features of PSI.
- Units are taught using almost purely individual methods, reading is the mode used by the students.
- At the completion of unit, monitor gives the unit criterion/ formative test.
- The test, restudy, retesting Cycle continues until the student achieves mastery.

Grading for Mastery

- The nature and form of grading, policy depends on the fact whether the students’ performance will be tested only through unit tests or they will also take a final examination.
- The students can be termed as masters or non-masters, so the only possible grade can be A or no grade.

The sequence of Mastery Learning tasks for Keller’s (1968) Personalized System of Instruction (KPSI) is shown in the figure 1.4.

- Eclectic Mastery Learning Strategy (EMLS)
  The word eclectic; according to Oxford Advanced Learner’s Dictionary (1997) is an adjective used for people, believes etc., not following only one style, set of ideas etc. but choosing from or using a wide range.
Introduction

Fig. 1.4: Showing the Sequence of Mastery Learning Tasks for Keller’s Personalized System of Instruction (KPSI).

Start

Defining Mastery
- Specify objectives and outcomes in behavioural terms
- Set the mastery criterion

Planning for Mastery
- Plan teaching-learning activities & materials
- Plan formative tests and correctives
- Plan for Time

Teaching for Mastery
- Present the new learning sequence i.e. study unit using individual based self-paced methods
- Administer the unit formative test
- Get the formative test result

Does the result meet the set mastery criterion? (Yes/No)
- Is there any other sub-unit to be taught? (Yes/No)

Grading for Mastery
- Administer the summative test
- Assign the grades

Stop

Provide corrective feedback through teacher explanation
Provide corrective feedback through self-repetition of selected portions of programmed test
Was it the result of first trial? (Yes/No)
According to Page and Thomas (1979), the term eclectic was used to advance a viewpoint on a curriculum that ought not to be grounded in any one theory of the behavioural sciences but rather must take account of the complex interaction of the full range of theories of psychology, sociology and other behavioural sciences. The term Eclectic has been used for an approach to counselling which is a combination of the Directive (counsellor centred) and Non-Directive (counselee centred) Approaches. The advocates of Eclectic Approach to counselling emphasize that the counsellor must select the approach that is most appropriate to the immediate problem and be ready and willing to change approaches at any time.

Based on similar beliefs, the word Eclectic in term Eclectic Mastery Learning Strategy (EMLS), implies that there is no one best way to implement Mastery Learning. Having all the essential features of Mastery Learning, EMLS is neither this (ML by Bloom), nor that (PSI by Keller), But both and more.

It assumes that:

- No two learning situations are identical.
- Learners have unique characteristics.
- Learning situation and learner characteristics are dynamic in nature.

Consequently a teacher has to adopt the essential elements of Mastery Learning to the particular context in which he/she teaches and to the unique characteristics of his students. Bloom (1968) in his earliest descriptions of the Mastery Learning stressed flexibility in the process and emphasized that each strategy must find some way of dealing with individual differences in learners through some means of relating instruction to the needs and characteristics of the learners.

The theoretical rationale for Eclectic Mastery Learning Strategy (EMLS) can be traced back to Carroll's (1963) formulation of learning as a function of time spent divided by the time needed. In order to ensure that students reach a predetermined mastery level of learning, we need to allow time to vary. And at the same time, to minimize the time difference among learners we require...
effective instructional strategies. Bloom’s (1968) Learning for Mastery Strategy and Keller’s (1968) Personalized System of Instruction attempt to provide enough time and employ instructional strategies so that all students can achieve the same level of learning. These Mastery Learning strategies can improve instructional effectiveness as proved by the research. But there are some theoretical and practical problems that need to be solved. We need to minimize the required time differences among students in order to increase the possibility of implementation of Mastery Learning programs in our schools. In order to minimize required time differences among students originating from differences in the abilities and from differences in learning situations, alternatives must be made available to students to maximize the possibility for learning. The presentation the explanation and the sequencing of the learning task must be varied according to individual differences in learners. In view of the fact that students differ in ability to understand instruction, learning programmes must be adjusted or modified with respect to the utilization of alternative instructional materials and methods. And one of the variables for Mastery Learning is related to the willingness of the students to be engaged actively in learning. Mastery Learning requires time and students must be willing to persevere, to devote the amount of time necessary for Mastery Learning combining Bloom’s Mastery Learning Strategy and Keller’s Personalized System of Instruction suitably, there by providing a variety of modes of original instruction, stimuli and situations can ensure all this.

Furthermore, Mastery Learning Programs tend to require considerable amounts of time and effort to implement, which most teachers and schools are not prepared to expend. Eclectic Mastery Learning Strategy offers to reduce this time and effort to make it school and teacher friendly.

A key advantage to the eclectic approach is its extreme flexibility. In this approach materials and methods are juggled according to the needs of the students and subject matter. The eclectic approach also lets us take advantage of good values of all methods that is harder to do in more structured programs.

Eclectic Mastery Learning Strategy, in light of the above theoretical rationale, proposes to permit flexibility in all important aspects viz. conception
of mastery, size and sequencing of learning units, form, Mode and pacing of original instruction on each unit, unit feedback instruments and mode of correction. The teacher has no predisposition to any approach. He/she selects the approach that is most appropriate to immediate learning situation and is ready and willing to change approaches at any time.

Eclectic Mastery Learning strategy recognizes the values in both, the Bloom’s Mastery Learning Strategy and the Keller’s Personalized System of Instruction, but stresses the need to be selective for successful application of Mastery Learning. It is based on the belief that there are strengths and weaknesses in both and that neither of the two allows the teachers, the flexibility necessary to teach most effectively. For the present experiment a set instructional sequence, suitable to the present context was decided to be followed.

The proposed conceptual framework for the Eclectic Mastery Learning Strategy is as follows:

**Defining Mastery**
- Formulating a set of course instructional objectives.
- Preparing a final or summative examination over these objectives and determining the course mastery performance standard which the student will be expected to achieve on this examination.
- Sequencing the learning units and determining the course objectives to be covered in each unit.

**Planning for Mastery**
- Developing a set of procedures by the instructor, whereby the students might master the unit’s objectives. These procedures include a list of unit’s objectives, a suggested set of study procedures, a set of study questions and a set of test items.
- Developing feedback/corrective procedures.
- Developing a set of alternative instructional materials.
Teaching for Mastery

- Presenting basic features of eclectic Mastery Learning Strategy.
- Providing orientation to the students regarding Mastery Learning Procedure.
- Teaching units using group and individual methods. Variety of modes used by students-includes listening, discussing, reading etc. Teacher explains the first concept in the first learning unit, asks students to respond to the exercise frames of the written programmed text already provided to them, guides them through the summary frame, helps them recapitulate, solves difficulties if any and moves on to the next sub-topic, and so forth, administers the unit criterion/formative test, identifies the non achievers and provides them with monitory help as the first corrective measure and teacher’s explanation as the second corrective measure to complete their unit learning.
- Administering of the unit criterion/ formative test
- Continuing the test, restudy, retesting cycle until the student attains mastery.

Grading for Mastery

- Administering of summative / criterion test.
- Awarding A’s to the students who performed equal to or above the course mastery performance level.
- Competition of students is with themselves rather than with their classmates.

The sequence of Mastery Learning tasks for eclectic Mastery Learning strategy (EMLS) is shown in the figure 1.5.

COMPARISON OF MASTERY LEARNING STRATEGIES

Bloom’s Mastery Learning Strategy, Keller’s Personalized System of Instruction and Eclectic Mastery Learning Strategy :
Fig. 1.5: Showing the Sequence of Mastery Learning Tasks for Eclectic Mastery Learning Strategy (EMLS).
Similarities

All the three strategies start with the assumption that all students can and will learn if the instruction is well design. Instructor has to pre-specify a set of instructional objectives and designed an instructional approach. The learning material is broken into small learning units that are sequenced and designed to ensure mastery.

Each unit consisting of two components i.e. original instructional component and feedback/corrective component is taught ensuring mastery of one unit before allowing the student to attempt next. After this students are evaluated on a criterion test.

Differences

The differences among Bloom’s Mastery Learning Strategy, Keller’s Personalized System of Instruction and Eclectic Mastery Learning Strategy may be summarized as follows:

- Conception of Mastery

  Bloom’s Mastery Learning Strategy is group-based teacher-paced approach with conception of mastery in terms of students’ performance on the whole. The mastery of the Parts is synonymous with the mastery of the whole. Hence a student’s grade is based solely on the students’ performance over all units taken as a whole.

  Keller’s Personalized System of Instruction is individual-based learner-paced approach with conception of mastery in terms of perfect performance on a particular number of units by certain point of time. Mastery of the parts of a course is synonymous with mastery of the course taken as a whole. Hence, Keller bases the student’s grades largely on his performance on each unit.

  Mastery for Eclectic Mastery Learning Strategy is defined in accordance with relative importance of learning tasks of each unit and entry behaviour of the learners. The most essential and critical outcomes are identified and a higher level of acceptable performance for these outcomes are identified and a higher level of acceptable performance for these outcomes is set. The items for
formative and summative tests are constructed accordingly. Mastery is defined operationally as performance at or above a particular level (depending upon their Learning situation) on each unit as well as on the course final examination according to the weightage assigned to them.

- **Size of Learning Units**
  
  **Bloom** uses hierarchically sequenced longer learning units that correspond to two weeks worth of instruction.

  **Keller** uses smaller units that correspond to roughly one weeks’ instruction.

  For Eclectic Mastery Learning Strategy, size and sequencing of the learning units is decided according to learning task. Size of learning units might vary from four to ten days.

- **Form, Mode and Pacing of an Original Instruction**

  In **Bloom’s** Strategy students learn cooperatively with their classmates, employing several modes as reading, hearing, lecturing and/or participating in discussions. The teacher controls the delivery and flow of instruction.

  In **Keller’s** strategy students learn independently of their classmates, employing reading as the chief mode. Each student controls the degree and flow of instruction while teacher acts as the engineer or contingency manager of all student’s learning.

  A combination of group-based teacher-paced and individual-based self-paced methods depending on the learning situation is proposed for eclectic Mastery Learning strategy. The teacher explains the concept using the group-based teacher-paced approach and then guides students through exercise frames as students write responses in the programmed text provided to them. Though students are allowed to self-paced but teacher’s motivation ensures complete attention. Economy of time is further ensured by a recapitulation by the teacher at the end of each sub topic. The recapitulation helps the teacher to identify gaps in understanding by the students and solve problems immediately.
• **Unit Feedback Instruments**

_Bloom_ uses formative tests consisting of multiple choice questions that provide detailed feedback and hence help to prescribe an appropriate remedial and learning sequence.

Feedback instruments employed for _Keller’s_ strategy include a wider variety of testing formats and item types, including multiple choice, essay and performance and oral questions. Feedback is not much detailed and hence it is sometimes more difficult to prescribe an appropriate and efficient remedial sequence.

Formative tests consisting of multiple choice questions that provide detailed feedback and hence help prescribe an appropriate remedial learning sequence are proposed for Eclectic Mastery Learning Strategy.

• **Per Unit Mastery Requirement**

_Bloom’s_ approach does not demand perfect performance on each formative evaluation instrument.

_Keller’s_ approach does demand perfect performance on one unit for movement to the next.

In Eclectic Mastery Learning Strategy demand depends on the particular content, learners and learning situation. So the teacher decides the performance level required on each formative evaluation instrument.

• **Mode of Correctives**

In _Bloom’s_ strategy a variety of instructional correctives employed includes tutorials, small group learning activities and a number of alternative instructional devices such as alternative textbooks, workbooks, programmed instruction, audio-visual materials and the academic games and puzzles. These correctives present the unit’s material, involve the student and reinforce his learning in ways that are different from the original instruction. Typically the student is asked to complete his instruction in his own time. Hence the time allowed to learn is relatively fixed.
In contrast, Keller uses tutorials as primary mode of corrective instruction and the instructional corrective tend to be very similar to the original instruction.

A variety of instructional correctives employed in Eclectic Mastery Learning Strategy includes tutorials small group learning activities and a number of alternative instructional devices such as alternative textbooks, workbooks, programmed instruction, audio-visual materials and academic games and puzzles. These correctives present the unit’s material, involve the student and reinforce his learning in ways that are different from the original instruction. Efforts are made to minimize time differences for mastery of learning material among students.

1.2 FEEDBACK CORRECTIVES IN MASTERY LEARNING STRATEGY

Bloom’s remediation strategy differs from Keller’s approach in three respects: The formative instruments provide 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 the student’s learning problems but also to prescribe an appropriate remedial learning sequence. Keller’s feedback instruments typically describe only a random portion 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.

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 and a number of alternative instructional devices, audio-visual materials, academic games and puzzles.

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 are very different from the original instruction. The basic ideas underlying Bloom’s correction

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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’s strategy is to return the student to the original instructional material for review and restudy. The assumption is that the student does not need a different set of instructional materials, only more practice with the old set is required.

In the Mastery Learning Strategy Bloom proposed to implement these ideas which were designed for use in classroom where the time allowed for learning is relatively fixed. Mastery was defined in terms of a specific set of major objectives the student was expected to exhibit by a subject’s completion. The subject was then broken into a number of smaller learning units and the unit of objectives were defined whose mastery was essential for mastery of the major objectives. The instructor taught each unit using typical group based methods but supplemented this instruction with simple feedback/correction procedures to ensure that each student’s unit instruction was of optimal quality. The feedback devices were brief, diagnostic tests administered at the unit’s completion. Each test covered all of a particular unit’s objectives and thus indicated what each student had or had not learned from the unit’s group based instruction. Supplementary instructional correctives were then applied to help the students overcome his unit learning problems before the group instruction continued. This approach to Mastery Learning represented a great advance over previous strategies in two important respects:

- The feedback instruments were much improved. The improvement was attributable in part to the greater precision with which the structure of the learning units could be described.
- This strategy employed a greater variety of instructional correctives than previous approaches. The strategy assumed that equality of instruction
could best be defined in terms of:

- The clarity and appropriateness of the instructional cues for each pupil.
- The amount of active participation in and practice of the learning allowed each student.
- The amount and variety of reinforcements available to each student.

Under the typical group based instructional situation of one teacher to thirty students, it was unlikely that the quality of instruction was optimal for all students. To promote student learning to the fullest extent, therefore, the diagnostic information provided by formative evaluation must be translated into specific supplementary instructional procedures whereby each pupil can correct his particular unit learning difficulties. The purpose of these correctives is to provide each learner with the clearest and most appropriate instructional cues, the requisite amount of active involvement in and practice of the learning and the amounts and types of reinforcement his learning requires. Presently, there are no methods for going from a student’s incorrect formative test responses to the specific learning correctives he needs. For this reason, a wide variety of instructional correctives have been made available so that the student can discover those best suited to his characteristics and needs. The following are the corrective which have been used most effectively:

- Small group problem sessions
- Individual tutoring
- Alternative learning materials
  - Alternative textbooks
  - Workbooks and programmed instruction
  - Audiovisual methods
  - Academic games and puzzles
- Reteaching

The small group sessions and the individualized tutoring, for example, added an important personal-social component to each student’s learning not typically found in large group instruction. The workbooks and programmed instruction provided the student with the drill they may have required.
The Frequency of Use of the Feedback Correctives

The major intent of formative feedback and learning correction devices is to pinpoint and correct student learning deficiencies before they impair subsequent learning. Depending on the relevance of the learning of particular units in the subject to the learning of others, it may be necessary to use feedback/correction devices more than once in a given learning unit. This is especially likely for the earliest units in any subject, whose learning is almost always fundamental to the learning of later ones. The student's success or failure on the early units shapes his interest in and attitude toward the learning of later units. For such subjects, more frequent use of the feedback/correction devices during early units would ensure each student's thorough mastery of the skills and provide him the successful initial learning experiences crucial for sustaining his desire to learn.

INDIVIDUALISED SINGLE FEEDBACK CORRECTIVE

There are many procedures for correcting deficiencies related to learning. Remedial instruction is a specific unit of instruction bases comprehensive diagnostic finding and intended to overcome a particular learning deficiency in a student. The role function of remedial instruction is to provide each student with the instructional cues and for the active participation and practice and the amount and type of reinforcement they requires to complete his unit learning. There are range of corrective procedures such as small group sessions, individualized tutoring, add on important personal social component to each students learning not typically found in large group instruction can provide students with the drill they may require. Individualized remedial instruction is valuable activity for which teacher have too little time when employing conventional group instruction, during individualized remedial instruction the teacher guides thinking of each individual student. Formative test is administered at the completion of each unit to provide feedback on the adequacy of the students learning the test either indicates unit mastery and thus reinforce his learning or it highlights the material he still needs to master. Thus each student’s original instruction is supplemented with
appropriate learning corrective so that he could complete his unit learning.

As a rule of Thumb, Bloom suggests that errors made by a majority of students should be corrected by group instruction and errors made by less than a majority should be corrected by individual students. Individualized remedial instruction is probably the most efficient and effective corrective procedure for correcting individual learning problems.

Individualised single feedback corrective means that you can give feedback corrective individually to each student but only single type of feedback and only once. After knowing the weaknesses of the learner the teacher selects a kind of feedback corrective which is be the most effective for the learner whether it is again tutoring by the teacher herself or by the class monitor etc and use that feedback corrective in an effective way that after this type of feedback the learner will be able to overcome his weakness and master the concept.

There are the few ideas for giving individualized feedback corrective –

- **Comment on what was correct/good not just on what was wrong** – A fear of making mistakes and/or of being corrected for every error will only reduce fluency and natural sounding interaction. It will also restrict the free flow of ideas. Therefore, when assessing and giving feedback to students, sensitivity should be shown. Students need to be encouraged and assured by positive feedback on what they are doing right as well as being focused on what needs improvement.

- **Consider what was said (and achieved) not just how it was said** – In order to keep interest in the topic high and to assist in the development of business related ideas, try to get feedback from students on the content of the task as well as giving feedback on how it was said.

- **Let your students know the assessment criteria** – To aid development in all areas of the assessment criteria, students should be familiar with it. Also, making it clear which part or parts of the criteria they are being assessed on in feedback should help focus development.

- **Limit the number of areas to assess** – In order to provide individual
assessment to all students in a group limit the number of areas to feedback on.

- **Encourage your students to assess themselves and each other** – Getting students to monitor each other using the Assessment Criteria and Observation Task Sheets Tailor – made for certain task types will help them focus on areas for development and will maximise opportunities for feedback and assessment.

- **Encourage students to keep records of their individual weak areas** – If students are given individualized feedback on assessments, they can keep note of their weak areas and focus on these in future practice.

### 1.3 LIFE SKILLS

Modernisation and the social changes caused our youth at a critical situation where they stand between traditional set up and emerging non-traditional society. It is shocking to note that almost 80% of students feel that they cannot talk to their parents about personal problems. Nearly 40% also said they feared examinations and suffered from fear of failure (Narayana, S. 2003).

According to **Winston English Dictionary (1957)**, skills is knowledge of any art together with expert ability of put that knowledge to use. The term skill denotes that some learning has taken place and that a smoothing or an integration of behaviour has resulted. A skilled act has to be learned. It is not one, which might be termed. Instinctive, are reflexive or one in which successful performance is achieved in a single trial.

Life skills are defined as the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life. Life skills constitute a continuum of knowledge and aptitudes that are necessary for a person to function independently and to avoid interruptions of the employment experience (Brolin, 1989). Life skills includes self-development, communication skills, job and financial skills, development education, interpersonal and family relationship development and stress and anger management.
According to Rao, 2003, the development of life skills is an important part of personality development, which can be beneficial for all young adults.

Allen, Mehal, Palmateer and Sluser (1995), says that in a life skills group, responsibility for personal growth rests with the client. Personal growth, counselling and developing belief systems are all part of encouraging psychological growth. Psychological growth must be considered to be a primary goal of life skills.

Life skills are problem solving behaviours appropriately and responsibility used in the management of personal affairs.


Wolman (2001) considers the drive for spiritual self improvement to be the same thing as the desire for self-actualization. Self actualizing people provide a benchmark for psychological health Maslow (1987).

From this perspective, Life skills, in its support and encouragement of personal growth, is involved with supporting and encouraging spiritual growth also.

Life skills, being focused on matters of problem-solving and effective behaviour change through choices of action, and also being concerned with matters of morality, invokes the exercise of spiritual intelligence when problems of right and wrong arises and when decisions about moral courses of action are to be made.

Most children and adolescents acquire a broad base of coping and social skills. The emergence of skills accelerates during early adolescence, when school, family and peer relations are in transition and when there is increased pressure exerted on adolescents by adults to accept responsibility for a variety of interpersonal behaviours and events. The development of skills is to a large
extent influenced by the patterns of attachments and stressors that occur during childhood and adolescence. Children who have been provided with opportunities to learn appropriate skills, have been consistently rewarded for effective coping and have not been exposed to debilitating stressors are more likely to acquire comprehensive set of adaptive skills.

Life skills include a wide range of knowledge and skill interactions believed to be essential for adult independent living (Brolin, 1989). The three major skill areas that need to be emphasized are daily living, personal or social and occupational skills.

Life skills are essential to job functioning and they must be included in instruction for students with special needs. Several million individuals with learning problems are still denied the opportunity to engage in meaningful employment in the U.S. large number of students with disabilities both high school graduates and dropouts, earn very low salaries. These students do possess the potential to live and work in community if they receive appropriate life skills instruction. However, without this instruction they often fail to hold their jobs. A life skills curriculum approach blends academic, daily living, personal or social and occupational skills into integrated lessons designed to help students learn to function independently in society.

Abraham Maslow (1970) in his discussion of a hierarchy of human needs, pointed out that belonging was an essential and prerequisite human need that had to be met before one could ever achieve a sense of self-worth. He posited that the needs of human beings could be divided and prioritized into five levels. Individuals do not seek the satisfaction of a need at one level until the previous level of need is met. The five levels of need identified by Maslow were:

- Physiological
- Safety/Security
- Belonging/Social Affiliation
- Self-Esteem and
- Self-Actualization
Maslow’s hierarchy of needs not only reminds us how essential it is for people to live with in the context of a community but it also shows us that the need for self-actualization necessary implies that every person has abilities that warrant specific development within themselves figure 1.6 can be divided into two zones.

First Zone — Life skills zone, which includes only human beings
Second Zone — Life skills non-zone includes human beings and animal

The upper part of the figure is meant for only human beings life skills, which was considered in the present investigation.

An education in life skills is designed to help children and young people to learn the skills they need to deal with the likely demands and challenges of modern life. The object is to equip young people to apply those skills in ways that will help them to protect themselves against the many stresses and

Fig. 1.6 : Maslow’s hierarchy of human needs.
pressures that may put their health at risk.

As part of its skills for life education project, **W.H.O’s Mental Health Program** in Geneva has for some years been producing a “*Skills for Life Newsletter*” to provide an update on new developments and research in the field of life skills education in schools. The newsletter describes local, national and international initiatives around the world to support the development of education in skills for life. These include communication skills, Decision-making, critical thinking, empathy and coping with stress. This life skills education project provide few guidelines on the development and implementation of life skills programs as:

- Developing a life skills support infrastructure
- Formulating objectives and a strategy for skills program development
- Designing life skills program material
- Training of my skills trainees
- Pilot testing/evaluating a life skills program and training
- Implementing a life skill program

In 1991, **United Nations Educational Scientific and Cultural Organization** had suggested to implement life skills techniques for teaching act in school based program.

Life skills consist of knowledge, attitude and skill, which are required to solve many problems of society at a particular time and prepare for adapting in the future.

Life skills’ training is increasingly attracting attention as an important element in the preparation of people for the world of work. Life skills encompass orientation for the world of work, adult basic education, social and basic management skills. **Ms Lobner (1997)** provides an analysis of a variety of programmes in the area of life skills in S. Africa and draws a number of lessons, which can also be applicable to other countries. The report demonstrates that life skills increase efficiency and quality of work. In the post-conflict context, it is observed that life skills training enhances creativity and capacity to deal with the difficult period of transition to a peaceful society.
Life skills encompasses a wide range of generic skills aimed at helping trainees to cope with various aspects of life. Life skills are geared to peacefully strengthen survival capacities by providing orientation basic education and pertinent health messages, social and basic management skills. Only when people learn to cope in this way will they be able to contribute and participate effectively in the workplace. Life skills empower people to make informed choices about their future.

Life skills help to develop human potential and therefore enhance the ability of people to reintegrate into society and contribute to its reconstruction.

Life skills contribute to a systematic development of attitudes, knowledge and skills patterns required for a job.

The term life skill is currently not widely used by international and non-governmental agencies. However, most organizations undertake some activities within the spectrum of life skills and those interviewed understood the use of the category after explanation. In a sense, what is being put forward is a basic education curriculum, which, along with vocational training, which equips people with the necessary skills and information to cope with the real problems (both material and psychological) they face in life.

According to UNICEF (2002) there is no definitive list of life skills. The list includes the psychosocial and interpersonal skills generally considered important. The choice of and emphasis on, different skills will vary according to the topic and local conditions (e.g., decision making may feature strongly in HIV/AIDS prevention whereas conflict management may be more prominent in a peace education program). Though the list suggests these categories are distinct from each other, many skills are used simultaneously in practice. For example, decision-making often involves critical thinking (what are my options?) and values clarification (What is important to me?). Ultimately, the interplay between the skills is what produces powerful behavioural outcomes, especial where this approach is supported by other strategies such as media, policies and health services. Following are some listed life skills of UNICEF.
COMMUNICATION AND INTERPERSONAL SKILLS

- Interpersonal Communication Skills
  - Verbal/non-verbal communication
  - Active listening
  - Expressing feelings, giving feedback (without blaming) and receiving feedback

- Negotiation/Refusal skills
  - Negotiation and conflict management
  - Assertiveness skills
  - Refusal skills

- Empathy
  - Ability to listen and understand another’s needs and circumstances and express that understanding

- Cooperation and Teamwork
  - Expressing respect for others contributions and different styles
  - Assessing one’s own abilities and contributing to the group.

- Advocacy skills
  - Influencing skills and persuasion
  - Networking and motivation skills

DECISION MAKING AND CRITICAL THINKING SKILLS

- Decision making/problem solving skills
  - Information gathering skills
  - Evaluating future consequences of present actions for self and others.
  - Determining alternative solutions to problems.
  - Analysis skills regarding the influence of values and attitudes of self and others on motivation

- Critical Thinking skills
  - Analyzing peer and media influences
COPING AND SELF-MANAGEMENT SKILLS

- **Skills for increasing Internal locus of control**
  - Self esteem/confidence building skills
  - Self awareness skills including awareness of rights, influences, values, attitudes, rights, strengths and weaknesses.
  - Goal setting skills
  - Self evaluation/self assessment/self-monitoring skills

- **Skills for managing feelings**
  - Anger management
  - Dealing with grief and anxiety
  - Copying skills for dealing with loss, abuse trauma

- **Skills for managing stress**
  - Time Management
  - Positive Thinking
  - Relaxation Techniques

In the year 1991, WHO suggested to other countries to use life skills activities in school for behaviour, health and development of adolescents by acquiring health–related knowledge, values, skills and practices children can be empowered to pursue a healthy life and to work as agents for community health.

The report of the WHO expert committee on comprehensive school. Health education and promotion reviews the global state of school health identifies opportunities for and barriers to strengthening school health programmes at international, regional, district and local levels, and makes recommendations to strengthen school health infrastructure and health promotion.

Besides, Callahan (2001) focussed of life skills Manual, is a
comprehensive behaviour change approach that concentrates on the development of skills needed for life, such as communication, decision-making, thinking, managing emotion, assertiveness, self-esteem building, resisting peer pressure and relationship skills. The life skills approach is completely interactive using role plays, games, puzzles, group discussions and a variety of other innovative teaching techniques to keep the participant wholly involved in the sessions. Teachers, health workers and community leaders have been able to adapt this model to meet different needs and suggestions are provided on how to adapt the life skills approach to many different contexts.

This manual was compiled and adapted from materials created by the World Health Organisation (WHO), the United Nations Scientific and Cultural Organisation (UNESCO), the Curriculum Development Unit, Ministry of Education, Zimbabwe and UNICEF.

WHO (1993) aims to fight and control disease. WHO mentions that life skills consists of 10 skills (5 pairs) and divide the Intelligent behaviour into three types each consisting of a set of life skills as follows:

1. In cognitive domain, it has identified two life skills viz., creative thinking and critical thinking.
2. In affective domain, self awareness and empathy are included.
3. In psychomotor domain, 3 pairs of life skills have been suggested.
   3.1 Relationship and Communication

![Life Skills of WHO](image_url)
3.2 Decision making and problem solving
3.3 Coping with emotions and coping with stresses.

**COGNITIVE DOMAIN**
It consists of:
- **Creative thinking** means the extensive thinking that has no frame without any restriction.
- **Critical thinking** means the consideration thinking, analysing other situation problems, deciding and judging the information and over the body.

**AFFECTIVE DOMAIN**
It consists of:
- **Self awareness** means finding and understanding good or bad point of themselves. The students can know differences between themselves and others which are ability, sexual, age, level of education, religion, skin, health etc.
- **Empathy** means imaginative and involuntary project of one’s self in to an object or being leading to sympathetic understanding or vicarious experience of events witnessed. The theory of empathy tries to account for the observer’s expensive mood in viewing wide open spaces, his experience of the ‘feel’ of motion at the sight of a flying sea gull, etc. and is particularly enlighten ending for the psychology of poetic imagery.

**PSYCHOMOTOR DOMAIN**
It consists of:
- **Interpersonal Relationship, social responsibility and communication** mean students can talk, speak and can use body language for communication about what one feels. He can accept others feelings which have to be appreciated with negative skill and interpersonal relationship.
- **Decision making** means to know problems or a cause of problems. It is
selecting priorities and analysing between good or bad. So, problem solving then means, students can select, evaluate and decided suitable choices. They can decide activities for daily life.

- **Coping with emotion and stress skill means**, the students can evaluate emotion and its influence for self behaviour. They can react suitably and know the cause of stress, control emotion, keep off problem and behave in a good way.

**Skill of Critical Thinking**

Man is the best and the most perfect creation of god. Man has dexterity of mind, intelligence, reasoning and creativity. His educatability depends upon his ability to think, to judge (to be a critic) and then to explore. Now a days, high on the public agenda for educational reforms is the goal of critical thinking with all support system of “high order thinking skills”.

The word critical derives etymologically from two Greek roots kriticos (meaning discerning judgement) and kriterian (meaning standard). Etymologically, then the word implies development of discerning judgement based on standard.

In Webster’s New World Dictionary (1989), the relevant entry reads characterized by careful analysis and judgement and is followed by the gloss: critical, in its strictest sense, implies and attempt at objective judgement so as to determine both merits and faults. For example, those who think critically typically engage in intellectual practices of the following sort: monitoring, reviewing and assessing goals and purposes; the way issues and problems are formulated, the information or data of evidence presented for acceptance, interpretations of such information, data or evidence; the quality of reasoning presented or developed, basic concepts or ideas inherent in thinking, assumptions made, implications and consequences that may or may not follow; points of view and frames of reference. Those who think critically, therefore, characteristically strive for such intellectual ends as clarity, precision, accuracy, relevance, depth and illogicalness.

Critical thinking is thinking more deeply. It involves reasoning logically
and analyzing, organizing, examining and questioning information to attain several possible answers. The concept of critical thinking as defined by Robert Ennis (1985) states that critical thinking is focused on deciding what to believe or do. This definition allows flexibility and diversity of application, including decision-making, problem solving, value judgement and higher levels of Bloom’s (1974) taxonomy.

Critical thinking is convergent or judgemental thinking, where the mind discovers a common attribute, expressed as a word or phrase, which is shared by more than one idea or concept in the population of ideas being considered. Reasoning which results in a value judgement is termed by many thinkers as Critical Thinking and is an aim of education, which everyone accepts.

Attributes of a critical thinker according to Ferrett (1997) are:

- Asks pertinent questions.
- Assesses statement and arguments.
- Is able to admit a lack of understanding or information.
- Has a sense of curiosity.
- Is interested in finding new solutions.
- Is able clearly define a set of criteria for analyzing ideas.
- Is willing to examine beliefs, assumptions, and opinions and weigh against facts.
- listens carefully to others and is able to give feedback.
- Sees that critical thinking is a lifelong process of self-assessment.
- Suspends judgement until all facts have been gathered all facts have been gathered and considered.
- Looks for evidence to support assumption and beliefs.
- Is able to adjust opinions when new facts are found.
- Looks for proof.
- Examines problems closely.
- Is able to reject information that is incorrect or irrelevant.

Critical thinking has been a primary goal in every educational reform in the past. Now criticism has been directed at school level that teachers have not
been successful in teaching students in how to think critically in real life problems. Scientists think about thinking with a personal/social context resolve science and technology problems to which they can relate.

High order thinking skills in fact are those associated with the qualitative aspects of problems such as making of decisions and forming judgments. In turn, this will require that a student is able to distinguish theory from dogma, probability from certainty, fact from friction and science from folk lore. Student must recognize that whatever solution to a problem holds today may not hold tomorrow.

THEORETICAL FRAMEWORK

Conceptual Definitions

According to Kottmeyer (1949) critical thinking means going beyond the idea of the printed page. Kottmeyer described three units used in proper elementary school which contributed to the development of critical thinking ability:

- Analysis of propaganda
- Reading of the newspaper editorials
- Interpretation of cartoons

Burroughs and Lynda Anne (2000) defined critical thinking as a composite of thinking skills that included reflective thinking, assessing alternative viewpoints and the use of problem solving.

FACTORS ASSOCIATED WITH CRITICAL THINKING

Watson and Glaser (1952) identified the following as major factors in the ability to think critically:

- **Inference**—Ability to discriminate among the degrees of truth or falsity or probability of certain inferences drawn from given facts or data.
- **Recognition of assumptions**—Ability to recognize unstated assumption in the given assertion or propositions.
- **Deduction**—Ability to reason deductively from given premises; to
recognize the relation of implication between propositions; to determine whether what seems an implication or necessary inference between one proposition and another is indeed such.

- **Interpretation**—Ability to weigh evidence and to distinguish between unwarranted generalizations and probable inferences which though not conclusive or necessary are warranted beyond a reasonable doubt.

- **Evaluation of arguments**—Ability to distinguish between argument which are strong and important to the questions at issue and those which are a weak and unimportant or irrelevant.

These all factors in the ability to think critically have important implications for an understanding of the human behaviour.

**Critical Thinking and Emotions**

We cannot separate intellectual from the emotions. Without the feelings of desire and drive, no amount of critical or creative thinking could take place. Bronowski (1961) observes that a gifted man cannot handle bacteria or the equations without taking fire from what he does and having his emotions engaged.

Critical thinking person must be able to recognize and prevents his biases from influencing his data. He must be able to approach problems open-mindedly. He must be free of superstition and ulterior motive. Without this drive for continued learning, human progress would cease.

**Social Criticism and Critical Thinking**

The study of literature involving both creative and the factual writings is an aid towards understanding the importance of critically analyzing the author’s intent, his authority for writing or speaking and the techniques he uses to convince the readers.

Critical thinking is a protection against accepting the printed word as authority until it has been established as being as free as possible of prejudice. There is a tendency on the part of children and adults alike to believe or accept
that which is spoken or written. This tendency poses a serious danger to civilized countries unless the people understand that the pen is mightier than sword and it can often be just as unreliable.

Critical Thinking as a Part of Problem Solving and Creative Thinking

Critical thinking is closely related to both problem solving and creative thinking. The solution to most problems require critical examination before any final conclusion can be drawn. Thus critical thinking is one phase of logic problem solving. Streib and James Thomas (1993) concluded that critical thinking and problem solving intersect with each other.

In their study Gelvena and Don R. (1990) concluded that “A moderate positive relationship exists between the problem solving and critical thinking”.

Critical thinking is usually one phase of creative thinking. The creative product must often be evaluated. Similarly a group decision about the story or verse written some days previously by a child may help the author to improve both his product and his subsequent methods of work. Thus critical thinking can be closely related to creative processes.

Critical Thinking and Judgment

Critical thinking involves a considerable amount of judgement. In certain types of judgements and therefore, in critical thinking about certain issues, emotional factors may influence decisions. Since critical thinking has been defined as involving the comparison of some proposition or object against norm or standard. All critical thinking is comparative; the basis of the judgements sometimes called the anchoring stimulus must be known and measures to indicate variations in judgement must be carefully stated.

Postman and Egan (1999) classified the judgments into following types:

- **Perceptual judgements** – As tone or design
- **Affective judgements** – Such as like or dislike, pleasant or unpleasant, preference for national or social groups
- **Abstract – Conceptual judgements** such as classifying plants or
animals, evaluating scientific theories, checking against rules or definitions.

If one accepts the hypothesis that critical thinking involves a considerable amount of judgment, the classification above suggests that it is not purely an intellectual process.

Critical Thinking and Informal Logic

Most efforts to teach informal logic have been centered on university level courses. Certain textbooks that are frequently used for informal logic courses provide a reasonable sense of the kinds of material included under the label. Texts contain passages for analysis, techniques for displaying relationships among various segments of an argument. In addition to philosophers there are a small number of people from other disciplines, such as English and History, linked to the informal logic movement.

The only fully developed and extensively assessed program for pre-college students is Matthew Lipman’s “philosophy for children”. The basic method of teaching is extensive discussion organized around issues raised in the course of study like texts. These texts pose traditional problems in philosophy. Problems of meaning, truth, aesthetics, reality and imagination ethics and the like.

In the present study the critical thinking has been taken to mean, a sum total of components which inculcate the ability to reason to perceive one’s role in society, to analyse different situations, to assume responsibility, seriousness, to develop sensitivity and thoughtfulness in a student.

SKILL OF COPING WITH STRESS

Individuals of all ages experience stress and try to deal with it. During childhood years, People learn ways to manage feelings of stress that arise from the many fearful situations they experience. Because of emotional and physical strain that accompanies stress is uncomfortable; people are motivated to do things to reduce their stress. These “things” are what is involved in coping.

Stress involves a perceived discrepancy between the demand of the
situation and the resources of the person. Since people engage in coping in an effort to neutralize or reduce stress, coping activities are geared toward decreasing the person’s appraisal of or concern for this discrepancy. Thus, coping is the process by which people try to manage the perceived discrepancy between the demands and resources they appraised in a stressful situation.

The word manage in this definition is important. It indicates that coping efforts can be quite varied and do not necessarily lead to a solution of the problem. Although coping efforts can-and, some would argue, should be aimed at correcting or mastering the problem, they may also simply help the person alter his or her perception of a discrepancy, tolerate or accept the harm or threat or escape or avoid the situation (Lazarus and Folkman, 1984).

We cope with stress through our cognitive and behavioural transactions with the environment. People use many different methods to try to manage the appraised discrepancy between the demands of the situation and their resources.

The coping process is not single event because coping involves ongoing transactions with the environment; the process is best viewed as a dynamic series of continuous appraisals and re-appraisals of the shifting person-environment relationships. Shifts may be the result of coping efforts directed at changing the environment, or coping directed inward that changes the meaning of the event or increase understanding. They may also be the result of changes in the environment that are independent of the person and his or her coping activity. Regardless of its source, any shift in the person-environment relationship will lead to re-evaluation of what is happening, its significance and what can be done. The revaluation process or reappraisal in turn influences subsequent coping efforts.

And so, in coping with the threat of serious illness, people who make efforts to change their lifestyles may receive encouragement and better relationships with their physician and family. But individuals who ignore the problem are likely to experience worse and worse health and relations with these people. Each shift in one direction or the other is affected by the
transactions that preceded it and affects subsequent transactions.

FUNCTIONS AND METHODS OF COPING

People have an enormous number of ways for coping with stress. Because of this, researchers have attempted to organize coping approaches on the basis of their functions and the methods they employ.

Functions of coping

According to Richard Lazarus and his colleagues, coping can serve two main functions. It can alter the problem causing the stress or it can regulate the emotional response to the problem.

- **Emotional focused coping** – It is aimed at controlling the emotional response to the stressful situation. People can regulate their emotional responses through behavioural and cognitive approaches. Some examples of behavioural approaches are using alcohol or drugs, seeking emotional social support from friends or relatives and engaging in activities such as sports or watching TV, that distract one’s attention from the problem. Cognitive approaches involve how people think about the stressful situation. In one cognitive approach, people change the meaning of the situation – for example, by deciding, “There are worse things in life than having to change jobs because of my heart condition” or “Now that my girlfriend has left me, I realize that I really didn’t need her”.

  People tend to use emotion-focused approaches when they believe they can do nothing to change the stressful conditions.

- **Problem focused coping** – It is aimed at reducing the demands of the stressful situation or expanding the resources to deal with it. Everyday life provides many examples of problem-focused coping, including quitting a stressful job, negotiating an extension for paying some bills, devising and new schedule for studying (and sticking to it), choosing a different career to pursue, seeking medical or psychological treatment, and learning new skills. People tend to use problem-focused approaches
when they believe their resources or the demands of the situation are changeable. For example, caregivers of terminally ill patients use problem-focused coping more in the months prior to the death than during bereavement.

To what extent do people use problem-focused and emotion-focused approaches in coping with stress in their lives? Andrew Billings and Rudolf Moos (1981) studied this issue by having nearly 200 married couples fill out a survey. The subjects described a recent personal crisis or negative life event that happened to them and then answered questions that were very similar to the ones you answered in the self-assessment exercise. The outcomes of this research revealed some interesting relationships. Both the husbands and the wives used more problem-focused than emotion-focused methods to cope with the stressful event. But the wives reported using more emotion-focused approaches than the husbands did. Subjects with higher incomes and educational levels reported greater use of problem-focused coping than those with less income and education. Last, the subjects used much less problem-focused coping when the stress involved a death in the family than when it involved other kinds of problems, such as illness or economic difficulties.

Methods of Coping: Skills and Strategies

What types of skills and strategies do people use in altering the problem for regulating their emotional response when they experience stress? Table describes several commonly used ways of coping that Susan Folkman and Richard Lazarus and their colleagues (1986, 1988) identified from their research. The table labels the strategies as serving problem or emotion-focused coping functions and gives examples of cognitive or behavioural efforts a hospital patient might make when using each strategy. Coping methods that focus on emotions are important because they sometimes interfere with getting medical treatment or involve unhealthy behaviours, such as using cigarettes, alcohol and drugs to reduce tension. People often use these substances in their efforts toward emotion-focused coping.
WAYS OF COPING WITH STRESSFUL SITUATION

- **Planful problem solving** (problem-focused) analyzing the situation to arrive at solutions and then taking direct action to correct the problem. For instance, Roy, a hospital patient who needs to choose a specialist for a serious illness, might seek and study information about different specialists before choosing.

- **Confrontive coping** (problem-focused) taking assertive action, often involving anger or risk-taking, to change the situation for example – if Roy’s medical insurance balks at paying for a desired treatment he might stand his ground and fight for payment.

- **Seeking social support** (can be problem or emotion-focused) trying to acquire informational or emotional support. For instance, Roy might ask friends and nurses about different specialists (informational support with a problem-focused function) and describe his worries to get comfort and encouragement from people he loves (emotion focused function).

- **Distancing** (emotion-focused) making cognitive efforts to detach oneself from the situation or create a positive outlook. As an example, Roy might try not to think about the health related problem he’s facing or try to make light of them.

- **Escape-avoidance** (emotion-focused) thinking wishfully about the situation or taking action to escape or avoid it. For instance, Roy might engage in fantasies of miracles or other external happenings that would make his problems go away or he might try to avoid dealing with the problems by sleeping or using alcohol a lot.

- **Self control** (emotion-focused) attempting to modulate one’s own feelings or actions in relation to the problem. And so Roy might hide his feelings to prevent emotional interactions with others or slow down the pace of decision-making to prevent impulsive choices.

- **Accepting responsibility** (emotion-focused) acknowledging one’s own role in the problem while also trying to put things right. For example,
Roy might lecture himself for not having gotten medical attention sooner and promise to respond to symptoms more promptly in the future.

- **Positive reappraisal** (emotion-focused), trying to create a positive meaning from the situation in terms of personal growth, sometimes with a religious tone. For instance, Roy might become a better or stronger person from the experience or feel that he has developed a stronger faith.

There is no one best method of coping. No single method is uniformly applied or effective with all stressful situations. Research has revealed two important patterns in the way people cope. First, individuals tend to be consistent in the way they cope with a particular type of stressor that is, when faced with the same problem people tend to use the same method they used in the past. Second people seldom use just one method to cope with a stressor. Their efforts typically involve a combination of strategies. Such as planful problem solving and denial. The degree to which individuals rely on strategies that promote avoidance of the problem may have important health implications.

A one year prospective study compared people who differed in their reported use of avoidance-promoting approaches. Of the subjects who experienced a high degree of stress during the intervening year, those who had reported a greater tendency to use avoidance promoting methods had, at the end of the study more psychosomatic symptoms – for example, headaches and acid stomach.

**SKILL OF DECISION MAKING**

The dictionary meaning of decision is the act of reaching conclusion or making up one’s mind. Decision making has been discussed by various authors in various ways of describing as a process, or in the from theories or models.

Decision making implies a process, which occurs over a period of time. Theory and research reveal that decision making involves becoming aware of the need to make a decision going through a process of working on that decision (i.e. gathering information, identifying options, evaluating options, selecting among options) making a decision and then taking action to implement that decision. On the basis of this viewpoint, decision-making
refers to making a choice among options and it occurs during problem solving. But not all decision making is part of problem solving. It is therefore, presented as a separate thinking skill.

Decision making is the process of choosing a course of action from the alternatives to achieve a desired goal. It consists of activities an individual performs to come to a conclusion. According to Haynes and Massie, “decision making is a process of selection from a set of altered courses of action which is thought to fulfil the objective of the decision problem more satisfactorily than others”. Decision-making is a process of selection and the aim is to select the best alternative.

This process consists of four interrelated phases, explorative (searching for decision occasion), speculative (identifying the factors affecting the decision problem) evaluative (analyzing and weighing alternative courses of action) and selective (choice of the best course of action).

There is a close relationship between planning and decision-making. In the planning process individual decide the goals to be pursued, what resources will be used and what actions will be taken to achieve the goals. The entire planning process involves individual in a continual series of decision making situations. The quality of decisions will determine how effective the plans will be suggested four stages in the decision making process. At each stage, the person choosing from alternative requires certain informant:

- Information about alternative actions;
- Information about possible alternative outcomes;
- Information about probabilities linking actions to outcomes; and.
- Information about preferences from the various outcomes.

Gelatt's (1962) decision making framework assumes a decision maker who requires information to produce a recommended course of action, which may be terminal or investigatory depending upon how it relates to the decision maker’s purpose. In 1989, Gelatt summed up decision making as the process of arranging and rearranging information into a choice of action. For Janis and Mann (1977) decision making involves a conflict within each individual, who
is faced with a personally relevant decision as simultaneously opposing tendencies to accept and reject a given course of action. According to Arsham (1994-2006), decision-making is central to human activity and is the core of all managerial activities. Planning, for example, involves the following decisions.

What should be done? How? Where? By whom? As shown in the following figure 1.8.

<table>
<thead>
<tr>
<th>Perceiving</th>
<th>Implementing</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Need</td>
<td>Prescribing</td>
</tr>
<tr>
<td>Describing</td>
<td>Controlling</td>
</tr>
<tr>
<td>Why?</td>
<td>Where?</td>
</tr>
<tr>
<td>What?</td>
<td>Who?</td>
</tr>
<tr>
<td>When?</td>
<td>How?</td>
</tr>
<tr>
<td>Questions relevant to decision making process</td>
<td></td>
</tr>
</tbody>
</table>

**Fig. 1.8 : Process of Decision Making.**

The decision making process contains a few well-defined stages, including describing, prescribing and controlling the problem, each of these stages requires a set of relevant questions to be asked. Moreover, this process is never ending since the problem keeps changing, therefore there is always need for feedback to measure the effect of decision. Each decision problem makes the one successful as the decisions becomes rules, which afterwards serves to make other decisions.

**Characteristics of Decision Making**

- Decision making is a **goal oriented** process. Decisions are made to achieve certain goals i.e. to bridge the gap between the present position and the desired position. A decision is good to the extent it helps in attaining the desired goal.
- Decision making involves **choice or selection** of the most appropriate course of action out of various alternatives. Unless there are two or more alternatives there is no need for decision-making.
- Decision making is an **ongoing or continuous process.** An individual regularly make decisions and managerial job is perpetually a decision making exercise. Decision making is a recurring activity.
- Decision making is an **intellectual process.** Decisions are the outcome
of deliberations, reasoning, judgements, and evaluation. It also involves intuition and experience

- Decision making is a **dynamic process**. It involves a time dimension and a time lag. The techniques used for making decisions vary with the type of problem involved and the time available for its solution.

- Decision making is **situational**. An individual may take one decision in a particular situation and opposite decision in another situation. There may also be a decision not to act.

- Decision-making involves **commitment of time, efforts and resources**. Once a decision is taken the organization commits itself in a particular manner.

- Decision making is **pervasive**. Individual at all levels take decisions through the nature and significance of decisions taken may vary from one level to another.

**Process of Rational Decision Making**

Decision-making can be rational or irrational. Rational decision-making means taking decisions on the basis of facts and logical reasoning. A decision maker is said to be rational when he identifies and analyzes the problem systematically, identify alternatives and selects the most appropriate alternative on the basis of relevant data. On the other hand decision-making becomes irrational when the decision maker depends purely on hunch and intuition without using the relevant facts and figures.

**Table 1.1 : Traditional and Scientific Methods of Decision Making : A Comparison.**

<table>
<thead>
<tr>
<th>Traditional method</th>
<th>Scientific method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of hunch and intuition</td>
<td>Use of information and reasoning</td>
</tr>
<tr>
<td>Trial and error approach</td>
<td>Systematic approach</td>
</tr>
<tr>
<td>Judgemental</td>
<td>Analytical</td>
</tr>
<tr>
<td>Traditional technique</td>
<td>Modern technique</td>
</tr>
<tr>
<td>No use of operations research techniques</td>
<td>Quantitative and operations research techniques used</td>
</tr>
</tbody>
</table>
STEPS OF RATIONAL DECISION MAKING

Rational decision making is a systematic process consisting of the following steps:

- **Identify the Problem**

  The decision making process begins with the recognition of a problem that requires a decision. The problem may arise due to gap between present and desired state of affairs. That threats and opportunities created by environmental changes may also create decision problems. At this stage, a decision maker should identify and define the real problem. A problem well defined is half solved. In order to recognise the problem quickly, he must continuously monitor the decision making environment. Imagination, experience and judgement are required for detection of problems that require decisions.

- **Diagnose the Problem**

  Diagnosing the real problem implies analysing it in terms of its elements, its magnitude, its urgency, its causes, and its relation with the other problems. In order to diagnose the problem correctly, a decision maker must obtain all pertinent facts and analyse them carefully. The most important part of diagnosing the problem is finding out the real causes or sources of the problem. Symptoms must not be mistaken for real problems.

![Decision Making Process](image)
• **Discover Alternatives**

The next step is to search for the various possible alternatives. An executive should not jump on the first feasible alternative to solve the problem quickly. The courses of action open to decision maker are not always evident. A decision maker has to use his ingenuity and creativity to spot and interrelate them. A reasonably wide range of alternatives increases the manager’s freedom of choice. But it is wise for management to limit itself to the discovery of those alternatives which are critical or strategic to the problem. The principle of the limiting factor should be followed for this purpose. According to Barnard, “Strategic factors refer to those that are most important in determining the action to be taken in solving a given problem”. Development of alternatives is a creative process requiring research and imagination. It is necessary to ensure that the best alternatives are considered before a course of action is selected. Relevant information must be collected and analysed for this purpose.

• **Evaluate Alternatives**

Once the alternatives are discovered, the next stage is to evaluate or screen each feasible alternative. Evaluation is the process of measuring the positive and negative consequences of each alternative. Both quantitative and qualitative evaluation is needed to ensure that all tangible and intangible factors are taken into account. The element of risk involved in each alternative and the resources available for its implementation should also be considered.

• **Select the Best Alternative**

After evaluation, the optimum alternative is selected. Optimum alternative is the alternative that will maximize the results under given conditions. Choice of the best alternative is the most critical point in decision-making. The ability to select the best course of action from several possible alternatives separates the successful decision makers from the unsuccessful ones. Past experience, experimentation, research and analysis are useful in selecting the best alternative.
Implementation and Follow-up

Once a decision is made it needs to be implemented. Implementation involves several steps:

First, the decision should be communicated to those responsible for its implementation.

Secondly, acceptance of the decision should be obtained.

Thirdly, procedures and time sequence should be established for implementation.

Necessary resources should be allocated and responsibility for specific tasks should be assigned to individuals. The implementation of the decision should be constantly monitored. The effects of the decision should be judged through periodic progress reports. In case the feedback indicates that the decision is not yielding the desired results, necessary change should be made in the decision or in its implementation.

Herbert Simon has identified three phases in the decision making process:

- Intelligence activity involves a search for the conditions underlying the decision. It includes identification and diagnosis of the problem, definition of objectives and collection of information.
- Decision activity is concerned with the generation and evaluation of alternative courses of action.
- Choice activity implies selection of the best course of action. Post choice activity involves implementation of the decision.

Decision making includes problem solving, which requires high acceptance of solution. Decision making also includes other types of decision-making not clearly classified as problem solving. A decision is a choice among alternative proposals, the sum of which constitutes all or part of the group's task performance.

SKILL OF ACQUIRING KNOWLEDGE

By skill of Acquiring Knowledge we mean to increase knowledge...
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around the content of what is being taught/learned as well as the familiarity level of comfort. Here one is aimed at acquiring the compiled, automatized, functional and proceduralized knowledge characteristic of a well developed cognitive skill. It also implies in Acquiring Knowledge and skills within the training environment how quickly individuals are flexibly using new skills.

Helping students to acquire and integrate new knowledge is one of the main aspects of learning. When students are learning new information, they must be guided in relation the new knowledge to what they already know, organizing information and then making it part of their long term memory when students are acquiring new skills and processes, they must learn the steps, then shape the skill or process to make it efficient and effective for them and finally, internalize or practice the skill or process so they can perform it easily.

Concept of achievement: No matter what else schools find themselves doing, promoting academic achievement is among their primary functions (Ladson-Billing, G., 1999). Achievement is one of the most important goals of education. In the process of educating the young ones the stress and focus have come to the measurement and evaluation of student’s achievement in school and college subjects. The outcomes of the education are usually characterized as the achievement of those who have been educated. These may be expressed in terms of whether or not the aims of education were fulfilled in relation to those individuals and to that degree. In order to find out what has been achieved one requires some form of assessment.

Unfortunately the term academic achievement is not much more concretely defined. It is used with some frequency in the literature on public schools and is often employed interchangeably with the term achievement alone. In general the biggest dispute is about how best to measure academic achievement; little debate occurs about the characteristics of its definition.

Different authors have defined concept of academic achievement differently and their definitions cover different dimensions of achievement. Achievement is synonymous with the accomplishment of proficiency of performance in a given skill or body of knowledge.

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Trow (1956) defined academic achievement as the attained ability or degree of competence in school tasks usually as measured by a standardized tests and expressed in age or grade units based on norms derived from a wide sampling of pupil’s performance.

Crow and Crow (1956): Achievement means the extent to which a learner is profiting from instruction in a given area of Learning.

Pressey, Robinson and Horrock (1959) defined achievement as “the status or level of person’s Learning and his ability to apply what he has learned”. According to them achievement would not only include acquisition of knowledge and skills but also attitudes and values as aspects of achievement. Achievement as manifested by the application of acquired skills and knowledge is a product of learning attitudes and interests since these factors would implicitly influence the extent of achievement.

Good (1959) the Dictionary of Education, referred to academic achievement as the knowledge attained or skill developed in the school subjects, usually designated by test scores or marks assigned by the teacher.

Dyer (1960) was of the view that academic achievement is the sum total of information a student has at his command when he finishes the course of instruction.

Mehta (1969) expressed the view that the word ‘performance’ is a wider term that includes both academic and co-curricular performances of an individual. Achievement is the learning outcome of student. The level of achievement in the academic field of student is included in the performance of an individual.

Biswa and Aggarwal (1971) have similar viewpoint regarding academic achievement as they place emphasis on knowledge attained or skills developed in the academic subjects. It is competence actually shown by the pupils in the subjects in which they have received instruction.

According to Wolman (1973) academic achievement is the degree or level of proficiency attained in scholastic or academic work.

Page and Thomas (1979), in International Dictionary of Education
defined “achievement as performance in school or college in a standardized series of educational tests. That term is used more generally to describe performance in the subjects of the curriculum.

Hawes and Hawes (1982) defined achievement as successful accomplishments or performance in particular subject, area or courses usually by reasons of skills, hard work and interest typically summarized in various types of grades, marks, scores or descriptive commentary.

Turban, E. (1993) Knowledge acquisition involves actually capturing the knowledge. There are five stages in the knowledge acquisition process.

1) Identification – Identifies the problem characteristics.
2) Conceptualization – finds concepts to represent the knowledge.
3) Formalization – Design the structure to organise the knowledge.
4) Implementation – Formulates rules, frames etc., to represent the knowledge.
5) Testing – validates the rules that organise the knowledge.

According to Oxford Advanced Learners Dictionary (1997) achievement is a thing done successfully especially with effort and skill.

Ladson and Billings, G. (1999) states that at its best, academic achievement represents intellectual growth and the ability to participate in the production of knowledge. At its worst, academic achievement represents inculcation and mindless indoctrination of the young into cannons and orthodoxy of the old.

According to Megargee, E.I. (2000), Achievement tests how well students have mastered the subject in the course of instruction.

Getting evidence of the degree to which pupils acquired factual information or understanding or the ability apply what they know is always made easier when teachers are able to define exactly what they mean in each instance. If a teacher, for example, means by teaching factual information that his pupils should be able to answer appropriate questions requiring the facts immediately, this given him a good idea as to the kind of test questions to use
to get evidence of the success of his teaching. If he defines understanding as meaning to paraphrase, to pick out the central idea, to explain, or to make correct inferences, each of these definitions helps him in the construction of items to get evidence on the degree to which his pupils can do these things. Whether or not a pupil has learned facts or acquired skill of information of a factual nature can be measured in either of two ways:

(i) One way is to find out whether or not he can recognize correct facts, that is, facts should be given in response to specific question. As illustration of recognizing the correct fact would be a pupil’s underlining of the 3rd choice in the following multiple choice question: Underline the name of India’s present Prime Minister:

1. Nehru
2. Shastri
3. Manmohan Singh
4. Indira Gandhi

The pupil may not have able to recall the name Manmohan Singh but he could recognize it as correct.

(ii) The second general method of getting evidence as to whether or not pupils have acquired the skill of information in the sense of remembering facts, names, principles or other items of information is to find out whether or not they can recall them. A question similar to the above that requires recall might be worded as follows: What is the name of the present Prime Minister of India?

In both the methods skill of Acquiring Knowledge is measured through achievement of facts or information.

Achievement is synonymous with the accomplishment or proficiency of performance in a given skill or body of knowledge. Good (1959) in the Dictionary of Education, referred to academic achievement as the knowledge attained or skill developed in the school subjects, usually designed by test scores or marks assigned by the teacher. Hawes and Hawes (1982) defined achievement as successful accomplishment or performance in particular subject, area or courses, usually by reasons of skills, hard work and interest, typically summarized in various types of trades, marks, scores or descriptive
commentary. **Oxford Advanced Learner’s Dictionary of Current English (2002)**, achievement is a thing done successfully especially with effort and skill.

For **McCombs and Marzano (1990)**, achievement outcomes have been regarded as a function of two characteristics, skill and will. These must be considered separately because possessing the will may not ensure success if the skill is lacking. An achievement is simply the successful conclusion of a worthwhile task, project, or goal. It includes skill of ability to prioritize, create plans, overcome obstacles and follow through, etc., which are essential skills for professional and personal success. Here is a brief summary of six essential components of skill of Acquiring Knowledge (achievement):

- **Define Goals and Objectives**: The ability to clearly define goals and objectives is the first, critical step to the achievement of those goals and objectives. Without a clear vision, one’s chance of achievement can be drastically limited.

- **Create a Plan**: Achievement don’t happen by accident. They are the result of focused effort and actions. For this one’s plan must be realistic and viable, meaning that if followed, it has a reasonable likelihood of success.

- **Overcome Obstacles**: Problems, challenges, and unforeseeable setbacks are a natural part of life. Developing and improving one’s abilities to overcome obstacles—both mental attitude and problem-solving abilities, is an essential part of any worthwhile achievement.

- **Preserve**: Some of the most rewarding achievement require the greatest investment in time and resources. Having a commitment to preserve, especially when faced with obstacles, is a key differentiator between achievement and failure.

- **Involve Others**: No one becomes successful alone. Individual and team achievement is greatly impacted by one’s abilities to delegate, ask for assistance, and solicit support from friends, family, co-workers, mentors and others who have experience in the area of one’s pursuits.
• **Recognize Partial Success**: Every major achievement is the culmination of many little one’s with each of smaller achievement providing important steps that lead to success.

    As one complete each task in his plan, the sense of achievement tests were used to assess the skill of Acquiring Knowledge.

    From the definitions given above it may be concluded that academic achievement is the core of wider to term educational growth and perhaps none would deny the importance of academic achievement in child’s life. Achievement in the school may be taken to mean any desirable learning that is observed in the students. Since the word desirable implies a value judgment it is obvious that a particular piece of learning maybe referred to as achievement or otherwise depending on whether it is considered desirable or not. Achievement is used in this broad sense. It is customary for schools and colleges to be concerned to a greater extent with the development of knowledge understanding and acquisition of skills.

    In short academic achievement is a measure of understanding or skills in a specified subject or group of subjects. The academic achievement maybe for a particular subject or a total score of several subjects combined. Hence, academic achievement is concerned with the quantity and quality of learning attained in a the subject of study or group of subjects, after a period of instruction.

**Assessment of Academic Achievement**

    Perhaps, no one would deny the importance of academic achievement in child’s life. The success or failure of the student is measured in terms of academic achievement. It is the common observation that success in the academic field serves as an emotional tonic and any damage done to a child in the home or neighbourhood may be partially repaired by the success in the school. High achievement in school builds self-esteem, self-confidence, and strengthens self-efficacy believes that leads to better adjustment with the groups. Good academic record to certain extent predicts future of the child. Today, at the time of admission, for entrance in job, for scholarship, for future
studies good academic record is the only yardstick. Whatever one’s interest, attitude, or the aptitude may be one cannot underestimate the importance of academic record. It also helps the teachers to know whether teaching methods are effective or not and helps them in bringing improvement accordingly. Thus, assessment of academic achievement helps both students and teachers to know where they stand.

The assessment of academic achievement has long been a routine part of all educational processes. It has two purposes:

- Specifying and verifying problems and
- Making decisions about students

It aims to assist professionals in making decisions about the referral, screening, classification, instructional planning and student progress.

**Methods of Assessing Academic Achievement**

Typically, the most common method of testing academic achievement is through teacher–designed tests. These informal metrics identify specific objectives that have previously been taught and evaluate the degree to which students have mastered these objectives. Beyond these routine, everyday classroom–based assessment procedures, schools have commonly relied on larger scale evaluation of student achievement. Evaluation procedures can be focussed on specific individuals or entire groups of students. When focussed on individuals, the assessment methods are designed to make decisions about an individual student’s achievement, typically determining the actual acquisition, retention and progress of skill development against expected levels of achievement. When focussed on groups, the decisions are more related to the outcomes of program evaluation, examining the degree to which schools or school districts as a whole are meeting wide scale, district defined objectives.

Methods of assessing academic achievement can be categorized into one of four types:

- Standardized norm referenced tests
- Criterion referenced tests
Performance based assessment and
Curriculum based assessment

- **Standardized Norm Referenced Test**
  
  Norm referenced tests are designed to determine a student’s standing relative to similar age/grade peers. The results of the measure are usually reported in some form of standard scores and can be helpful in establishing a student’s achievement against a sample drawn from a target population.

- **Criterion Referenced Tests**
  
  Criterion – referenced tests are designed to determine the acquisition of specific skills against a pre-established standards. Teachers made tests are some of the best examples of these types of measures. Scores on these measures are usually reported in the percentage of skills mastered.

- **Performance Based Assessment**
  
  These measures are designed to provide indications of a student’s learned skills as demonstrated through material that is produced under conditions that simulate events occurring in the environment where the skill needs to be produced. Included among these measures would be lab demonstrations, artistic performances, writing samples, job evaluation systems and other types of skills that demonstrate learning through the integration and application of the knowledge.

- **Curriculum Based Assessment**
  
  Curriculum based assessment represents attempts to assess a student’s performance using expected curriculum objectives as the data for evaluation. There are multiple models of curriculum based assessment, but all models are focussed on evaluating student progress in an ongoing manner directly from a curriculum.

**FACTORS AFFECTING ACHIEVEMENT**

Academic achievement is considered to be unique responsibility of educational institutions. Knowledge of level of correlation between different
factors and academic achievement is, therefore, necessary for the teacher in ascertaining what contributes to high and low achievement of students. This is also of great concern to the parents, institutions and the society. Truly speaking the future of any institution depends upon the academic achievement of its students.

Academic achievement is a multidimensional, multifaceted phenomenon. Dave (1975) reviewed seventeen studies on factors affecting achievement. They vary from intelligence to physical health through social economic status of the family, sex, cost, distance of school from home and leisure time activities.

There are a innumerable factors which affect academic achievement viz. intelligence, personality, motivation, school environment, heredity, home environment, Learning experiences of school and class in particular etc. the factors like interests, aptitude, family background and socio-economic status of the parent also influence the academic achievement.

In a comprehensive study, Sinha (1970) asked high and low achievers to check factors that they considered important in order of achievement significance. These were: hard work, intelligence, memory, good health, availability of books, methods of study, financial difficulties, interest in social and practical work.

According to McCombs and Marzano (1990), achievement outcomes have been regarded as a function of two characteristics skill and will. These must be considered separately because possessing the will alone may not ensure success, mail if the skill is lacking.

There are several factors that are responsible for high and low achievements of the students and these factors can be grouped into two broad class’s: subjective factors and objective factors.

- **Subjective and Psychological Factors**
  These are related to individual himself while influencing one’s achievement for example intelligence, Learning ability, motivation, self-efficacy, Learning style, study habits etc.
Fig 1.10: Figure showing factors affecting achievement.
• Objectives or / and Environmental Factors

These factors, conforming to the environment of the individual include socio-economic status, educational system, family environment, environment evaluation system, value system, teacher’s efficiency, school situation etc.

Factors affecting achievement listed on the basis of different research findings have been presented in the figure 1.10.

The factors have been classified into following categories of their sources:

- **Cognitive factors** like intelligence, creativity, ability, Learning rate, reasoning ability etc.
- **Affective factors** like values, interests, self-efficacy, perseverance, stress etc.
- **Home related factors**: socio-economic status, family size, birth order, gender bias parental involvement, parental expectation, working status of parents
- **Time factors**: time spent, time allowed
- **Miscellaneous factors**: culture, locate, age, gender etc.

As one complete each task in his plan, the sense of achievement will continue to rise. This creates a pattern of personal success that will help to attain every goal one chose to pursue throughout his life. In the present study, achievement in academic subject was the prime concern of investigator; therefore achievement tests were used to assess the skill of Acquiring Knowledge.

1.4 LEARNING APPROACHES

The ability to learn is the most important skill one can acquire. An individual is often confronted with the new experience or learning situation in life, in careers, or on job. In order to be effective learner one have to shift from getting involve, to listening, to creating an idea to make decisions. One can develop learning approach and understanding learning approach helps one
Introduction

become aware of strengths in some steps of the learning cycle. The learning effectiveness can be improved by using the steps that one under use. Understanding learning approach help one to choose the appropriate careers, help in problem solving, managing people and working as a part of team. Better learning performance and life situation can be achieved through improving the match between learning approach and life situation.

As the year 2000 approaches, there are important advances to be anticipated, and challenging task to be identified in teaching and learning approaches. Good teaching was seen as involving pitching the material at the right level, presenting it at an appropriate pace and within a clear logical structure, providing an explanation which facilitated understanding and demonstrated both enthusiasm and empathy. Learning and teaching are two aspects of the same process that involve teacher, learner, content, and instructional material. All the activities of teaching focus on bringing about the desired learning with intention to emerge some changes in potentials, abilities and behaviour of learners. Key elements of quality learning relate to students’ perceptions of quality teaching which in turn influences their approach to study and ultimately learning outcome.

Over the past three decades, education researches have approached an understanding of learning from a phenomenon-logical perspective. Qualitative methods were employed to assess students’ experience of learning and the ways in which they made sense of the individual approach to the tasks prescribed by their course of study. The work developed by these educational researchers has moved away from an assumption of stable personality characteristics and has placed greater emphasis on the choices an individual makes in selecting an approach to a learning task.

The choice an individual makes in selecting an approach to a learning task, was somewhat the education researchers had approached to an understanding of learning. These researchers also moved away from several usual assumptions that may affect task, but a great emphasis was laid on the choices an individual makes in finding an approach to a learning task.
According to James Rhem (1995), in the United States stated, the phrase learning styles commonly accompanies discussions of personality differences. These discussions almost always create a kink of short-term, local excitement, but they tend to exaggerate the correlations between individual personality types and cognitive engagement. As Wibert McKeachie (1988) pointed out in the last issue of The National Teaching and Learning Forum, the best validated conceptions of learning styles stem instead from research begun in Sweden in the mid-1970s by Ference Marton and Roger Saljo.

In the last twenty years, this line of inquiry (in which the idea of styles emerges as secondary to larger preoccupation with approaches to learning) has been pursued by many researchers working in a variety of countries. The research has looked at thousands of students studying in over 40 disciplines. Repeatedly, it has found fundamental patterns in studying and learning behaviour as it actually occurs within the context of university education.

Probably the most influential finding of the original experiments, the researchers say, was what they describe as an obvious aspect virtually ignored by earlier research. And that was the fact that many students did not get the point of what they were reading simply because they were not looking for it. What were they then looking for? They were looking for the facts they thought they would be tested on. They were not looking for the meaning the text. In a sense, for them, at least perceived the situation, the meaning of the text stood in direct relation to the way they expected to be assessed. They were taking what has become known as a Surface Approach rather than a Deep Approach to learning.

Alarmingly, studies in Australia suggested that students progressively deepen a Deep Approach to learning as they move through high schools and schools and college. It appears that in many ways. Traditional teaching pushes students towards superficial levels of engagement with material, even as it hopes to do the opposite. To find out, this problem these researchers put students at the centre of their work and took a qualitative like at what students thought they were doing when they studied. They avoided questions such as:
• Do introverts learn mathematics more easily than extroverts?
• Why are some teachers more effective than others?

Instead of asking how and why questions, they concentrated on what questions: What does it take to be good at learning from a text; to learn arithmetic; or to be an effective teacher?

The shift towards a fuller understanding of learning phenomena involved an inquiry into the meaning of the underlying human actions behind them. Instead of projecting laboratory ideas about learning onto real-world settings, and rather than assuming that output or achievement equal intelligence, they actually went about studying in particular phenomenon more influenced by the demands of particular learning environment than by predispositions of personality. The research does not boil down into an easy or mechanistic answer to the challenges of good college teaching precisely because it shows very clearly how learning and teaching must be considered in relation to both the content and the context of the teaching.

But repeatedly, Ference Marton (1975); Noel Entwistle (1987); Paul Ramsden (1984) and most of colleagues found the same emerging patterns which have strong implications for making teaching in college effective. For example, the same student may take a Deep Approach in a humanities class where just grabbing the facts and formulae seems to equal academic success. Indeed, the very way I which these researchers, in dialogue with one another, moved towards the term approach and away from the term process indicated how inseparable an awareness of context is from their insights into how students learn. Approach, they feel, embraces a sense of the student’s intention in taking up learning task as well as how the students does about the task (processing it).

Intention emerges as perhaps the dominant idea in the pair (if one must dominate) because the how’s of learning necessarily vary. And this is where the Deep/Surface Approach literature tasks up the idea of learning styles, not in terms of fixed traits of unyielding attributes of individual students, but in terms of cognitive (and social) orientations with in Deep or Surface Approaches to
learning. It’s true that the how’s do vary in response to personal preference, habit, and personality, but they vary more in response to a student build toward understanding in one of two general ways. Some draw a quick mental sketch of the material to be grasped, using analogies, metaphors, and ties to personal experience, and then fill in and alter that framework as they acquire more and more detailed information. Others build up a framework piece by piece only as they acquire knowledge of the details.

- The first approach roughly describes what researchers call comprehension learning.
- The second describes operations leaning. Both are necessary on both global and local levels to develop real understanding.

Social orientations also affect student learning. Research at the Oxford Polytechnic and the Open University found four general social orientations: academic, vocational, personal, and social. Each of these also differed in response to the amount of extrinsic or intrinsic motivation students felt.

Ramsden (1984) emphasized that a delicate balance was needed. It was not so much the specific teaching and assessment methods one used that make the difference to the quality of student learning, but the reasons why one used them and the way his students perceived him. The key thing to understand about approaches was that they arise from the student’s perception of the teacher’s requirements.

In the field of educational research, researchers have employed a range of methods to study the learning outcomes. But over the past 28 years quantitative approaches, using psychometric techniques to develop questionnaires to access students’ approaches to studying have been adopted by Entwistle, Hanley and Hounsell (1979), Biggs (1987) and Schmeck, Ribich and Ramaniah (1977). Measuring students’ approaches to learning has been seen as a means of:

- Encouraging a more systematic approach to academic teaching.
- Assisting individual academics that are concerned to monitor and improve the effectiveness of their own teaching.
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- Identifying students at risk through ineffective study strategies.
- Observing the outcomes and experience of learning.
- Evaluating the quality of student learning. There are four key classifications, which however, offer a checklist of general features to consider in developing strategies and cultivation environments, which help Deep Approaches to thrive.
- Motivational context: We learn best when we feel we need to know. Intrinsic motivation remains inextricably bound to some level of choice and control. Courses that remove these take away the sense of ownership and kill one of the strongest elements in lasting learning.
- Learner Activity: Deep learning and doing travel together. Dong in itself isn’t enough. Faculty must connect activity to the abstract conceptions that make sense of it, but passive mental postures lead to superficial learning.
- Interaction with others: As Noel Entwistle (1981) put it in an email message, the teacher is not the only source of instruction or inspiration. Peers working as groups enjoin dimensions of learning that lectures and readings by themselves cannot touch.
- A well structured knowledge base: This doesn’t just mean presenting new material in an organized way. It also means engaging and reshaping the concepts students bring with them when they register. Deep Approaches, learning for understanding, are integrative processes. The more fully new concepts can be connected with students’ prior experience and existing knowledge, the more likely it is they will be impatient with inert facts and eager to achieve their own syntheses. The experimental procedure adopted by Marton (1975a, 1975b) and Saljo (1975) in their qualitative studies described what the students had preferred ways of tackling their learning task, thus different approaches to study were found among learners. In many ways this tide of research ends up affirming the primary importance of helping students learn how to learn, how to study, how to know themselves as learners. Study skills
Introduction
courses, however do not do that, cultivating this awareness must become part of coursework itself. The approaches adopted by students deep or surface don’t represent intelligence or character (or personality). It represents a relationship between the student and what he or she is trying to grasp.

Learning means different things to different people. Saljo (1979) classified the conceptions held by respondents in his interview based study into five categories:

1. Learning is a quantitative increase in knowledge. Learning is acquiring information or knowledge a lot.
2. Learning as memorizing. Learning is storing information that can be reproduced.
3. Learning as acquiring facts, skills and methods that can be retained and used as necessary.
4. Learning as making sense or abstracting meaning. Learning involves relating parts of the subject to each other and to the real world.
5. Learning as interpreting and understanding reality in a different way. Learning involves comprehending the world by re-interpreting knowledge.

It has been argued that 1, 2 and 3 are views, which underpin surface learning strategies, while 4 and 5 relate to deep learning.

Biggs (1887 a), Entwistle and Entwistle (1991) and Trigwell and Prosser (1991) have confirmed that the approaches student adopt have subsequent effect on the quality of learning.

The research findings of McKeachie (1998), Schmeck (1988), Weinstein and Van Mater Stone (1992) have also suggested that learning and studying process adopted by students are helpful to distinguish the successful students from less successful ones. Murray Harvey (1993) using path analysis to investigate students learning in higher education, also concluded that learning process variables such as approaches to studying are important factors in determining students learning progress.
Approach to learning can be described as the relationship between the student and a learning task. This process is not static state but is dynamic and changes as the situation changes. According to the Ramsden (1985), an approach is an “Intentional phenomena” that is directed by the individual to the outside world. It is about how students experience education. They will behave in a way that they think will get them a reward (such as high marks in an assessment) and will adapt to what they perceive is expected of them. They will do what they think the lectures wants; this may be either implicit or explicit.

Factors Influencing the Students’ Adoption of Approaches to Learning

Biggs (1993) proposed a framework for understanding student learning through consideration of the relations between what teachers and students do and think and the nature of student learning outcomes. That model, commonly referred to as the 3P model (presage, process and product factors), represents not only a linear movement from presage to process to product, but also allows for interactions between the components that form an integrated system, which is in equilibrium. A change to any part of the system affects other parts of the system.

Presage factors include both student characteristics and aspects of the teaching context. Student presage factors are relatively stable learning-related characteristics that include conceptions of learning, prior knowledge, motivation, work habits, study skills abilities, locus of control orientation perceived self efficacy, learning style and social and cultural factors. Teaching presage factors include conceptions of learning and teaching, teaching styles and methods, curriculum organization, task difficulty, assessment procedures, time available, freedom allowed, classroom management, resource materials and the classroom climate.

Process factors are the result of interaction between students and teaching presage factors and refers to the way the students handle the Learning task by adopting deep, surface or achieving approaches to Learning. Deep is defined as the learning approach characterized by intention to seek the meaning of the material being studied by using the material to elaborate and transform it.
In the surface approach, the material being studied is reproduced using routine procedures. A deep approach to learn is associated with constructivist teaching which suggested that learners actively construct knowledge for themselves. On the other hand a surface approach to learning is related to the tradition transmission models of teaching in which information is transferred from teachers to learners and in which learners assume passive roles.

*Fig. 1.11 : The 3P Model as a Classroom System (Biggs and Moore, 1993).*

An achieving approach, in which intention is ego enhancement or excelling in organized activities and cue seeking behaviour.

**Product** factors are the outcomes of learning and are determined mainly by the approaches to students learning. Outcomes may be categorized
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quantitatively (how much is learned), qualitatively (how well it is learned), and institutionally (relating to either quantitative or qualitative outcomes or both, leading to the awarding of grades).

Deep and surface are two approaches to study, derived from Original empirical research by Marton and Saljo (1976) and since elaborated by Ramsden (1992), Biggs (1987, 1993) and Entwistle (1981), among others.

It is important to clarify what they are not.

• Although learners may be classified as “deep” or “surface”, they are not attributes of individuals; one person may use both approaches at different times, although she or he may have a preference for one or the other.

• They correlate fairly closely with motivation: Deep with intrinsic motivation and surface with extrinsic, but they are not necessarily the same thing. Either approach can be adopted by a person with either motivation.

There is a third form, known as the ‘Achieving’ or ‘Strategic’ approach, which can be summarized as a very well organized form of surface approach, and in which the motivation is to get good marks. The exercise of learning is constructed as a game, so that acquisition of technique improves performance. It works as well as the analogy: Insofar as learning is not a game, it breaks down.

For the measurement of learning approaches, surface Motive (SM), Surface Strategy (SS), Deep Motive (DM), Deep Strategy (DS), Achieving Motive (AM) and Achieving Strategy (AS) were used by Biggs (1987) for the development of Study Process Questionnaire (SPQ).

Entwistle and Tait (1995) classified the dimensions of learning on the basis of Revised Approaches to studying inventory (RASI).

Deep Approach

• Intention of understand

• Relating ideas
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- Use of evidence
- Active interest

Surface Approach
- Intention to reproduce
- Unrelated memorizing
- Passive learning
- Fear of failure

Strategic Approach
- Study organization
- Time management
- Alertness to assessment demands
- Intention to excel
- Academic self confidence

While reconsidering the dimensions of approaches to learning Kember, D.; Wong, A. and Leung, D.Y.P. (1999) discussed Career Motive (CM); Fear of Failure (FF) and Meaning Approach (MA) in their studies, learning cannot be viewed in isolation but must be seen in a wider content including factors such as the curriculum, assessment, and models of teaching, students’ prior experience of education and their perceptions of learning. The aim therefore, is to create an environment that encourages students to develop a Deep Approach to learning, encouraging students to develop a deeper understanding of course material, which in turn, creates higher quality learning outcomes. Quality learning outcomes include: a good understanding of the discipline, as well as developing higher order skills, such as the ability to think critically and process information at high levels of generality.

Students who have only surface approach to learning do not acquire enough skills to tackle life’s situations and therefore feel panicky when dealing with these situations. The students fail to come to grip with the actual process of communication because the Learning approach that they had temporarily
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undergone was not sufficiently practiced so as to become a permanent behaviour of Deep study approach.

The whole process of education seems to become a single channel broadcast system wherein very little of planned communication takes place. The climate of the usual classroom sometimes becomes very authoritarian and gives the learner no freedom or choice to learn. This leads to a cold war atmosphere and quite often student’s resort to other methods of showing their frustrations. Otherwise, if given opportunities in learning strategies are accessible through introspection.

The research procedure adopted by Marton (1975, 1976) involves asking students how well their understanding of ideas in that chapter tallies with the intentions of the author. Philosophically, even if a theorist, or a saint, sees an important truth, his ability to communicate that truth will be distorted by the formal symbolism with which he tries to pass on his ideas. Those who try to understand the ideas are themselves limited by preconceptions, attitudes and incomplete previous knowledge. It seems an intriguing research idea to investigate the qualitative differences between the ways different students come to understand or misunderstand, what they read.

One another important aspect of Marton’s (1975, 1976) research was that it points up the other strong frame, which limits out ability, think imaginatively about learning. The formal educational system defines in its own characteristics and in rather narrow way. Our examination systems may, infact be encouraging those ineffective learning strategies, which lead the students to rely on the surface structure of language and the regurgitation of facts, rather than on ways of coming to understand important ideas and relationships. This theory of qualitative differences in learning seems to carry with it important implications for educators and the methodology is one which could be followed by teachers and lecturers in relation to their own subject area.

Some researchers have suggested that instruments measuring approaches to learning have an important role in the professional development of teachers in higher education (Richardson, 1990) and in encouraging a more systematic
approach to academic teaching Katz & Henry, (1988). Newstead (1992) observed that in recent decades there has been an explosion of research into individual differences in student learning.

Biggs (1993) set the deep/surface debate in the context of Chinese culture with the consideration of an apparent paradox, echoed by Marton, Watkins and Tang (1997), namely the perception in Asian Cultures that understanding may come through memorization (Tang refers to this as deep memorizing). Kember (1996) discusses the paradox of the Asian learner: anecdotal evidence of rote learning but high academic achievement.

The features of Deep and Surface approaches can be summarized thus:

Table 1.2 : Characteristic features of Deep and Surface approach.

<table>
<thead>
<tr>
<th>Deep</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus is on ‘what is signified’</td>
<td>Focus is on the ‘sign’ (or on the Learning as a signifier of something else)</td>
</tr>
<tr>
<td>Relates previous knowledge to new knowledge.</td>
<td>Focus on unrelated part of the task</td>
</tr>
<tr>
<td>Relates knowledge from different course.</td>
<td>Information for assessment is simply memorized</td>
</tr>
<tr>
<td>Relates theoretical ideas to everyday experience</td>
<td>Facts and concepts are associated unreflectively</td>
</tr>
<tr>
<td>Relates and distinguishes evidence and argument</td>
<td>Principles are not distinguished from examples</td>
</tr>
<tr>
<td>Organizes and structures content into coherent whole</td>
<td>Task is treated as an external imposition.</td>
</tr>
<tr>
<td>Emphasis is internal from within the student</td>
<td>Emphasis is external, from the demands of assessment</td>
</tr>
</tbody>
</table>

(Based on Ramsden 1988)

The surface learner is trying to “suss out” what the teacher wants and to provide it, and is likely to be motivated primarily by fear of failure. One interesting study has suggested that efforts by teachers to convey that what they want is deep learning only succeeds in getting surface learners to engage in ever more complex contextualizing exercises, trying to reproduce the features
of the deep approach, from a surface basis.

Surface Learning tends to be experienced as an uphill struggle, characterised by fighting against boredom and depressive feelings. Deep Learning is experienced as exciting and a gratifying challenge.

There is some evidence that assessment methods can “reach back” into courses in such a way as to make surface approaches more likely it has not so far been demonstrated that appropriate assessment methods can of themselves encourage deep learning.

The deep and surface distinction is a very popular one, much researched, using two main instruments, the Study Process Questionnaire (Biggs, 1987) and Entwistle’s AST. Although the original ideas were derived from the ‘phenomenographic’ approach of open ended measures factor-analysed to yield the basis deep and surface dimensions, later work has concentrated on refining scales to produce the dimensions (thus explicating the “symptoms” of each approach), and thereby the regarded the approaches themselves as given.

One characteristic of the surface approach is its tendency to “miss the point” of the learning. The reading of the evidence is that this may be a generalization which is not completely supported by the evidence, particularly bearing in mind the non-subject specific questionnaire instruments used which may not be able to get at this feature very easily.

What does not appear to have been researched is the problem of the structure of the knowledge being taught. While it is clear that either approach can be applied to practically anything, some subjects call forth a surface approach more readily than others - law is perhaps one example. While there is a correlation between deep approaches and better results in summative assessments, nothing seems to have been done on outcomes in professional practice beyond the institution.

“Learning” means different things to different people. (Saljo, 1979) classified the conception held by respondents in his interview-based study into five categories:
Learning as a quantitative increase in knowledge. Learning is acquiring information or “knowing a lot”.

Learning as acquiring facts, skills and methods that can be retained and used as necessary.

Learning as making sense or abstracting meaning. Learning involves relating parts of the subject matter to each other and to the real world.

Learning as interpreting and understanding reality in a different way.

Learning involves comprehending the world by re-interpreting knowledge.

There is a clear qualitative shift between conceptions 3 and 4. It has been argued that 1, 2 and 3 are views which underpin surface Learning strategies, while 4 and 5 relate to deep Learning.

Marton, Entwistle and Hounsell (1984) have concentrated on the approaches during normal study activities that the approaches to Learning and studying which students adopt in their everyday work can be described in terms of the deep ad surface distinction.

A deep approach to Learning maybe compared with David Ausubel’s idea of a meaningful of Learning set. The students set out with the intention actively to seek out the meaning and to reconstruct a personal understanding of the article. In contrast, a surface approach is narrowly focused on the detail. The students concentrate on rote Learning techniques to reproduce aspects of article about which they expect.

Miller and Pariett (1974) “I play the exam game and the tutor plays too”. The student will concentrate on what will be in the examination and how this will be marked. These techniques can be gathered by sitting in the class and listening to the tutor and will be separated from the actual subject content.

Gordon Pask (1976) and his colleagues identified contrasting styles of topic learning which involved operation learning and comprehension learning. A close correlation is empirically found between a deep approach and comprehension learning and between a surface approach and operation learning.
(a serialistic, narrowly focused style of learning which pay attention to detail and logical sequence).

The Factors to Influence Approaches to Learning

Ramsden and Entwistle (1991) describe four such factors, which seemed to be important to influence approaches to learning:

- Study Orientations (orientation meaning).
- Reproducing Orientations
- Strategic Orientations
- Non academic Orientations.

The first two of these Orientations are general tendencies to utilize deep or surface approach to studying respectively. The third represents an achievement orientation which uses both approach strategies to acquire high grades. However, Biggs (1978) associates his study factors with characteristics forms of motivation.

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Approach</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>Deep</td>
<td>Intrinsic</td>
</tr>
<tr>
<td>Reproducing</td>
<td>Surface</td>
<td>Extrinsic/ fear of failure</td>
</tr>
<tr>
<td>Strategic</td>
<td>Achievement</td>
<td>Need of achievement</td>
</tr>
</tbody>
</table>

Marton and Saljo (1976) in their study, attempted to identify different levels of processing of information among groups of Swedish University students. They were asked to read substantial passage of prose, on which questions were asked about the meaning of prose and also how they set about reading the passages. It was found that a number of categories containing basically different conceptions of the content of the learning task could be identified. The corresponding differences in the levels of processing described whether the learner was engaged in surface or deep approach of processing.

Fransson (1997) showed that content perceived as interesting or personally relevant appeared to facilitate deep Learning, while a Learning situation perceived as anxiety – arousing tended to induce a surface approach.

A study by Sevensson (1977) reported a relationship between the general approach to learning used in everyday studying and examination
performance. Most of the students who consistently adopted a deep approach passed all their examinations, while less than quarter of those using a surface approach were fully successful.

Dalgren and Marton (1978) suggested that students have two concepts of learning. Learning is something that happens to you (a passive attitude) and something that you do (an active attitude). If students are provided with an overloaded curriculum, they will adopt a surface approach to Learning where they will learn sufficient to pass the examination. The strategy for coping with a lot of work, will be to utilize a surface approach to learning and learn everything by rote. Accordingly, the student will use the strategy he thinks will get him the best mark. He will use a utilizing strategy and a surface approach to learning if he is instructed to learn facts by rote Biggs (1979).

A very comprehensive work by Entwistle and Waterson (1985) established 16 styles of learning (subscales) across four domains producing four main factors, which have been described as deep, surface, organized and strategic approaches to learning. The deep and surface factors contain among their component items, the defining features derived from qualitative research, while the remaining two factors are less stable and represent the two main facets of the strategic approach.

Features of Approaches to Learning

Deep Approach:

- Intention to understand
- Vigorous interaction with content
- Relate new ideas to previous knowledge / comprehension learning
- Relate concepts to every day experience
- Relate evidence to conclusions
- Examine the logic of the argument.

Surface Approach

- Intention to complete task requirements
- Memory information needs for assessments
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- 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

It is assumed that there is an underlying trait that could be called approaches to studying. This trait would be exhibited as an attitude prior to studying. The trait is related to five orientations to studying and learning: a deep approach, a surface approach, a strategic approach, clarity of direction in studying and academic self-confidence towards studying. Thus approaches to studying is conceptualized as an attitude derived from the five orientations of studying. This attitude is assumed along with various other subject content aspects such as complexity, difficulty and easiness of explanation, which vary from person to person to be influencing subject behaviour.

TEACHER’S ROLE IN ORIENTATION TOWARDS LEARNING APPROACHES

Curtin University of Technology (2004a) suggested that Surface Approach to learning is encouraged by university teachers who demand mostly memorization, rote learning and a focus on marks through assessment (which creates anxiety); overload the curriculum with excessive material (and focus on covering the syllabus); give little or no feedback on progress, and little choice in methods of learning. Surface approaches are also reinforced when student come from school systems where attainment in the qualifying entrance examination is seen as an end in itself. Meanwhile, a Deep Approach to learning is encouraged by assessment methods that foster active and long term engagement with learning tasks; stimulating teaching which demonstrates the
introduction

lecturer’s personal commitment to the subject matter and stresses its meaning and relevance to students; clearly stated academic expectations; and choice in the method and content of study. It also recommended several ways to improve lecturers to foster Deep Approaches to learning.

- Allow the students take control by inviting them to refocus on their learning, asking questions related to the lecture and breaking the large group into pairs for short sessions.

- Provide summary of the lecture a week earlier and let the students know that the lecture time will be used to solve problems or to discuss issues based on that information.

- Ask student to reflect in silence in order to think, formulate a question, and make a suggestion, to share a task in pairs or in small groups. In large lectures, call the names of students that the lecturer can remember and try to remember more names each week.

- Start the lecture by requesting the students to tell the lecturer about last week’s lecture and its application in their lives or test their comprehension of the lecture.

- Conclude the lecture by allowing the students to self test themselves on whether they have mastered the learning outcomes.

- Research also indicates the following instructional methods help promote deep learning

  - Encouraging faculty/student interaction (e.g. meet groups to plan projects, personalise teaching)

  - Encouraging student/student interaction (e.g., group projects, peer tutoring)

  - Explain to the students that they are expected to participate, contribute to debate and activities and prepare for the tutorial by reading, engaging in activities etc. also remind the students that the lecturer will not generally be using the tutorial as an opportunity to represent the lecture.
• Plan activities that will require students to actively engage rather than passively receive such as role-playing, discuss various aspects of a problem in pairs etc.

According to Christopher Knapper (1998), Deep and Surface learning can be considered in terms of the Bloom’s (1956) Taxonomy of Educational Objectives. Deep learning requires higher order cognitive thinking skills such as analysis (i.e. compare contrast) and synthesis (students are required to integrate components into a new whole, e.g., What is the relationship …) Surface learning, on the other hand, consists mainly of comprehension and reproducing knowledge (rote learning), which is often forgotten by students shortly after the course, has ended.

The University of Queensland, Australia offers guidelines on how to engender a Deep Approach among students by supporting independent learning. Organize appropriate learning activities that require student to be active in their learning experience, reward deep learning and inform students in advance of the marking criteria and standard required. Christopher Knapper (1998) emphasized the roles of manageable workboat, consistency of assessment takes and the learning objectives appropriateness of teaching methods and learning objectives towards encouraging students to adopt the Deep Approach to learning.

The following Table 1.3 compiled from the work of Biggs (1999), Entwistle (1998) and Ramsden (1992) provides some very valuable characteristics of the approaches and illustrates the importance of, How we manage the curriculum impacts on the learning process? For example, clearly stated academic aims, opportunities to exercise some choice and well aligned assessment strategies that help students to build confidence can be found among the factors identified as encouraging a deep approach.
Table 1.3: Characteristics and Factors that encourage deep and surface approaches to learning.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Deep Learning</th>
<th>Surface Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Examining new facts and ideas critically, and tying them into existing cognitive structures and making numerous links between ideas.</td>
<td>Accepting new facts and ideas uncritically and attempting to store them as isolated, unconnected, items</td>
</tr>
<tr>
<td><strong>Characteristics</strong></td>
<td>Looking for meaning. Focusing on the central argument or concepts needed to solve a problem Interacting actively. Distinguishing between argument and evidence. Making connections between different modules. Relating new and previous knowledge. Linking course content to real life.</td>
<td>Relying on rote learning. Focusing on outwards signs and the formulae needed to solve a problem. Failing to distinguish principles from examples. Treating parts of modules and programmes as separate. Not recognizing new material as building on previous work. Seeing course content simply as material to be learnt for the exam. Receiving information passively.</td>
</tr>
<tr>
<td>Encouraged by students’</td>
<td>Having an intrinsic curiosity in the subject. Being determined to do well and mentally engaging when doing academic work. Having the appropriate background knowledge for a sound foundation. Having time to pursue interests, through good time management. Positive experience of education leading to confidence in ability to understand and succeed.</td>
<td>Studying a degree for the qualification and not being interested in the subject. Not focusing on academic areas, but emphasizing others (e.g., social, sport). Lacking background knowledge and understanding necessary to understand material. Not enough time/to high a workload. Cynical view of education, believing that factual recall is what is required. High anxiety.</td>
</tr>
</tbody>
</table>
### Encouraged by Teachers’

| Showing personal interest in the subject. |
| Bringing out the structure of the subject. |
| Confronting students’ misconceptions. Engaging students in active learning. |
| Using assessments that require thought and requires ideas to be used together. |
| Relating new material to what students already know and understand. |
| Allowing students to make mistakes without penalty and rewarding effort. |
| Being consistent and fair in assessing declared intended learning outcomes, and hence establishing trust. |

| Conveying disinterest or even a negative attitude to the material. |
| Presenting material so that it can be perceived as a series of unrelated facts and ideas. |
| Allowing students to be passive. |
| Assessing for independent facts (short answer questions). |
| Emphasizing coverage at the expense of depth. |
| Creating undue anxiety or low expectations of success by discouraging statements or excessive workload. |
| Having a short assessment cycle. |
INTRODUCTION

REVIEW OF RELATED LITERATURE

The review of literature provides the background and context for the research problem (Wiersma, 1995).

The literature review accomplishes several purposes:

- It shares with the reader, the results of other studies that are closely related to the study being reported (Fraenkel and Wallen, 1990).
- It relates a study to the larger, ongoing dialogue in the literature about a topic, filling in gaps and extending prior studies (Marshall and Rossman, 1989).
- It provides a framework for establishing the importance of the study, as well as a benchmark for comparing the results of a study with other findings.

Keeping in mind, the above mentioned purposes, the results of some of the related studies are discussed below:

RESEARCH STUDIES ON MASTERY LEARNING STRATEGIES

Blackmore, C.L. (1985), investigated the effects of Bloom's Mastery Learning Strategy on students at Temple University in Philadelphia, as taught Racquetball skill in physical education classes and the study revealed that the following major findings on the basis of statistical analysis:

i) The achievement of the mastery group was significantly higher than the non-mastery group at the midtest. By the time of the post-test, however, the non-mastery group had improved to the point where both groups were found to be equal. It was evident that the conditions provided by the Mastery Learning model were effective for producing specific, results quickly.

ii) In particular, low aptitude students, females and especially the low aptitude females benefited from the condition provided by the Mastery Learning methods.

Jayalakshmi, T.K. (1985) studied the effectiveness of the modules as instructional materials in respect of intelligence and English reading.
comprehension. The main findings of the study were

i) The instructional strategy for Learning educational psychology at the B.Ed. level was quite effective.

ii) The instructional modules had potentiality for use in any institution with marginal change in personal.

iii) The modules as a whole had provided good motivation for the study of the educational psychology at the B.Ed. level.

iv) The PCM as a basic component had been successful in giving the basic information.

v) The different enabling activities had been effective in contributing to better achievement.

vi) Facility with language was found to be a significant factor affecting the performance of this group.

vii) Learners were helped in acquiring a better knowledge about certain classroom techniques like discussion.

Hefner, S.W. (1985), studied the effectiveness of the Mastery Learning Instructional Approach in facilitating the retention of achievement in language, arts or mathematics and analysed that

- No significant differences in language arts achievement were found between the experimental and control groups on either the post-test or the retention test.

- On both the CTBS (Comprehensive test of basic skills) and the CRT (Criterion Referenced test) post-test, statistically significant differences were found favouring the experimental group in the achievement of mathematics while no statistically significant differences were found between the two groups on the CRT retention test, significant differences favouring the experimental group were found on the CTBS retention test in Mathematics.

- In the meta-analysis no evidence was found to support the contention that the Mastery Learning/competency based education, instructional approach was more effective than (or as effective as) the Mastery
Learning instructional approach in facilitating the retention of achievement in language arts or mathematics.

**Guskey and Gates (1986)** conducted a meta-analysis, which contained 27 studies addressing five areas: student achievement, student retention, time variables, student affect and teacher variables. They found that achievement results were overwhelmingly positive, but varied greatly from study to study. Students at all levels benefited from Mastery Learning: effects were somewhat larger in elementary and junior high school classes than at the high school level. Effects in language arts and social studies classes were slightly larger than those attained in science and mathematics classes. Students retained what they had learned longer under Mastery Learning, both in short term and long-term studies. Students were engaged in learning for a larger portion of the time they spent in mastery classes and required decreasing amount of corrective time over a series of instructional units. Students developed more positive attitudes about learning and about their ability to learn. Finally, teachers who used Mastery Learning developed more positive attitudes toward teaching, higher expectations for students and greater personal responsibility for learning outcomes.

**Lovullo, C.T. (1986)** conducted a study to investigate the *impact of Mastery Learning/Outcome-based strategies on curriculum planning for elementary school students*. The study attempted to determine the influence these strategies had on the attitudes and achievement of sixth grade students. Ninety students participated in a mastery learning/outcome based programme. The results of the sixth grade pupil evaluation program test in mathematics were used to compare the achievement of the matched students. A student questionnaire consisting of forty validated statements was administered to the treatment and comparison group. The questionnaire statements were divided into two categories 1) Student attitudes toward school and 2) student perception of teacher behaviours. It was concluded that 1) Attitudes are not significantly enhanced as a result of differences in schooling i.e. (Mastery vs Non–mastery). The mastery model is a viable curriculum planning model for improving achievement. Students in the mastery environment performed significantly
better on the Sixth Grade New York State Pupil Evaluation Program Test in Mathematics.

Kishore, L. (1986), has reported that retention of students taught Physics using MLS for senior secondary school students was significantly higher as compared to the control group taught the same material through traditional method.

Jacobson, Gary Han’s (1986) study was to determine if student achievement could be improved and/or the number of remediations required for mastery were reduced by incorporating learning styles into initial instruction in a Mastery Learning classroom. The researcher concluded that by incorporating Learning styles into initial instruction in Mastery Learning classrooms, the number of remediations necessary for mastery could be significantly reduced.

Kow (1986) studied an individual Learning programme in basic Chinese characteristics using a Mastery Learning Approach. Results showed that at the end of the semester there was significantly greater proportion of students who could earn on ‘A’ by mastering the criterion number of characteristics than the proportion of students using the conventional instructional approach.

Naslund, J.C. (1987) conducted a study on Learning beyond mastery to automaticity : its effect on individual variation and retention. Two studies were conducted. The first involved Learning a complex psychomotor task. Subjects were divided randomly among three groups. Each group learned the same behaviour, but practiced to mastery and automaticity in different manners. The second study was conducted in two classes of Cardiopulmonary Resuscitation (CPR) and two groups of subjects received different Learning conditions. In both the psychomotor and CPR study, within the same group of subjects variance was significantly less for the number of trials to automaticity compared with trials to mastery. In the psychomotor task, the group that practised components in a cumulative sequence took significantly less total trials (Mastery and automaticity) than the comparison group (that practised the
components in unison). The variance for trials to mastery was also significantly lower for the cumulative component mastery group. These results were not found in the CPR study.

Patadia, H.J. (1987) conducted a study of a strategy for Mastery Learning in fifth grade geometry. The strategy was initially tried out on 110 pupils of convent of Jesus and Mary school. The students were divided into two matched groups viz., experimental and control group. The experimental group was taught through M.L.S. and the control group through the lecture method. He reported that the achievement of the experimental group was found to be significantly higher than that of the control group.

Sullivan, V.W. (1987) conducted a comparative study on students achievement using mastery and traditional teaching methods. It was found that the test scores varied significantly according to the instructional method used. After one semester mastery group students scored significantly higher in maths than the traditional group on math application, but significantly lower on math computation, full year gain scores, however, revealed that the original mastery math group achieved significantly higher gains than the traditional group in all areas.

Jantjes (1988) conducted a study to devise practical group Learning conditions as effective as the one to one tutorial method. To investigate whether student achievement is a function of the learning conditions provided to students and not an effect of inmate and stable earlier characteristics and to determine whether effect becomes more positive when greater cognitive achievement results from these learning conditions. The findings indicated that when the conditions of learning are appropriately improved to meet the cognitive and effective needs of most students, their levels of achievement and effect are significantly enhanced and their initial cognitive differences are greatly decreased over time. The results show that educators can devise teaching learning conditions that are almost as effective as tutoring conditions.

Anderson, Ranold William (1988) studied the effect of M.L. on algebra achievement, the design of this study in corporated what ‘Salvin’ proposed to
be the best evidence for M.L. Both the experimental groups performed better on the teacher made algebra test than their control group counterparts, with effect sizes of .274 and .856. On the standardized post test, the afternoon experimental group out performed its control group yielding a relatively high effect size of .724. However, the morning control group performed better than its corresponding experimental group, with an effect size of .181.

Olson, D.A. (1988) conducted a study to determine if Mastery Learning interacting with the principle of wait-times effect on student’s achievement and attitudes in 7th and 8th grade Mathematics classroom. The results for grade 7th were that Mastery Learning wait time and gender had significant effects on student achievement as measured by the criterion reference test with Mastery Learning wait time and females having the greater post test achievement. The post test Stanford Achievement test (NRT) results showed that females were at a statistically greater level. There was a significant three way interaction on attitude in which females had higher attitude scores on the presence of Mastery Learning and wait time. The result for grade eight showed interactions with the independent variables on the Stanford Achievement Test (NRT) post test. The interactions had females having the greatest achievement when combined with the treatment of Mastery Learning and wait time and males having higher achievement as a control group and with Mastery Learning and wait time. Mastery Learning was a positive and significant main effect for the CRT post test and males having higher achievement as a control group and with Mastery Learning and wait time. Mastery Learning was positive and significant main effect for the CRT post test. Wait time was a negative and significant main effect for the CRT post test. Wait time was a negative and significant main effect on attitude on ATT post test.

Kim-IL-Sum Yang (1989) studied the validation of self instructional food service inventory control system module because adjusted mean scores on the achievement pre-test between the two experimental groups were significantly different with the mean scores for the self-instructional treatment because higher the inventory control self-instruction method was judged at last equally as good as the lecture method. The students responses to the attitude
inventory showed that the students in the self-instruction group had overall favourable attitudes towards the module. Therefore, the self-instructional method appears to be an effective innovation. Further use and study of this method for teaching college students and practitioners seem justified.

**Monger, C.T. (1989)** conducted a study to examine the *effects of a Mastery Learning instructional strategy on student achievement and on students subject-related attitudes.* Of particular interest was the potential difference in elementary and middle school mathematics achievement and attitudes between learners instructed by an instructional strategy based on Bloom’s theory of Mastery Learning and Learners instructed by traditional methods. A quasi-experimental design was used to examine the effects of Mastery Learning Instructional strategy on achievement and subjects related affect of learners. To identify differences in achievement a two-group pre-test, post-test design for each of the three grade levels i.e. two, five and seven was used. It was found that there was no significant difference between the achievement and subjects related effect for second and fifth graders. For seventh grade, control group out performed the experimental group in Maths concepts and total Maths. So Bloom’s theory of Mastery Learning was not supported by the study.

**Berger (1990)** conducted a *qualitative study of the process of self directed learning* and concluded that most of the participants judged the quality of their learning projects through both their own internal standards and external signs of recognition.

**Vaidya (1990)** compared *MLS with CAM and the traditional method.* The findings of Vaidya’s study indicate that MLS was more effective than CAM or TM in (1) facilitating learning and enhancing the achievement level and (ii) improvement in self concept and attitude towards the subject.

**Kincaid (1991)** studied the *effectiveness of Mastery based setting compared to a traditional lecture discussion setting in two developmental mathematics course of a two year college in Central Texas.* In each course, the post-test scores of those participating in the mastery based setting were
significantly higher than those in the lecture settings.

Alspach (1991) studied the self directed Learning readiness of nursing students and found nursing programme afford only a limited amount of self directed learning opportunities for students and that faculty perceive that they provide self directed Learning opportunities much more frequently than students perceive receiving them.

Verma, B.C. (1991) in his study for secondary school female students on the subject of geography found that the pattern of study habits and attitudes of pass group as well as promoted group of students following instruction through K-PSI,B-MLS and control group was more or less similar though in pass group B-MLS group showed higher but not statistically significant scores and in promoted group PA1 students showed higher but not statistically significant scores.

Edjlali Mohmmad (1991) studied the effect of competency based Mastery Learning on aptitude, motivation, self-esteem and Math anxiety. Results of the data indicated that significant difference existed between the two methods of teaching/learning. The research findings indicated that students in Mastery Learning class perform at a higher achievement level, had a more positive attitude towards Learning mathematics and towards themselves had less Math anxiety and developed higher self-esteem.

Blakemore, C.L. and Others (1992) compared psychomotor skill performance in isolation and in competitive game situations with seventh grade boys. They taught basketball using Bloom’s Mastery Learning model and non-mastery procedures. Mastery subjects surpassed control and non-mastery groups on all skills performed in isolation. No significant differences existed in skill performance in competitive game situation.

Sawhney, P. (1993) studied about the effectiveness of MLS of teaching on acquisition and retention of algebraic concepts in high school students in relation to ability level, cognitive style and class organization. She found in her study that MLS was superior teaching strategy in teaching algebraic concepts to Class IX students. Above average and average ability students secured
significantly higher score than the below average student irrespective of teaching strategy.

Singh (1993) investigated the relationship between group empowerment and self directed Learning in selected small groups and observed the enhancement of competencies to be self directed learners to help the groups become more empowering.

Bajaj, Rajneesh (1994) studied the effect of the Mastery Learning strategies (Bloom and Keller) on the teaching of geometrical concepts for sixth grade students in relation to intelligence and found no significant differences between the Bloom’s and Keller’s strategy of Mastery Learning on Learning.

Ritchie, D. and Thorkildsen, R. (1994) studied a teacher-directed, video disc-based programs for teaching fractions to fifth grade students to examine the factor of accountability in Mastery Learning programmes. The video disc based instruction was chosen to help minimize differences in instructional delivery. Researcher used a pre-test, post-test, two group design to identify if knowledge of participation in a Mastery Learning program was related to academic achievement. 96 students in four classes participated in the study classes were randomly assigned to 2 treatments. All students received instruction in fractions via the teacher directed, video disc based Mastery fractions programme. Treatment I students knew that they were participating in a MLP and therefore were held accountable for their progress and remediation. Treatment 2 students were not aware that their teacher was using Mastery Learning principles to determine progression and remediation comparisons between treatment 1 and 2 student scores, after adjustments for pretest results using analysis of covariance, revealed standardized mean difference effect sizes of 0.67 for achievement favouring treatment 1. These results provide some evidence that knowledge of being in a mastery based programme contributes to increased achievement.

Panda, L.N. (1994) confined his study to secondary schools of Cuttack district of Orissa for class eight in History. The most striking results of this analysis was that Bloom’s Mastery Learning was more effective irrespective of
rural or semi-urban areas, poor or middle SES students, boys and girls, scheduled caste and general caste students, and students belonging to agriculture or service class family as compared to students following conventional method of instruction, for immediate and delayed retention.

McNorton, C.R. (1995) designed a study to investigate the implementation of Mastery Learning in an elementary school. The Mastery Learning programme was established in the language arts and mathematics curricula. Interviews were conducted with 18 of the 27 teachers, together with the principal and superintendent, 3 staff members and the office secretary. Six basic conclusions were drawn from participant responses:

i) Mastery Learning was instituted to improve student achievement.

ii) Problems associated with the programme’s initiation as well as subsequent problems were mainly handled by the principal in cooperation with the teachers.

iii) Extended Learning time is found for mastery by utilizing time from non-mastery classes.

iv) Grading practices represent an electric approach.

v) Mastery Learning brought about an increase in academic achievement based on a year to year tabulation.

vi) Administrators were optimistic about both the present and future use of Mastery Learning. Teachers expressed positive views concerning the present use of Mastery Learning, but were non-committal regarding its use in the future.

Hudson, C.B. (1995) conducted a study titled a modified Mastery Learning /inquiry approach to physical geology for at risk students. A semester course in physical geology, taught using a modified Mastery Learning approach with inquiry based laboratory investigations, was offered in 1991 and 1992 to a class of at-risk students who were enrolled in the University of South Carolina’s opportunity Scholars Program. The courses were similar, although the material presented during the second year was more extensive. The goal of the courses was to enhance the learning of students who are considered
academically challenged for reasons other than mental capability. The extent to which this goal was achieved was measured by the extent to which four objectives were fulfilled. One was to increase student knowledge of geological topics. Other objectives were to increase effective scores of value, interest and enjoyment of the study of physical geology, to identify preferred instructional strategies of the at-risk students and to increase the student’s confidence and self-esteem. The 1991 experiment was evaluated using a repeated measures design. The students had significant gains in knowledge and affective scores of enjoyment and overall feeling about the course. Comparison of the more rigorous 1992 course to the 1991 course, using a non-equivalent control group design, showed significantly higher cognitive achievement in 1992 group without sacrifice of any of the affective attributes of value, interest or enjoyment. Preferences for various teaching strategies and aids were similar for both years. Strategies associated with Mastery Learning received the highest ratings, however, it was not possible to attribute the students’ gains specifically to the Mastery Learning Approach. Informal contact with a number of students in the following semesters provided response indicating that the students had gained confidence and self-esteem.

J.A. Livingston and J.R. Genetile (1996), studied performance on successive units of achievement in graduate classrooms using Mastery Learning procedures, was used to test two variations of Bloom’s decreasing variability hypothesis –namely that under the favourable condition of Mastery Learning, differences in faster and slower learners will decrease over successive units, leading to (a) smaller variances on successive units and (b) smaller correlation between an initial measure of aptitude and achievement on successive units. The data from the four classrooms studied do not support the decreasing variability hypothesis rather, they show no change over time.

Aviles, C.B. (1996) investigated instructional method Mastery Learning for social work education by contrasting it with non-mastery instruction using 137 undergraduates in a social work course. The independent variables measured were achievement, retention, student study hours spent, student attitudes toward course topic and student course evaluations. Qualitative and
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Quantitative data were collected about student preference for, ratings of and attitude toward instructional method. Qualitative and quantitative data were collected about instructor time spent and instructor reactions to instructional method. A quasi-experimental, contrast group design with repeated measures was employed. One instructor taught two courses sections with Mastery Learning instruction, another instructor taught two course sections with non-mastery instruction. The mastery group had three study guides, three exams, three make-up exams, six quizzes and mandatory outside class, instructor-led, group correctives. Both methods resulted in similar findings: achievement, study hours, instructor hours, changes in attitude towards course topic and instructor evaluations. Mastery Learning resulted in greater retention (P<.05), but the difference amounted to one test item. The Mastery Learning group preferred Mastery Learning (100%) rated it positively (93%) and commented positively about Mastery Learning (86%). One percent of the student comments were negative. Positive instructor reactions included increased classroom time efficiency and better co-ordination between teaching and testing. Negative instructor reactions included set up time required and recognition of faulty teaching through quizzes and correctives. Mastery Learning resulted in similar findings compared to non-mastery instruction on a range of variables related to student achievement and student attitudes toward course topic. The mastery instructor and mastery group reacted positively to Mastery Learning instruction. Mastery Learning required similar amounts of instructional time, but required additional implementation time. Other implementations of the Mastery Learning elements could require increased implementation time.

Yohon, T.I. (1996) conducted a study to determine if a Mastery Learning teaching methodology affected the anxiety levels of students compared to a more traditional teaching methodology. Teaching methodologies were identified in this study as (i) Mastery Learning and (ii) a traditional (i.e. lecture) teaching methodology. Anxiety was operationalized through the use of the State-Trait Anxiety Inventory (STAI). STAI defines two types of anxiety: state anxiety and trait anxiety. The subjects were chosen from two Washington state high schools. Intact classes representing each teaching
methodology participated from each school. Thirty-two students were in the Mastery Learning group, 24 students participated in the vocational class without Mastery Learning and 32 students were in the traditional teaching methodology group. A quasi-experimental repeated measures design was used with an analysis of the first administration of the STAI indicating the three groups were similar in regard to state anxiety and trait anxiety levels across the teaching methodologies. No difference was observed in state anxiety between teaching methodologies groups over time (FC$^2.85=2.05$, P=.135) as well as no difference in trait anxiety (FC$^2.85=1.12$, P=.332) student demographics as age, parental support, number of employment and extracurricular hours did not influence students trait or state anxiety levels. Females seemed to exhibit higher levels of state anxiety.

Hanna, K.R.K. (1997) designed a study entitled *self-paced Mastery Learning in adult learners: a descriptive study of nursing curriculum*. Qualitative research methods and descriptive statistics were used to develop a case study describing a self-paced modularized nursing curriculum that incorporates concepts of Mastery Learning and Learner self-directedness. Data used were obtained from historical records, a computerized database, programme evaluation questionnaires and focus group interviews. A portrait of 478 students enrolled in the programme over an eight year period was developed. Focus group interviews were conducted with current students (beginning and advanced), programme graduates, programme withdrawals and the faculty. Results indicated that the flexibility of a self-paced curriculum model with its emphasis on mastery rather than a fixed time for completion accommodated educational as well as personal needs of students. Completion time varied from 3 semesters to 6.5 semesters with a mean completion time of 4.4 semesters. The self-pacing format fostered personal growth, individual responsibility, self-awareness, self-confidence and self-discipline. Graduates cited the value of Learning organization, priority setting and time management and related these skills to employment requirements.

Lee, C.D. (1998) studied the *effect of a Mastery Learning technique on the performance of a transfer of training task (Bowline Knot)*. This study
evaluated the effect of using the Mastery Learning technique of self-directed feedback, reinforcement and remediations of knowledge on the performance of a work–related task involving 130 Navy recruits tying a Bowline Knot. The study utilized the randomised subjects, post test only control group design. Success or failures on the first trial or the number of trials to successful performance of the task (tying the Bowline Knot) were the dependent measures used. The Mastery Learning intervention was conducted via a work–book that provided feedback to the student on his or her knowledge attainment after instruction, yet before the evaluation of the transfer task. The first hypothesis that Mastery Learning would have an effect on the transfer of knowledge from the classroom to a work–related task was statistically significant when the outcome measure was the results of the first trial. There was no statistically significant difference on the mean number of trials to successful performance of the task. The second hypothesis investigated participants affective response to both traditional and experimental methods of instruction through the use of an attitudinal instrument. Statistical significance was found on this hypothesis, though in the opposite direction than predicted. A few mitigating factors appear to explain this conflicting result. Nonetheless, the findings of the study support the claim that the use of Mastery Learning technique can have a significant positive effect on the ability of participants to transfer knowledge from a classroom –training context to a work related task.

Pezeshki, G.H. (1998) examined the effect of an innovative approach of teaching college algebra on the achievement of Mexican – American students as compared to the traditional approach. A total of 213 students participated in this study. Results indicated that cooperative learning and Mastery Learning were effective teaching strategies. These two strategies were used by the researcher as the innovative approach to teaching college algebra to Mexican – American students. Studies conducted of the achievement effects of Mastery learning and cooperative learning found significantly greater achievement in treatment classes than in control classes. The mean scores on the post–test of the students enrolled in the treatment groups were higher than the mean scores on the post test of the those enrolled in the control groups.
Shahjahan, A. (1999) designed a comparative study of Learning languages through cooperative Mastery Learning among tribal and non-tribal fifth graders. Achievement in languages and self-esteem were two dependent variables. Cooperative Mastery Learning, nature of habitation (tribals and non-tribals) and family background were the three independent variables. Data were analysed by using ANOVA and effect sizes. It was found that cooperative Mastery Learning strategy yielded higher achievement gain scores and self-esteem gain scores than conventional group Learning for the three languages viz., English, Hindi and Assamese. Scores of non-tribals were found to be higher than those of tribals. The family background had no effect on achievement gain scores, cooperative Mastery Learning strategy in Hindi was found to have maximum effect size, second being in English and third in Assamese.

Kohli, V. (1999) investigated into the effectiveness of self Learning modules on achievement in geography in relation to mastery and non-mastery teaching strategies, intelligence and study habits. A 2 x 2 x 2 factorial design was employed. The sample consisted of 200 senior secondary students. The findings of the study proved that mastery strategy was superior to non-mastery strategy in teaching geographic concepts. Intelligence was found to be directly proportional to achievement in mastery strategy but not related to achievement in non-mastery strategy. Gain achievement of low intelligence group under mastery strategy was much more than that of low intelligence group under non-mastery strategy. Study habits were not found related to performance.

Dubey, A. and Khuntia, S. (2000) investigated into the effectiveness of personalized system of Instructional module in guidance and counselling of B.Ed. students in terms of students reaction and study habits. Twenty three B.Ed. students of guidance and counselling were subjected to treatment. The Keller’s module was found to be effective in terms of students reaction towards it and it was concluded that the study habits of students have no effect on their achievement on criterion test.

McKenzie (2000) investigated achievement and affective domains of high school algebra 1 in traditional or self paced Mastery Learning.
programme. Anxiety and students attitudes towards mathematics were also investigated. Two classes of algebra I was taught using traditional methods of instruction and two classes were taught using a self paced M-L programme. Other affective variables like confidence anxiety and attitude towards maths were also measured prior and after the study through the Fennema Sherman Attitude scales. The results of this study indicated that students in the traditional classroom scored significantly higher than students in the self-paced Mastery Learning classes. Further more the study suggested that self-paced instruction had a positive impact on reducing anxiety levels of male students.

Gulati, V. (2001) conducted a study effectiveness of inquiry training model Mastery Learning model and conventional method of teaching accountancy on students achievement, self-concept, adjustment and cognitive styles and he concluded that Mastery Learning model and conventional method in teaching accountancy to higher secondary students. Also inquiry training model in more effective than conventional method in teaching accountancy to the students of higher secondary stage.

Ogogo, O.C. (2001) studied Mastery Learning situations with generalization and analogy as advance organizers and their impact on learning outcomes of high school students in relation to their cognitive style and concluded that MLS with generalisation and analogy as advance organizers (ML–GEN and ML–ANAL was more effective than the conventional group Learning (CGL).

Mehra, V. and Kumar, R. (2001) investigated into effect of Mastery Learning strategy on pupils achievement in geography. The study was conducted on 60 students of class X. The experimental group was taught Geography by Mastery Learning strategy for four and a half weeks and control group was taught for the same time by the conventional teaching method. Analysis of results revealed that students taught by Mastery Learning strategy exhibited superior performance as compared to their counterparts taught by conventional classroom teaching.

Kumar, R. (2001) investigated into effect of Mastery Learning strategy
Introduction on pupils achievement in geography. The study was conducted on 60 students of class X. The experimental group was taught geography by MLS for four and a half weeks and control group was taught for the same time by the conventional teaching method. Analysis of results revealed that the students taught by Mastery Learning strategy exhibited superior performance as compared to their counterparts taught by conventional classroom teaching.

Vibha (2001) studied the effect of Mastery Learning Strategy on achievement and self-efficacy in English in relation to entry behaviour, taking total sample of 235 students and concluded that:

(i) The achievement gain scores of students studying through B–MLS, K–PSI and E–MLS were found different as compared to conventional group Learning.

(ii) Three levels of entry behaviour viz., Adequate, Average and Inadequate entry behaviour resulted in almost equal achievement gain means of students.

(iii) The instructional strategies and levels of entry behaviour were not independent of each other on achievement gain means.

(iv) Different Mastery Learning strategies viz., B–MLS, K–PSI and E–MLS resulted into different self-efficacy gain means as compared to conventional group learning.

Guru, B.S. (2003) studied effectiveness of Bloom’s Mastery Learning strategy on achievement in mathematics of concluded that the achievement of students on the test was better when students taught through Bloom’s Mastery Learning strategy than the students through the conventional method.

Sangeeta (2004) studied the effect of Mastery Learning strategy on achievement of class IX students in maths in relation to different cognitive styles and concluded that students of the experimental group taught through enrichment material provided in Mastery Learning strategy exhibited significantly higher gain in achievement in comparison to the control group students who were taught through traditional classroom teaching.

Chand, H. (2004) studied the effectiveness of Mastery Learning
strategy on achievement in social studies and concluded that the achievement of students on the test was better when taught through Bloom’s Mastery Learning strategy than the students taught through the conventional method.

Singh, K. (2005) studied the effectiveness of Mastery Learning strategy for teaching social studies to secondary school students and concluded that (i) students of the experimental group taught through Mastery Learning Strategy exhibited significantly higher in achievement in comparison to the control group students who were taught through traditional classroom teaching. (ii) If regular and immediate feedback and remedial instructions are provided to students their performance gradually improves.

Ibrahim Y. Kazu; Hilal Kazu; Oguzhan, O. (2005) studied the effects of Mastery Learning model on the success of the students who attended “Usage of Basic Information Technologies” Course. In order to realize one of the most important necessities of the life, which is Learning the human being spends most of their life for education training activities. In the conventional applications, every individual being a part of a group is dependant on a single programme and an educational management which was chosen for the group by the teacher. However, each student has individual Learning abilities, different from other members of the group. At the end of the teaching activities with one group, nearly all of the individuals of that group are expected to be successful. The findings gained in this research show that being a significant difference in experiment group favour on the points of final test and achievement points. (The findings of the study show a significant difference in favour of the experimental group versus the control group in both the final test scores and achievement points). In experimental group, Mastery Learning model was used. Therefore, it was seen that Mastery Learning model increased the student achievement effectively.

Heng-Li-Yang; Chi-Lun Liu (2006) studied about Process oriented e–Learning architecture in supporting Mastery Learning and concluded that Instructional strategy plays a prominent role in traditional classrooms but it is not widely noticed in e–Learning environments. This study adopts the widespread pedagogical method of Mastery Learning and proposes an e-
Learning system architecture that considers the concept of process management and applications of mobile device. This study also offers several scenarios to explain how to use this kind of system. The proposed system could assist teachers to manage their students more easily and it can streamline the teaching processes. It could also make personalised teaching more popular and easier.

Diane B. Wayne; John, Butter; Viva J. Siddall; Monica J. Fudala; Leonard D. Wade; Joe Feinglass; Williams C. McGaghie (2006) studied Mastery Learning of Advanced Cardiac Life support skills by Internal Medicine Residents Using Simulation Technology and Deliberate Practice and concluded that a curriculum featuring deliberate practice dramatically increased the skills of residents in ACLS scenarios. Residents needed different amounts of training time to achieve minimum competency standards. Residents enjoy training, evaluation and feedback in a simulated clinical environment. This Mastery Learning program and other competency-based efforts illustrate outcome based medical education that is now prominent in accreditation reform of residency education.

**RESEARCH STUDIES ON FEEDBACK CORRECTIVES**

At present there is no way to go from an incorrect formative test response to the prescription of the particular corrective or combination of correctives a particular student may need to overcome his errors. Much additional research is needed on the kinds of correctives best suited for certain types of students and those most useful in the classroom.

Past Mastery Learning research suggests that the relationship may be largely an artifact of present instructional practices. The findings demonstrate that if no attempt is made to optimise the quality of each student’s classroom instruction, then individual differences in student entry resources are reflected in their achievement. However, if the quality is made optimal by means of supplementary feedback/correction procedures then the differences are not reflected in student achievement.

Kulhavy, et al. (1985) reported that if feedback functions primarily to correct errors than it follows that any design characteristic that leads students to
process, study or apprehended the feedback more closely should increase the amount of correct that take place and ultimately improve criterion performance. Research suggests that such increases in correction do not results from parallel increases in the amount of information contained in the feedback and that enhancement of feedback bulk in an inefficient means of raising accuracy at recall.

Carrier, S.I. (1985) studied microcomputer programmed remediation of specific reading and writing skills deficiencies in secondary school students. The context was set by Florida’s State Student Assessment Test (SSAT), which measures skill mastery in relation to a set of minimum performance standards. The sample consisted of one public secondary school’s students who exhibited SSAT skill deficiencies and were assigned to remediation labs or compensatory education classes, depending on the severity of deficiency. Four treatments were devised printed exercise (PE), microcomputer no reinforcement (MN), microcomputer-graphics reinforcement (MG) and microcomputer-verbal reinforcement (MV). Dependent variables included student SSAT performances on one reading skill and one writing skill, measured by a post test and by a retention test three weeks after the treatment. ANOVA was the principal statistical procedure. Tests in the writing measures revealed significant treatment effects on the post–test and retention test.

Spadafore, Thomas Jeffrey (1985) studied application of computer software to the Idaho Proficiency math Test competencies. The history of competency testing and legal issues related to it are reviewed briefly in light of the responsibility of school districts for providing remediation programs for students who have failed the test. The mathematics competencies of the state of Idaho are identified and keyed to four sets of readily available secondary level Apple compatible software packages. These packages have been analysed for flexibility and ease in student/teacher use. Several programs for implementation of computer–assisted instruction (LAI) in remediation are suggested with guidelines for administrators in selecting from available options and for teachers in using the program for remediation purposes.

Ciechalski, J.C. and Parker, L.D. (1990) examined academics
remediation for students identified at risk by Kindergarten screening instruments. With experimental group (n=84), school counsel participated in assessment and facilitated remediation process throughout school year. With control group (n=100), counsellor coordination assessment procedure, with remediation being classroom teacher function, found significant difference in overall group achievement test scores between control and experimental groups.

Angell, R.F. (1993) studied personalized remediation strategies in mathematics instruction based upon Learning styles of ninth grade students. The Texas Assessment of Academic Skills (TAAS) was administered for the first time in October 1990. The subjects were 46 ninth grade students in Texas Gulf–Coast high school who completed the math portion of the 1990 TAAS. The instruments used the Fennema and Sherman Mathematics Attitude Scale (1976), Houghton–Mifflin Practice TAAS form A and form B; and the National Association of Secondary School Principals (NASSP) Learning Style Profile (1989). In the first phase the 16 students who did not pass the TAAS exam with the required 60 percent mastery were in a remediation program where they received an additional 75 minutes per week of instruction. At the end of phase one, the 16 students and the other 30 students completed TAAS Practice Assessment. During the second phase, the 75 minutes of extra remediation time each week for the 16 low scoring students were based upon Learning style strategies. At the end of phase two all 46 students completed TAAS Practice test Form B and the same Fennema – Sherman Mathematics Attitude Scales Multivariate F-tests, Univariate t-tests, Analyses of Covariance and Multiple Classification Analyses were used to test hypotheses. End of Phase I results indicate that the 16 students who scored 59 percent or below in the October TAAS were also weak in the cognitive skills area of the Learning Style Profile and had significantly more negative attitudes towards mathematics. Phase II remediation activities resulted in greater improvement in attitudes and practice TAAS scores for the 16 low students compared to the others.

O'Connor and Murphy (1997) conducted a study the purpose of which was to investigate the effects of acoustically modified speech training on the
awareness of phonological processing, word recognition, reading comprehension and language abilities of children with language and/or reading based learning disabilities. A recent line of research has attempted to establish the relationship between the auditory, processing of some sounds and reading disability. To address this concern with auditory processing or discrimination some computer software has been developed to retrain children with language based learning disabilities to process sounds of relatively short duration. These computer sounds-and-word games utilized acoustically modified speech. Sixteen children aged 7 to 10 years with language based learning disabilities were trained in an educational setting on these computer games that utilized acoustically modified speech. The children were assessed (Pre-test and Post-test) on measures of language ability, phonological processing and reading ability: both word recognition and comprehension. The results of repeated measures ANOVA indicated that there was a significant improvement in the blending abilities of those children who received treatment.

Tedick, J.; Barbara de Gortari; Lyster and Ranta (1998) conducted a Research on Error correction and implications for classroom teaching and found that approximately 34% of the student utterances audio taped during those 18 hours of class time contained some type of error. Teachers responded with some type of corrective feedback to 62% of all the errors produced by students. Of all the feedback utterances produced by the teachers in response to learner errors, 55% or slightly over half, were found to lead to uptake of some type on the part of the learner. However, only 27% of the feedback utterances led to student repair. When investigator looked at the total number of errors produced by students and the total number of repairs they produced, they found that just 17% of the total errors made by students were repaired in some way by students. The study produced interesting results in terms of feedback types. Investigator found that the teachers in their study provided corrective feedback using recasts over half of the time (55%). Elicitating feedback was offered in 14% of the cases, clarification requests 11%, meta linguistic feedback 8%, explicit correction 7% and repetition 5%. Investigator point out that the low percentage of repetition feedback is rather deceptive because teachers often
produce repetitions along with other types of feedback. Investigator summarize that student-generated repairs are important in language learning because they indicate active engagement in the Learning process on the part of students. This active engagement occurs when there is negotiation of form or when the students have to think about and respond to the teachers feedback in some way. And this negotiation of form occurs when the teacher does not provide the correct form but instead provides cues to help the student consider how to reformulate his or her incorrect language.

Mukhtiar Singh (2001) studied the effect of a corrective programme on reading problems in Hindi language among the Vth class students in Abohar and concluded that corrective reading programme had a significant effect on the improvement in reading ability and also on reducing the reading problems in Hindi.

Papponi, Paula (2001) examined the extent to which remediation enrichment, character education, and service learning improved. Secondary students’ self-concept and raised their level of academic achievement. Three types of research processes were used in the collection of data for the study; test data, surveys, and anecdotal data. The findings of the study were consistent with literature on academic achievement and self-concept, remediation/enrichment, character, education and service learning play in improving students’ self-concept and academic achievement.

Randall, Lisa Tell (2001) investigated the effectiveness of algebra and geometry software of the INVEST Learning Program as remedial instruction, using a sample of 40 ninth and tenth grade remedial math students at a rural public high school. Math subtests of Wechsler Individual Achievement Test (W1AT) were given as pre- and post-tests. Significantly higher numerical operations post-test results were found for the treatment group than for the control group. A significantly higher mean active time on task percentage was found for the treatment group. Results of secondary analyses found two significant interaction effects. The results of this study suggested that the INVEST Learning Program may be more effective in raising computational math skills and as program may be more effective in raising compared to
traditional math instruction for remedial public high school students in the rural setting.

Simpson, K.P. (2002) designed a remediation program to meet students’ needs and to find out what a student knows and needs to know. An online testing program, such as educational test, may provide the answers. The test is versatile instrument that offers benchmark tests, grade specific tests, and strand tests in the four content areas for grades K through 8. The results, data assessment, and feedback are immediate and specific. The use of educational test online was studied with seven sixth grades who had not passed Virginia’s standards of learning (SOL) test in grade 5. The results show increased improvement in all areas of reading ability for the students in the remediation program. The test was not a perfect indicator of improvement on the SOL test but it provided a point to gauge progress and set remediation goals.

Summerlin, J.A. (2003) made a comparison of the effectiveness of offline Internet and traditional classroom remediation of mathematical skills. He examined the academic effectiveness of internet based developmental mathematics instruction for community college students. A quasi–experimental design was utilized in which the effectiveness was measured in three ways:

i) Comparing the success rates of both groups in the remedial mathematics course as measured by a passing grade.

ii) Comparing the achievement as measured by mean scores on the Texas Assessment of Skills Program test taken after the course; and

iii) Comparing the success rates of both groups in their first college mathematics class after remediation.

One thousand eight hundred and seventy five students were included in the control group to study by the traditional method. One hundred and sixty students were in the population of observed group, studied by Internet. The internet developmental mathematics course was an offline, home study course that utilized the Internet for teacher/student and student/student communication. Students turned in completed assignments via the internet. The course exam was conducted on campus along with the traditional student.
Results of the study showed a statistically significant difference was observed with the traditional method of study yielding a much greater successful completion rate. The achievement of the successful students from both groups were found to be statistically equal. However, the success rate of students that studied their remedial mathematics in the traditional manner demonstrated a much greater success rate in the college algebra than those who studied remedial mathematics via. Internet. No statistically significant correlation were identified by the multiple regression analysis between achievement and the other variable.

Verma, S. (2003) studied the effect of feedback and corrective procedures on Learning outcomes and attitude towards mathematics of class IX students of HP and concluded that (i) if regular and immediate feedback and corrective procedures are provided to students their performance gradually improves. (ii) Students of the experimental group taught through feedback correctives and students of control group taught through traditional classroom teaching. Experimental group exhibited significantly higher gain in achievement than student of control group. (iii) Feedback corrective group exhibited better attitude towards mathematics than control groups.

Lane, Patrick Mathew (2004) studied students with achievement problems extent to which their positive and negative mindset moderates the impact of educational remediation. In the study, the positive and negative mindset for achievement and social emotional well-being of 32 students (14 males, 18 females in grade 6) referred to a university educational Psychology Clinic for academic remediation were compared with the mindset of a non–matched group of similar age students; who presented no achievement problems. Results indicated that in comparison with students with no achievement problems, students who were one or more years below grade level in reading or math, were rated by their parents as being lower in academic confidence, work persistence, organization and getting along and higher in general work avoidance, general disorganisation and rebelliousness anger. The mindset of students receiving remediation did not appear to moderate their degree of academic engagement during remediation, their affective disposition
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Mross, Maryellen (2004) studied one middle school’s supplemental program designed for remediation in middle school mathematics and preparation for a state-wide standardized test. In Pennsylvania, students who are not proficient in mathematics and reading as demonstrated by their performance on the state exams Pennsylvania System of School Assessment (PSSA) are provided with the opportunity for additional instruction in order to achieve the proficient level in the subjects. A one-group pre-test – post-test design was utilized to determine the effectiveness of the supplemental instructional program in mathematics. The Terra-Nova Second Edition Survey CTBS (Terra–Nova) was the standardized test that was used for the pre-test and post-test. A significant treatment effect of Math Edge program was found for both seventh and eighth grade students. There was a demonstrated improvement in math scores of both grade levels on a standardized test. An interaction of grade level and mathematics score growth also showed a significant effect with eighth grade students exceeding seventh grade students in mathematics score growth on a standardized test.

Perin, D. (2004) studied remediation beyond developmental education the use of Learning assistance enters to increase academic preparedness in community colleges. A qualitative case study in 15 Community College across the country revealed that learning assistance centers and specialized skills labs are an important means of increasing students’ academic preparedness for postsecondary study. Since these facilities provide instruction or support in reading, writing and math skills, it appears that play a valuable remedial role. Most of the assistance occurs in the form of tutoring and computer assisted instruction, and some of the centers also provide specialized learning centers and labs, and duplication of services may explain the lower than expected demand for assistance services seen in some of the sites. However, the institutions consider the Learning centers to be effective, and report positive outcomes including retention in college English and increase in GPA. Because, in some cases, recipients of learning assistance service display severe learning difficulties tutors may benefit from professional development in instructional
strategies for special needs students.

Yuvraj (2005) studied the effect of providing feedback on performance in mathematics of IX standard students in Solan in Himachal Pradesh. He concluded that (i) if regular and immediate feedback are provided to students their performance gradually improves (ii) The control group improved after teaching significantly (iii) The experimental group students taught through feedback exhibited bigger in improvement in performance in mathematics than control group students.

Frank, Morris (2005) studied child to child interaction and corrective feedback in a computer mediated L2 class and examined the provision of corrective feedback and learner repair following feedback in the interactional context of child-to-child conversations, particularly computer mediated, in an elementary Spanish immersion class. The relationship among error types, feedback types and immediate learner repair were also examined. A total of 46, fifth grade children participated in the study. Using blackboards, the instructor randomly paired students and created a ‘virtual group’ for each pair. Each pair was asked to interact and complete a jigsaw task in the ‘virtual classroom’. Blackboard recorded the pairs’ interactions, which were later printed and coded for types of error (syntactic/lexical) types of negative feedback (explicit recasts, negotiation) and immediate learner repairs. Findings indicate that learners did not provide explicit negative feedback. Learners provided implicit negative feedback (recasts and negotiation) while completing the jigsaw task in the virtual classroom. The majority of lexical errors and syntactic errors were corrected using negotiation. Over half of feedback moves led to immediate repair. Negotiation moves proved more effective at leading to immediate repair of errors than did recasts.

Ana Linares Garcia (2005) studied the effect of teacher feedback on EFL Learner’s functional production in classroom discourse. From this study, we can conclude that EFL young learners can realise the same functions in the L2 as native speakers of the same age, if their teacher encourages them to do it. The frequent use of the personal function by the children in the native context indicates its importance as a communicative tool at this age, also in classroom
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contexts. Therefore, it seems to be a function that should be enhanced in EFL contexts.

The present study shows that interactional feedback, which is frequently used in first language contexts is also necessary in EFL classrooms if children are expected to use the L2 to convey functions such as the personal one. This has been observed in our analysis of Group B in which the teacher’s low frequency of use of this type of feedback has resulted in the children’s use of their mother tongue to compensate for their lack of functional competence in English.

Finally, it is essential, that we establish clear comparative correlational models with the native language classroom context that could help the non-native teacher of English to establish the parameters of use of the different discourse functions. This type of studies are especially aimed at the promotion of children’s language, production and communication in a foreign language from the early stages of their Learning process. This is a factor which will certainly facilitate their oral communication skills in a foreign language as they grow older.

Glover, C. and Brown, E. (2006) studied about written feedback for students: too much, too detailed or too incomprehensible to be effective? and examining the potential for improving student learning by making changes to the way formative assessment and feedback are presented. This research presents a more detailed analysis specifically of the perceptions of the levels and relative effectiveness of written feedback. Some key qualities of this feedback, and some examples of inappropriate use are identified, providing insights into possible changes in the nature of and approach to written feedback to students.

REVIEW STUDIES ON APPROACHES TO LEARNING

Ramsden and Entwistle (1981) have shown effect of academic department on students’ approaches to studying. The investigation resulted that a positive attitude to study and strategic approach combined with high scores on deep approach and low sores on surface approach scales. There were found
to be significant relationship between the variable among them and that positive attitudes and deep approach are linked with the academic progress.

**Aggarwal (1981)** carried out a *study of learning approach and contract activity package* and concluded that the level of students who are motivated and responsible may continue either academic or creative studies independently, through contract activity package. The academic achievers learned in depth, advanced. Creative aspect of the area of study.

**Van Rossum and Schenk (1984)** used the *reduction of conceptions in two categories: reproductive level and constructive level in their study on the relationship between learning conception, study strategy and learning outcome*. They found that students who used a surface approach to learning held reproductive conception of learning (increasing one’s knowledge, memorizing and reproducing and applying) whereas those who used a deep approach held a constructive conception (understanding and seeing something in a different way).

**Avery, R.E. (1986)** was to investigate the *effect on academic achievement when teacher styles and student learning styles were matched*. The study also assessed the teachers ability to determine their students learning styles by guessing. Other areas of study included:

(i) the effect on academic achievement when teaching style, learning style and sex were matched;

(ii) the effect on academic achievement when the teachers sex matches the students; and

(iii) the relationship between the vocational students’ dominant styles and their shop placement. One hundred and eleven twelfth grade vocational student and seven teachers completed the Gregory style delineator. The study concluded that matching learning style with teacher styles did not improve academic achievement; that teachers could not guess the dominant styles of their students; that there was no relationship between vocational placement and student dominant styles; and that when the sex of the teachers’ matched that of their students’ academic
achievement decreased.

Entwistle (1986) used both quantitative and qualitative methodologies to learning in students. Findings indicate that different forms of motivation are associated with the three main approaches to learning (deep, surface and strategic). Learning approach was strongly affected by assessment procedures, workload, freedom in learning and by what students perceived to be good teaching.

Hinkle, K.S. (1987) was to investigate relationships among learning style preferences, personality types and mathematics anxiety of college students. Data were collected during the fall of 1985 from seventy five students (27 males and 48 females) enrolled in the researcher’s Mathematics Anxiety Rating scale inventory (MARS), Klob’s Learning style inventory (LSI), Myers Briggs Type indicates (MBTI), California achievement test free response questionnaire and course performance. Learning style preferences and personality types were significantly related in the following ways: concrete experience to extraversion; active experimentation to perceiving. The suggestions made by the study were that teachers should consider learning style preferences and personality type when planning instruction and should identify what learning style preferences and personality types lead to success in their class and teach students to adapt.

Biggs (1988) examined the relation of different approaches to writing to the quality of the written outcome. 24 student writers were interviewed. Results stated that writers using a deep approach achieved higher grades overall, but some writes using mixed and surface approaches achieved high grades through sheer length and wealth of detail. Findings suggested that the deep approach is clearly associated with desired outcomes.

Ramsden (1988) investigated students approaches to Learning and their perceptions of teaching. The results were derived from a survey of 745 government school students. ANOVA was used to measure the association between students perceptions of their surface or deep Learning strategies and their formal achievement as evaluated by standardized subject examination
results. Findings demonstrated that students who reported deep strategies to learning perceived the teaching in the schools they attended to be better than those students who reported surface strategies. “Surface” students scored lower on the end of year examination than the deep students.

John Steven (1989) was to determine whether differences exist between gifted and non-gifted students in their learning style preferences. The study further attempted to investigate if learning style differences are affected by membership in a culturally different group. The subjects were 187 junior high school students from a large urban school district in south eastern Pennsylvania. The total sample was divided into two main groups: 115 white students vs. 72 black students and 90 gifted students vs. 97 non-gifted students. All of the subjects were administrated Renzulli and Smith’s Learning Style Inventory (1978). Findings revealed that significant learning style differences existed between gifted and non-gifted students (p<.05) as well as black and white students (p<.01). This replication study confirmed the findings of earlier studies that reported significant differences in learning style preferences between gifted and non-gifted students regardless of grade level (elementary vs. junior high). Type of giftedness (academically talented vs. intellectually gifted), and geographic locale (urban vs. suburban).

Finley, J.L. (1990) was to identify the factors underlying three self report learning style inventories. An additional goal was to determine the relation of the underlying factors to academic performance. Over 700 first year students enrolled in introductory psychology courses at Colorado State University were given three learning style inventories. The three inventories were: (a) the Study Process Questionnaire (SPQ), (b) the Approaches to Studying Inventory (ASI) and (c) the inventory of Learning Process (ILP). The findings of the study supported that the Achievement Motivation and Extrinsic Motivation factors were distinct from factors associated with the cognitive aspects of learning styles. Learning style constructs related little to undergraduate GPA in this study. Yet, the learning style constructs were suggested to be relevant in other ways such as making decisions about careers and college majors.
Beckwith (1991) investigated the relationships between three approaches to Learning (Surface, deep and achieving) prior knowledge of subject area and performance on a multiple-choice test following a unit in basic psychology with 105 college freshmen. It was found that the approaches to learning were unrelated to test performance. Prior knowledge did not relate to a deep approach but did predict performance.

Hargett (1994) attempted to determine the relationship between scholastic aptitude and approaches to learning. The researcher administered the Study Process Questionnaire (SPQ) to 532 undergraduates. Results indicate that students scoring highest on the Scholastic Aptitude Test (SAT) used the Surface Approach more than middle or low ability students. That is those with higher abilities chose to adopt rote memorization as a Learning strategy to achieve high grades in school.

Richardson (1994) studied effect of approaches to learning on academic learning on mature college students and suggests mature college students use more desirable approaches to academic learning, adopting a deep approach (meaning orientation) more often and a surface approach less often than younger students. Explanations include motivation by intrinsic goals; acquisition of a surface approach by younger students in secondary education and effects of life experience.

Kumar, Sudheesh P.K. (1994) attempted to study interaction effect of intelligence, cognitive style and approaches to studying on achievement in biology of secondary school pupils. The representative sample of 700 secondary school children were administered the Proportionate stratified sampling procedure given to sex, locale, instructional efficiency and management category of schools. Regarding Main effect of approaches to studying significant main effect of deep/surface approach existed on achievement in biology, total score, comprehension and in higher objective category for the total sample. In knowledge and application categories no significant main effect of deep and surface approach was found.

Landine, Jeffry Robert (1994) examined the relationship between meta
cognitive approaches and motivation, locus of control, self-efficacy and academic achievement. The purpose of this study was to examine the relationship between meta cognition and certain personality variables and the role they play in academic achievement. Biggs (1987) Model of meta cognition was used as the theoretical framework for the study. The model suggests three distinct approaches to Learning: surface, deep and achieving. Measures of meta cognition, motivation, locus of control, self-efficacy were used to compare with the students estimates of current academic average. These measures were administered to a population of 108 grade 12 students in new Brunswick and Newfoundland. The results indicated significant positive relationships between metacognitive approaches and motivation, locus of control, self-efficacy and academic average. An analysis of differences between the three metacognitive approaches groups showed the deep and achieving approach groups to be related to academic success, but not the surface group. It was concluded that meta cognition and these personality variables are related to academic achievement.

Siliauskas-Walker, Gina (1994) examined the effects of Learning approach and cognitive mapping on quality of learning outcomes. The focus of this study was to investigated whether less effective students who typically adopt a surface approach to learning (associated with the intention to reproduce essential information and the use of rote learning) can benefit from instruction in cognitive mapping to attain a meaningful learning outcome in a text comprehension task. Also examined was the effect of cognitive mapping on the performance of students whose typical approach is deep (learners who focus on the meaning inherent in learning tasks and look for interrelationships). In addition, the study investigated the overall effectiveness of the cognitive mapping strategy in increasing meaning learning outcomes six intact classes were randomly assigned to treatment or controlled conditions. Students were classified on Learning approach according to Learning Process Questionnaire (LPQ) scores. The dependent measure consisted of categorization of the written responses to an essay type test, using the structure of observed Learning outcome (SOLO) Taxonomy to differentiate deep and Surface response. A
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chi-square analysis demonstrated the effectiveness of cognitive mapping instructions on the performance of the treatment group as a whole. Additional planned comparisons using Fisher’s Exact Test, however, revealed that such instructions did not affect the performance of learners categorized either as surface or deep. Learners classified as neither surface nor deep (54% of the sample), on the other hand, were shown to be positively affected. Learners categorized as deep may be able to assimilate different deep strategies without ill effect, while learners categorized as surface may require other interventions if they are to develop understanding.

Watkins, David and Akande, Adebowale (1994) explored the approaches to learning of Nigerian secondary school children: Emic and ethnic perspectives in Z studies. In study 1,150, 14-16 yrs old were asked to provide open-ended answer questions, ”what do you mean by Learning?” Content analysis identified Learning conception similar to those found in western studies that are thought to underlie deep and surface approaches to Learning. Study 2, examined the reliability and validity of the western-developed Learning process questionnaire, for 265, 14-16 yrs old Nigerian children. Findings were generally encouraging. Tentative comparisons of the approach to learning of these Nigerians with the same aged Australian, Nepalese, Hong-Kong and Filipino children question the stereotype of third-world learners as rote learners.

Yuen-Yee, Grace Chan and Watkins, David (1994) investigated classroom environment and approaches to learning: An investigation of the actual and preferred perceptions of Hong-Kong secondary School students. This hypothesized that students will exhibit a strong relationship between their preferred approaches to learning. The data collection was administered 180 from 3 Hong-Kong secondary students (aged 14-15 yrs) in 5 Anglo-Chinese Student’s approach to Learning was assessed by the Cantonese Version of the Learning Process Questionnaire, and students’ perception of their classroom environment was assessed by the 36 item version of the classroom environment scale. Data showed the students perceived their classroom to be fairly competitive and teacher controlled as encouraging rote learning. Students
preferred a friendlier atmosphere where students and teachers collaborated to provide a greater variety of interesting but challenging activities such a Learning environment, students indicated, would tend to promote the deeper, more achievement-oriented approach to learning that they would prefer.

**Anderson, Margaret D. (1995)** studied *relationship between college students Learning approach to their quality of Learning outcome*. The focus of this study is to empirically test. **Biggs's (1985)** theoretical model of the relationship between specific predictor and criterion, variables. It examines the inter relationship among the predictor variables of locus of control approach to Learning, and meta cognition, and their relationship with the quality of Learning outcomes (structural complexity and dept of cognitive performance) Rotter’s locus of control scale (Rotter, 1966), and Biggs's study process questionnaire (SPQ) (Biggs, 1988b) and Tobias’s assessment of meta cognition were administered to 177 college students from a state UNIV to measure the predictor variables. Essay Answers to open ended questions based on three text passages were evaluated using the structure of the observed learning outcome (SOLO) Taxonomy (Biggs and Collis, 1982) to determine structural complexity. The results of Pearson’s product moment correlational analysis indicate a positive correlation between internal locus of control and deep and achieving approaches to learning and meta cognition. A negative correlation between surface approach and meta cognition is indicated no relationship between any learning approach and learning outcome is supported.

**Beyeler, Julia Mae (1995)** conducted *action research intervention: psychology undergraduates’ application of reading comprehension and learning strategies*. This ethnographic Study documented the application study strategy of five college students during one semester when strategies to improve reading and Learning were taught and demonstrated. The participants to the Learning and study strategies inventory (LASSI) as pre and post test for comparison with their GPA and study strategies (Weinsten, Palmer and Schulte, 1987). After the first test, the participants believed that the chapter objectives given to them by the psychology instructor should be utilized as a guide for Their learning instead of the strategies provided by the researcher.
This resulted in participants using the surface level strategy of memorizing answers to the chapter objectives. The participants did not believe that the deep level strategies, summarizing and applying the information to other situations, in reciprocal teaching, were necessary in order to receive their desired grade in psychology. The implication of this study for professionals planning, reading and learning assistance for college students is that if surface level strategies are selfish and to pass a course, those are the strategies the students will utilize. However, when surface level strategies are utilized and the student does not update in the desired grade, then, the student is more willing to apply deep level strategies to improve the grade.

Lindsey and Faulkner (1996) began as a response to the question: *What makes the academic learning of highly gifted students different from those less able?* The research project began with a cohort of 11 students in the year 1987. Data was collected in the following areas:

- **General ability.** The advanced test B 40 *(Australian Council for Educational Research, 1983)* was used as a measure of general ability. This test is a group test including verbal and numerical reasoning items.

- **The Learning Process Questionnaire (Biggs, 1987)** was used to provide measures of the students general beliefs and goals in learning.

The findings highlighted a significant association between combinations of learning goals, the types of strategies students use and the levels of school achievement. The differences in strategy use and achievement that were fond in this study pointed to the usefulness of taking into account the multi dimensional character of student styles of engagement with learning. The author stated that the characteristics, which each student bring to their learning context, shape and combine with their construction of the task, to influence the learning strategies they adopt and the outcomes they achieve. The study concluded that moles of learning need to consider the influence of students general orientation towards learning.

Beattie, Collins and McInnis (1997) studied on *Deep and surface learning: a simple or simplistic dichotomy?* In the accounting education
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literature by introducing the full complexity of the important education literature on deep and surface learning show that the use of this dichotomy, which is often used as convenient shorthand, generally oversimplifies in two key respects.

- First, the deep-surface distinction is relevant in analyzing the following aspects of learning: student learning intentions, learning styles, learning approaches adopted and learning outcomes. The specific context in which the distinction is being applied must be defined carefully. Moreover, it is unrealistic to assume that a deep approach to learning is universally desirable, since it may be necessary, given the nature of the knowledge to be acquired, to adopt a surface approach.

- Second, the deep-surface approach to learning has been shown to comprise only one of several components, which influence a student's overall learning orientation.

As a consequence, the identification of several learning orientations, rather than two approaches, given richer insights into students' learning processes. These orientations, which comprise the learning style and learning approach, are determined partly by the students' personality, motivation and study methods and partly by contextual factors such as the learning task, the attributes and enthusiasms of the lecturer and the forms of assessment. If intervention strategies designed to improve teaching and learning are to be successful, then a fuller understanding is required of the complex, composite and contingent nature of deep and surface learning and its interrelationship within the teaching-learning environment.

Chin (1998) studied the qualitative differences between a deep and surface learning approach to learning science. One hundred and two eighth grade students were given the Learning Approach Questionnaire to measure their orientation to learn using a deep or surface approach. Strategies associated with a deep learning approach included generating mental images and analogies, outcomes, self-experiences and prior knowledge and applying them to new situations asking questions and thinking of specific examples, when
students used a deep approach they also constantly monitored and self-evaluated the status of their comprehension, self-questioned and self-corrected their errors.

**Chin, Christine Hui-li (1998)** investigated the *relationship between students Learning approaches and their understanding of some chemical concepts in eighth grade science*. The study revealed the differences between the deep and surface Learning approaches with regard to generative thinking, nature of explanations, asking questions, meta-cognitive activity and approach to task.

**Humphreys, B.K. (1998)** studied *How do the students learn or fail to learn in a traditional chiropractic curriculum?*. The result revealed that student learning was affected by the educational environment personal and a curricular motivations to learn, personal perceptions of curriculum and individual approaches to learning and studying.

**Po Yin Dren and David Watkins (1998)** investigated the *interrelationships of affective variables, learning approaches and academic achievement*. It was shown that both academic casual attributions and academic self concept influenced academic achievement indirectly via students learning approaches, locus of control was significantly and negatively related to the surface approach to studying while academic self concept had a positive significant influence on the deep approaches to studying showed significant direct effects on academic achievement. The findings supported the theoretical notion that personality variables influence students learning processes and subsequently their academic achievement. The findings also tend support to attributional retaining.

**Watkins and Wong (1998)** conducted a *longitudinal study of psychosocial environment and learning approaches in the Hong-Kong classroom*. The study revealed that an enjoyable classroom environment mediated the causal relationship between a deep approach and high level achievement. However, classroom environment did not seem to influence changes in approach to Learning.
Thummarpon, A. (1998) was to investigate the preferred learning styles of junior students within the Faculty of Education Prince of Songkla University and to determine relationships between learning styles and students grade point average, sex and programme area. A sample of 139 junior students was designated for this study. The Thai translated instrument used in this study was translated from the Learning Style Inventory developed by Albert A. Canfield in 1976. The data indicated that the junior students had a strong preference for learning style variables concerning instructor affiliation, people and direct experience. The forward stepwise regression analysis indicated that learning style variable labelled expectation for success was the best predictor of academic success as measured by GPA.

Chin (1999) compared the differences between deep and surface approach to learning science. Six grade 8 students judged as using a deep or surface approach were video-taped during class group laboratory activities in a chemistry unit. They were also interviewed individually before and after instruction about related science concepts. On analysis of students actions it was found that when students used a deep approach, they ventured into their ideas more spontaneously, gave more elaborate explanations which described mechanisms, asked questions which focussed on explanations and causes. Students using a surface approach gave explanations that were reformulations of the questions. Their questions also referred to more basic factual or procedural information.

Britton, L.A. (1999) conducted an exploratory study of the impact of hypermedia based approach and science – in – fiction approach for instruction on the polymerize chain reaction. The results of this study revealed that the significant conceptual change about the nature of science was not detected, even though most students demonstrated deep and elaborate learning styles.

Salim Kumar, C. (1999) studied the effect of approaches to studying and achievement in Biology in relation to intelligence. The study revealed that there was no significant effect of approaches to studying and achievement motivation on achievement in Biology for high, low or average intelligence group.
Van Melle, Elaine Patricia (2000) evaluated the use of a CD-ROM to foster Learning for understanding using a case study approach. This study examined the use of a multi-media CD ROM entitled HyperClinic: Interactive Case Studies in Microbiology in order to foster to learning for understanding in a first year Microbiology course for nurses. Results of the study Process Questionnaires showed that there was a significant shift in a deep approach to Learning over the course of the term. Student interviews revealed that the computer technology supported this shift by providing students with the opportunity to apply what they had learned in class to specific case studies.

Schaap, Pieter (2000) conducted a study entitled the development of a psychometric instrument to determine the learning approaches of adults. The primary aim of the study was to develop psychometric questionnaire which could be used by adults. The second aim of the study was to develop a systems model which could indicate the relationship between learning approaches, learning environment factors, personal factors and learning outcomes for organizations. The learning approaches questionnaire (LAQ) which was developed consists of the learning content section (LAQc) and social orientation section (LAQs). The LAQc section consists of a deep, surface and achievement learning approach dimension, as well as an perceived self-efficacy and fear of failure dimension. The LAQs consists of a dependent, independent cooperative and competitive learning approach dimension. The research results provide evidence of the content, factor and construct validity of the LAQ. The result of the empirical investigation strongly support the systems model of learning.

Price, Nancy’s (2000) study has explored the qualitative differences in student learning outcomes while establishing the relationship between learning context, student approach to learning and student learning outcomes. The data set included instructor interviews, a qualitative measure of instructor’s student learning expectations for their course, qualitative measures of student learning expectations and quantitative measures of students’ general learning approach, students’ specific approach to learning in their course. The following relationship were examined within the context of three McGill Distance
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Education Program Courses: (i) the relationship between learning context, student approach to learning and student learning outcomes; (ii) the relationship between student and instructor perspective of the learning context; and (iii) the relationship between type of course, course learning expectations, course structure and design and the selected methods of assessment.

Lucas (2001) reported the findings of a phenomenographic research study, which sought to identify students’ approaches to learning introductory accounting and their conceptions of accounting. The findings revealed that, in common with other disciplines, deep and surface approaches to learning could be identified. However, the main contribution of this study lies in two areas.

- First, it distinguishes those features that are characteristic of the deep and surface approaches within the discipline of accounting.
- Secondly, it identifies contextual features surrounding these approaches to learning and which are central to an understanding of them.

The paper suggested how these findings can be used immediately to make changes within teaching and assessment practice through a phenomenographic pedagogy which: seeks to make students' conceptions of the subject matter explicit; provides diagnosis tools for the identification of distinctively different conceptions of the subject and approaches to learning; and addresses issues of preconceptions and relevance within teaching and assessment.

Evans, Christiana Janet (2001) studied approaches to Learning, need for cognition, and strategic flexibility among university students. The purpose was to explore relationships among three questionnaires: The study process questionnaire (SPQ) (Biggs, 1978), the need for cognition scale (NCS) (Casioppo and Pety, 1982) and the strategic flexibility questionnaire (SFQ) (Cantwell and Moore, 1996). The SPQ measures three approaches to Learning: Deep, surface and achieving. Underlying theory suggested strong similarities among need for cognition, the deep approach and adaptive control as well as similarities among surface approach, inflexible control and irresolute control. Further, surface, inflexible, and irresolute appeared to be opposites of
need for cognition, deep and adaptive. It was proposed that these scales might all be measuring one underlying construct such as self regulated Learning.

Sellheim, Debra Ough (2001) examined the ways in which physical therapy teachers and students’ beliefs and conceptions about teaching and learning, teachers’ instructional methods, and students’ perceptions of learning experience influence the students’ approaches to learning. In addition this study examined national trends in physical therapy students’ approaches to learning. Quality data collection methods including semi structured interviews of faculty and students, classroom observations and document review were utilized. This study found that the majority of physical therapy faculty in this sample hold conceptions of teaching categorized as teacher-centered while learners’ beliefs and conception of teaching and learning are focused on acquiring knowledge and skills with an emphasis on deeper understanding and application. The profile of physical therapy students’ approaches to learning also showed preferences for deep or strategic approaches to learning. Factors that appear to move student towards a surface approach in their learning include students’ inability to see relevance in the material, assessment methods focused on recall of information, overload of curriculum content, passive teaching methods, students’ lack of interest in content, and environments that are not conducive to learning. Factor that appear to move students toward a deep approach to learning include awareness of the relevance and context learning, appropriate sequencing of learning, assessment methods focused on reflective observation and clinical reasoning, adequate time to utilize deep approaches to learning, interactive learning, environment conducive to deep learning connections between new learning and previous knowledge and discussion with classmates.

Gordon and Debus (2002) studies contextual modifications were implemented in an existing pre-service teacher education programme to increase students’ use of deep approaches to learning and reduce their reliance on the use of surface approaches, without the need for major redesign. Students’ perceptions of their competence in performing the tasks of teaching (personal teaching efficacy) were also expected to improve in response to
improvements in quality learning. These cohorts of students (N= 134), enrolled in a pre-service teacher education degree programme at a rural university in New South Wales, Australia participated in the study. A longitudinal quasi-experimental design was used, with Cohort 1 acting as a control while Cohorts 2 and 3 represented treatment groups. Repeated measures were taken on Biggs’ (1987b) Study Process Questionnaire, a modified version of Gibson and Dembo’s (1984) Teacher Efficacy Scale and the Academic subscale within Lefcourt’s (1981) Multi-dimensional-Multi-attributional Causality Scale. An action research paradigm was embedded to enable the development and refinement of the altered teaching approaches. Results indicated that the modifications to teaching methods, task requirements and assessment processes applied to the treatment group encouraged changes in students’ approaches to learning by firstly reducing their use of surface approaches and later increasing the use of deep approaches. While both treatment and contrast groups exhibited equivalent growth in teaching efficacy, differences between cohorts were noted in the sources that informed personal teaching efficacy at the conclusion of the course. These findings suggested that the study succeeded in its major goal of improving the quality of teaching and learning in this teacher education programme.

Manpreet Kaur (2003) studied about the attainment of some scientific concepts through Bruner model in relation to Learning approaches of secondary students and concluded that mean performance of students of deep approach is higher than the mean performance of students of surface approach and interaction between Bruner models and Learning approaches leads to higher scores of students.

Bailey (2003) investigated the effect of two learning strategies have on student to student interaction, student to teacher interaction and student satisfaction. He suggested that a student perception of student to student and student to teacher interaction may impact the level of student satisfaction. There is no difference in the level of students satisfaction between two learning strategies.

Uraiwan, W. (2003) conducted a study on language learning through
language laboratories in relation to self efficacy and learning approaches of technical college students in Thailand and concluded that learning approaches, do not seem to differentially affect the attainments through language learning in language laboratory. Deep Learning approach students and surface learning approach students are almost equally in every aspect of English performance of learning through language laboratory and conventional group learning totals scores, scores of stress on words, scores of rhythm in words and scores of intonation words. Through language laboratory, high English self-efficacy students with deep approach were found superior over their counterparts with surface approach and deep approach students of high English self-efficacy showed higher gain means on intonation as compared to their counterparts of deep approach but low English self efficacy.

Wannasilapa, U. (2003) in her study on language learning through language laboratory in relation to self-efficacy and learning approaches to technical college students in Thailand. One of the objectives of the study was to determine the effect of the Language Laboratory Interaction on language performance on technical college students with Deep and Surface learning approach. The sample consists of 400 randomly selected Technical College students of Thailand. Tools used were an instructional package for learning through Language Laboratory, Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) (Biggs, 2000) for identifying deep and surface learning approaches and English Self-Efficacy Scale (Ahuja and Vibha, 2000). Findings of the study led to a conclusion that learning approaches do not seem to differently affect the attainments of students’.

Mayya, S.S., Rao, K.A., Ramnarayan, K. (2004) studied about learning approaches, learning difficulties and academic performance of undergraduate students of physiotherapy. The study concluded that academic performance has shown significant negative correlation with surface approaches and various problems of learners like fear of failure and lack of confidence, non—academic distracters and poor English language ability. This study demonstrated significant positive association between surface approach and various problems of the learners. The students have also reported a number
of academic and non-academic problems.

Developing deep approaches to learning is claimed to enhance students’ engagement with their subject material and result in improved analytical and conceptual thinking skills. The paper changing the learning environment to promote deep learning approaches in first-year accounting students by Hall, Ramsay and Raven (2004) reported on changes to the learning environment centering on the introduction of group learning activities that were designed to improve the quality of students’ learning outcomes. The impact of changes in the learning environment on students’ approaches to learning, as measured by the Study Process Questionnaire (SPQ) (Biggs, 1987b), was then assessed. Results indicate that, across the semester, accounting students exhibited a small but statistically significant increase in their deep learning approach, and a small but statistically significant reduction in their surface learning approaches. The results suggested that accounting educators, through changes in the learning environment, might be able to influence the learning approaches adopted by accounting students.

Emillia, Ova’s (2005) explored the influence of the clinical learning environments (CLE) on students’ learning approaches and learning outcomes. A cross-sectional study of 209 medical students doing clinical clerkship rotations was conducted using two questionnaires (i) clinical learning environment questionnaire (Rotem et al, 1955) and (ii) as approaches to learning questionnaire (Biggs, 1987 and Hilliard, 1995). The quantitative and qualitative findings reinforced each other. The CLE in the clinical rotation (i.e. department) had a strong influence on students’ approaches to learning and learning outcomes. The extent of students’ opportunities to practise was a strong indicator for perceived learning outcome. The study showed the potential for manipulating the CLE in order to influence students’ approaches to learning and learning outcome.

Baker, M.E. (2005) studied on Mathematical problem-solving skills in undergraduate pre-service teacher education students and examined the mathematical problem solving skills of pre-service teacher education students. Twenty-seven students enrolled in one of the two sections of an elementary
mathematics methods course in an upper mid-western university during the fall term of 2003 participated in the study. Variables examined in the study include problem solving, math anxiety, and approach to learning, as defined by strategies associated with the three approaches: surface, strategic and deep. The relationships between the variables were also studied. Students related the extent to which they perceived that they experienced math anxiety and employed the strategies associated with problem solving and the three approaches to learning through their responses to pre-and post-course administrations of the Mathematics Information Processing Scale survey. These students indicated that they employed problem-solving strategies and that the strategies used increased by the end of the course. Students also indicated that they typically experienced math anxiety and this neither increased nor decreased significantly by the end of this course. Math anxiety was not correlated to problem solving on the pre-course survey, but it was on the post.

The most common approaches to learning reported by these pre-service students was the Strategies Study approach, both before and after the course. By the end of the course, the Deep-Associative Study approach supplanted the Surface-Disintegrated Study approach for second place. This indicated growth in these pre-service teacher education students as mathematicians and problem solvers since the Surface approach to learning has negative connotations and the Deep approach is a much more positive and deeply intrinsic approach to learning. Positive correlations were found between both the Strategic Study and Deep-Associative study approaches to learning and problem solving. No correlation was found between the Surface-Disintegrated study approach and Problem solving.

**Hagans (2005)** described the *learning styles and learning strategies of formally trained and informally trained musicians and to explore creativity relationships when learning music*. Identifying the learning styles and learning strategies of 109 students at Berklee College of Music accomplished this and 30 Naturally trained musicians in Tulsa, Oklahoma. The Learning-Style Inventory (LSI) was used to measure learning styles, Assessing the Learning Strategies of Adults (ATLAS) was used to identify learning strategy
preferences. The study found the largest groups for the LSI were the Divergers and the largest groups for ATLAS were the Engagers. It also found that one’s learning style and learning strategy group had no significance to one’s level of creativity. Major conclusions were that the LSI and ATLAS are useful tools that accurately identify and describe learning preferences of formally trained musicians.

Bresman, P.H.M. (2005) studied about learning strategies and performance in organizational teams by addressing the subject of team learning strategies and their performance effects in three independent but related chapters. A common theme was the notion that theorizing about team learning as constituted by a set of distinct strategies can improve our understanding of how teams learn, and how it influences performance. The first chapter explores team learning in an inductive study of six teams in one large pharmaceutical firm. The second chapter reviews the literature on team learning and concludes that it has largely been treated as a uniform construct. Drawing on organizational learning theory, social learning theory, and the literature on the management of innovation and entrepreneurship, the final chapter examines different team learning strategies, and vicarious learning in particular, as a means to understanding learning and performance differences across teams. Vicarious learning is conceptualized as an integral part of how teams learn. The chapter concludes by pointing toward a contingency theory of team learning in which the effectiveness of a team learning strategy depends on characteristic in the team’s task environment.

Basharina, Olga’s (2005) study on an activity system analysis of international telecollaboration: Contexts, contradictions and learning examined the long distance computer mediated communication in 4 WebCT forums which joined 20 Japanese, 37 Mexican, and 46 Russian English learners. The emphasis was on defining to what extent contradictions captured the how and learning aspects of interaction. The study illustrates how affordances of multiple contextual layers defined students participation their objectives, motivation or unwillingness to interact, and attitudes toward each other. The Japanese and Mexican students participation represented an
interactive learning paradigm whereas the participation of the Russian students represented a curriculum teacher centered paradigm. Depending on their identity of deep, strategic or surface communicators students demonstrated differences in quality of their participation. The study identified eight major contradictions attributed to students different cultures of use of the computer technologies (Thorne, 2003) and different frames of reference with regards to their norms of language use and beliefs about learning online. The study found evidence of both learning and not learning through content and discourse analysis of interaction protocols and students interview and survey reports. Extending the ongoing discussion, the study emphasizes the importance of

(i) students cultures of use of computer technologies, mediated by instructors and by broader socio cultural contexts,

(ii) student frames of reference with regards to interacting and learning and

(iii) students agency in defining the meaning of being communicatively competent in international intercultural online environments.

Struyven, K. (2005) adopted a course on child development in the teacher training programme of elementary school teachers that was either delivered by means of lectures in one group or by student activation teaching methods in the other group. In total 958 students participated in this study. Contrary to expectations, student activating instruction does not lead students towards deep approaches to learning or learning for understanding. Instead, they tend to adopt more surface approaches to learning and less strategic approaches. Despite these findings, results reveal student performance to be similar in both groups. The student activating teaching produces a wide range of course evaluations, dividing student into supporters and opponents of this teaching method. Supporters highlighted benefits such as: collaborative learning, active learning critical thinking, and real life problem solving skills; whereas opponents opposed the benefits.

Singh, P. (2005) studied the impact of participative classroom climate on the achievement of ninth grade students in relation to their Learning approaches and concluded that

(i) Academic achievement mean scores were

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higher for students of Deep approach than that of their counterparts in surface approach (ii) There is significant difference in achievement scores of deep approach and surface approach students. Students with deep learning approach achieved higher score than that of their counterparts in surface approach.

Yew (2005) investigated the learning approaches adopted by marketing students and the impact of changes in teaching strategies upon the students learning approaches and whether there are any significant differences in deep learning scores among students with different demographic profiles. Data was collected from 32 students by administering the Study Process Questionnaire (SPQ) developed by Biggs (1982) and interviews. Initially students were found to adopt a surface approach compared to a deep approach, while the students were motivated to obtain the highest grades to enhance their egos about half of their time. Changes were made to the teaching strategies throughout the semester which include use of group problem solving exercises during tutorials, group presentations and assignments. The paired t-tests conducted revealed a significant increase in the use of the deep learning approach at the end of the semester. There were no significant differences the deep learning approach scores among students from different demographic profiles. The results of the study suggest that learning approaches can be influenced through changes in the teaching strategies.

Scott Sherry B., Harrison, Adreinne D., Baker, Thelma, Wills, Joylyrne D. (2006) studied interdisciplinary community partnership for health professional students: A Service Learning Approach and presents a qualitative approach to studying the reflective learning experiences of health professional students after they participate in an interdisciplinary community based healthcare course. Over a 2 year period, health professional students from various health-related disciplines voluntarily took an interdisciplinary, community based health course offered at an urban, mid-Atlantic, private university. Through didactic and experiential opportunities, students in the course learned the importance of providing health care services to underserved populations at urban community based sites. Throughout the semester, students kept journals, completed community response forms, and participated in
documented class discussions. A research team of health professional faculty applied constant comparative analyses to the journal entries and community site visit response forms. Four central themes were identified as the students engaged in learning experiences at various community sites: (i) the need for preventive healthcare; (ii) the importance of health services and resources; (iii) the awareness of students attitude and behavioural changes; and (iv) increased awareness of student and client expectations for health care services.

Yuan, Rong’s (2006) study on *a probe into learning approaches and attitudes towards technology enhanced language learning (TELL) on Chinese instruction* carried out at the military environment at the defense language institute aimed to investigate whether learning approaches could predict learners (TELL). Both the learning approaches inventory ASSIST and the attitudes towards TELL survey were administered and sent out to 158 Chinese language learners. 137 valid responses were obtained. Conclusions of the study were as follows:

i) The surface and apathetic approach was a significant predictor for both learners measured language proficiency and their self perception of academic performance.

ii) The strategic approach was a positive predictor for learners attitudes toward TELL; whereas surface and apathetic approach was a negative predictor for learners attitudes towards TELL.

iii) None of the learners demographic variables could not predict either learners language proficiency or their attitudes towards TELL.

Much of the work that we have reviewed on learning approaches provided evidences that students learning techniques are different from one another. This being the case is also true that there would be a difference between the ways students should be taught and the ways the students are currently being taught. The studies highlighted that consideration of learning approaches on planning instruction, curriculum and teaching will certainly lead to success.
RESEARCH STUDIES RELATED WITH LIFE SKILLS

Botvin (1985) and his colleagues studied the life skills training programme as a health promotion strategy and have developed a curriculum based programme called life skills training which seeks to facilitate the development of generic life skills as well as skills and knowledge more specifically related to substance use.

Hamburg, D.A. (1986) preparing for life: the critical transition of adolescence explored problems and burdens of adolescents in modern society and probes strategies and actions that offer reasonable chances of diminishing development casualties during the adolescent period. Discussion first focuses on several historically recent changes that have affected adolescents, including the lengthening period of adolescence, the disjunction between biological and social development, youth’s confusion about adult roles and the years ahead, the erosion of family and social support networks, and the easy access by adolescents to potentially life threatening substances and activities. The discussion particularizes the nature of the problems and burdens of adolescence with statistics on school dropouts, pregnancy, smoking, suicide, drug abuse, and death and disability from illness and injury. Some approaches to intervention are then discussed. These include peer-mediated approaches, and preparation to resist social influence through life skills training. Some general observations follow these focus on long term outcomes of early experience and adolescents’ need for accurate information, especially about the life science and health. Concluding remarks describe objective of the Carnegie Corporation’s council on adolescent development.

Brochu, S. and Souliere, M. (1988) studied Long-Term Evaluation of a Life Skills Approach for Alcohol and Drug Abuse Prevention. Three day life skills re-education program, embedded in 10 weeks new employee basic training had no long term effects on alcohol and drug knowledge and attitudes. Findings suggest that primary prevention program targeting adults may be too late to affect alcohol and drug habits, life skills approach may work best in secondary prevention efforts, and long term evaluation are necessary.
Potlebaum, S.M. (1988) measured the effect of grade repetition on Academic Achievement using covariance structure analysis. Conclusions drawn from this study indicated that grade repetition did not affect academic achievement when the constructs of family background and ability were taken into account. The results are more meaningful for white subjects.

Cupple's, J.K. (1988) studied and compared the linguistic performance and academic achievement of sensorineural unilaterally Learning impaired children with normal learning children. The results of the language assessment indicated that one third of the subjects demonstrated specific language deficits in the areas of receptive and expressive language and verbal problem solving tasks more than one half of the subjects who had grade repetitions also demonstrated similar language deficits. Results of academic achievement assessment on tests of reading, language and mathematics showed that 30% of the subjects received scores below grade expectancy in at least one academic area, 42% of the subjects who had grade repetitions also demonstrated academic scores below grade expectancy. No significant correlations were demonstrated between degree and side of loss compared with language performance and academic achievement variables.

Sharma, P.L. (1988) investigated into the factors related to academic under achievement of girls of secondary schools located in rural area of Haryana. The tool used included Mohsin verbal test of intelligence, Wrenn's study habit inventory (Hindi Adaptation) and Bhatia achievement motivation test. Academic under achievement was found to be more influenced because of intellectual factors (like study habits, language usage/ability) than non-intellectual factors (like achievement motivation, self concept, personality traits, adjustment).

Singh, S. (1989) studied the relationship of home environment, need for achievement and academic and academic motivation with academic achievement. The tool used included Money's Problem checklist, Ojha's Parental Attitude and McClelland's TAT for need achievement. The data was analysed using Mean, S.D., Correlation, t-test, Academic achievement was found to be significantly related to self-concept of students. There was not any
significant correlation of achievement with achievement motivation, home environment and need for achievement.

Beach, M.G. (1989) compared the academic achievement of students in Grades 3 through 8 who were 6.9 years old or older at first grade entrance with students in the same grade who were 5.9 to 6.5 years old at first grade entrance. The major findings revealed that age had significant effect on reading achievement in grades 3, 4 and 6. Of all the variables, socio-economic status was the most powerful, affecting reading, language and mathematics achievement at all grade levels. Girls achieved significantly higher than Boys in language in grade 4 through 7, and third grade students in single grade classrooms achieved significantly better than those in multigrade classrooms. The conclusions indicated that first grade entrance age had a limited effect on later academic achievement.

Santa, R.E. (1990) suggested Getting Set for Success which consists of three booklets: the text, success portfolio and facilitator’s guide. Unit 1 in the text tests the students’ coping skills. Contracts in the success portfolio for this unit enable the student to determine the sources of stress and ways of coping, describe different procedures for managing time, assess sources and ways of coping with depression, recognize and practice assertive behaviour and define the problem, seek alternatives and implement a plan. The focus of unit 2 is understanding self, particularly the positive and negative supports to constructive personnel and in their personal behaviour. Contracts in the success portfolio and above the student to increase self-regard and self-acceptance, used strategies to overcome self defeating behaviour, understand the importance of taking charge of college life, explosion according to Maslow’s ladder of values the needs that impel the student to achieve in college, and explode states of parent, adult and, child in self as the student relates to instructors and classmates. The unit 3 focuses on career awareness. Contracts in the success portfolio enable student to develop a value, interest and ability profile and follow the steps towards playful decision making and goal setting.

Lumpkin and Cynthia (1990) examined effects of teaching critical thinking skills on the critical thinking ability, achievement and retention of
social studies content by 5\textsuperscript{th} and 6\textsuperscript{th} graders. The study used a direct instructional approach on the critical thinking ability, achievement and retention of students content by 5\textsuperscript{th} and 6\textsuperscript{th} graders. The independent variable was the teaching methods used in the social studies classes. The dependent variables were scores on the critical thinking post--test scores on the content test and scores on the retention of content test. Result showed no significant differences in the critical thinking ability of the fifth grade groups nor of the sixth grade groups. There was no significant differences in the content achievement nor in the retention of content for the fifth grade groups.

Alan (1990) conducted a study on critical thinking measurement and development in vocational students in further education. The attention underlying the research aim was that teachers in further education should strive to improve critical thinking abilities so that vocational students are better prepared for making complex decisions in the work situation. In this respect the research had four specific aims. First to provide an operational definition of critical thinking, amenable to experimentation, second to develop a measure of critical thinking, third to test the effectiveness of a study package for enhancing student critical thinking abilities. Fourth to determine how teaching style might influence the development of critical thinking. In the fourth aim action research methods were used to deduce how teaching styles might enhance critical thinking. Results have shown that students preferred a flexible exposure to both teacher directed and student directed methods and this encouraged the development of integrating skills needed to enhance critical thinking.

Spangler, N.A. (1990) studied attitudes toward education and academic achievement of female incarcerates and found that attitudes towards education play an important role in the academic achievement of incarcerated females.

Suciati (1990) analysed the effect of motivation on the academic achievement in a distance education setting. Results indicated that the motivation effect on achievement was .61, which explained 36\% of achievement variation. Persistence is postulated as a function of motivation which in turn influences achievement.
Shah (1990) in his study *A study of relationship among intelligence, self-concept and academic achievement of pupils of standard X of semi-urban and rural areas of Sihore Taluka* and found positive and significant relationship between intelligence and achievement.

Fan Minte (1990) examined the impact of cooperative Learning and tutoring on academic achievement and self concept of Native American students and the results showed that statistical significances were found in Mathematics at P<0.001 using t-test for the entire sample as well as for both genders, grade levels and public and non-public students. This indicates that cooperative Learning and tutoring had a strong positive effect upon academic achievement.

Hamburg’s (1990) study deals with essential life skills for young adolescents. At present, there is a need to formally and systematically teach middle and junior high school students life skills for surviving, living with others and succeeding in a complex society. In this study, an introductory section was followed by a discussion of early adolescent development and life skills and core elements of life skills training. Attention was then given to:

- School-based interventions, including interpersonal Problem Solving, Social competence training, drug and alcohol project, school and community programmers.
- The Midwestern, a drug and alcohol-based interventions, including girl clubs of America, the summer training, and education programmed and the salvation army.
- Promising new conceptual models including the school development programmed, Rochester schools experiment, community prevention of alcohol and tobacco use, the violence prevention project and research leading to an anticipated middle-school violence prevention curriculum.

The next section discussed programmed implementation and evaluation. Concluding remark focused on the need for dissemination of information about effective life skills training and recommendations for implementation of preventive programmers in middle schools.
Terkelson, C. (1990) on the effects of a communication skill training program upon interpersonal communication in a Fortune 500 company was to determine if the training program, Communication And Relationship Effectiveness (CARE) produced a significant improvement in their interpersonal communication skills. A quasi-experimental, non-equivalent control group design was selected for the study. The interpersonal Communication inventory (ICI) was used to measure the change scores of the participants (n=24) relative to the control group (n=24) Findings revealed that the treatment employees made significant gains on seen of the twelve measures of communication and statistically yielded larger gains than the control group employees on four measures. Managers of employees perceived participants to have improved their communication behaviours after training compared to control employees. No significant differences were found among demographic group. Conclusion were that the communication patterns of CARE program participants were significantly improved and these changes were maintained over a four-week period after the training. Most importantly, these improvements were apparent to their’ as well.

Park, Y. (1991) examined the effect of teachers – imitated students – teacher personal relationship beyond the classroom upon academic achievement and attitudes of selected student at Korea Baptist Theological College and concluded that the teacher’s informal, close relationship had no effects on the students academic achievement and the attitude toward the course.

Wishnant, W.T. (1991) studied how stress and coping strategies change overtime and what relationship that change may have to academic achievement and found that course grades served as a measure of academic achievement for comparison to stress and coping scores. Comparisons were also made among the student variables of age, gender and levels of academic preparedness.

Kumar, D. (1991) conducted an investigation of academic achievement of adolescents in relation to their self-concept and socio-economic status and concluded that there was no significant relationship between academic
achievement and self-concepts and further he found that there was no significant difference between academic achievement of adolescents belonging to high and low self-concept.

Rajendran and Kaliappan (1991) conducted their study on sixth and ninth grade boys students to identify the various areas of academic stress and found the four main stress factors i.e. personal inadequacy with proportion of variance 29.4; fear of failure 26.8; inter-personal difficulties 21.1; and inadequate study facilities 14.7. The final form of scale consisted of sixty seven items describing the various areas of stressors.

Criner and Adkins (1992) conducted a study on critical thinking of adults. This study of critical thinking and reasoning in adults examined the relationship between pre and post test scores on a measure of reasoning skills of a group of community college students who were taught introductory philosophy and a control group which was taught the fundamentals of physical science. The t-test for independent samples revealed no statistically significant difference on a measure of reasoning between the two groups. Two way analysis of variance (ANOVA) revealed no significant relationship between adult (25 years and older) subjects.

Marie (1992) studied the relationship of teacher behaviour and characteristics of critical thinking skills among middle level students. The purpose of this study was to investigate the effect of teachers behaviours and characteristics upon the development of students mathematical critical thinking skills. From a pool of 20 teachers whose students had been pre and post tested for a measure of critical thinking skills, 10 middle level teachers were selected to complete extensive questionnaire on their backgrounds and experiences. The teachers were ranked in accordance with their respective classes mean gain scores on the assessment pool. From the pool of 20 teachers, the top ranked 25% (5 teachers) and bottom ranked 25% (5 teachers) were selected for the study. Extremes of the ranking order were used to increase the probability of determining post differences in teacher behaviours and characteristics between the two groups. Identified variables from pair wise comparisons of the teachers within each group were analysed, following corroboration from a minimum of
three data sources, to generate group profiles. Comparisons were conducted between all pairs of teachers with in each group and the differences between the two groups were compiled in the form of group profiles.

Warren and Marie (1992) conducted a study on student Learning of science process and critical thinking skills in the science I and science II curriculum. The purpose of this study was to evaluate the long term success of the science I and science II curriculum in contrast to the traditional content oriented curriculum. Results from the content knowledge test did not indicate a significant difference in achievement between the two groups.

Harding, K.L. (1992) studied the comparison of the academic achievement of students in St. Charles country in a selected district with a year round schedule and a district with a traditional nine month schedules. An analysis of variance at the .01 level revealed a statistically significant difference between the mean score of language Arts/Reading and the mean scores of social studies. This study appeared to support Academic Achievement gains in favour of the year round schedule.

Jackson, (1992) compared the academic achievement between magnet and non-magnet school students and found that students in the magnet programme scored higher than the students in the regular school programme on the Mathematics and reading subtests of the TAP (Test of Achievement and Proficiency). The magnet group scored slightly higher than their non-magnet counterparts on the TBP (Total Battery Composite Test). No significant differences were found between the two groups on the written expression and using sources of information subtests.

Sager, R. (1992) studied the effects of schools entrance age on the academic achievement of elementary school children with below average intelligence. The study revealed older age girls had significantly higher total Maths achievement than younger age girls. Other analysis of variance tests revealed, the tendency for older age students to achieve better but not at significant level.

Blakely, M.N. (1992) conducted a study to compare normal curve
equivalent scores (NCE) on the school attitude measure with NCE scores on
the California Achievement Test, Form E and the comprehensive tests of basic
skills, Fourth edition in 1990 with scores in 1991 to determine the relationship
between achievement and attitudes of students. The comparisons of the NCE
scores of forty-four primary age students were made after a one-year interval
in which intervention strategies were implemented by the school staff in an
effort to improve attitudes and achievement levels of students. No significant
difference was found at the 0.05 level between achievement test scores in 1990
when compared to 1991. Analysis also revealed that there was no significant
relationship in 1990 or again in 1991 in student achievement scores and student
attitude scores when correlated. A significant relationship at the 0.05 levels was
found to exist between achievement tests scores in 1990 when correlated with
achievement test scores in 1991. In addition, a significant relationship at the
0.05 level was found to exist between attitude tests scores in 1990 when
correlated with attitude test scores in 1991. Finally, there was no significant
difference found at the 0.05 level in the relationship of students scores on
achievement and attitude tests in 1990 when compared to the same students in

Meyer and Steyn (1992) reported on a pilot programme on Acquired
Immune Deficiency Syndrome (AIDS) and life skills training implemented in
schools in Pretoria, Laudium, Cape Town and Soweto (South Africa). Data
were collected through pre and post questionnaires and focus group
interviews. The purpose of the programme was to provide adolescents with
accurate information on which decision about AIDS prevention behaviour and
tolerance towards people infected with the human immunodeficiency Virus
(HIV) would be based. The programme has 10 modules, each with specific
teaching objectives; suggested teaching methods, teaching aids and learning
activities; and suggestions for additional reading. The modules address
puberty and adolescence, relationships (e.g., peer, family, opposite sex), love,
human sexuality, Decision Making, sexually transmitted diseases (STDs) and
HIV/AIDS. Finding indicated that students showed a general improvement in
AIDS-related knowledge topics as well more Positive perceptions of condom
use, and more realistic perceptions regarding susceptibility, and the seriousness and outcomes of HIV/AIDS.

Schoenee, R.K. (1993) studied the effects of elementary calendar experience on academic achievement and rate of attendance of high school graduates. The results of the study indicated that there was no significant difference in academic achievement and rate of attendance between students who attended a year round elementary schooling schedule as compared with those students having experienced a traditional elementary calendar schedule. Although not significantly different year round schooling students possessed higher GPA's (Grade Point Averages) and rate of attendance while traditional calendar schedule subjects possessed higher achievements scores in Maths and English. Male subjects performed better in Maths while female subjects scored higher in English.

Mansfield, J.B. (1993) examined the effect of extended wait-time versus short wait-time on student academic achievement and student attitude toward a course. Results showed that no significant differences were found between the experimental group and the control group relative to academic achievement and students attitude toward a course. No significant differences were found between genders relative to academic achievement and students attitude toward a course.

Caroline and Chapman (1993) reported current practices in teaching thinking skills of teachers and the factors which effect the teaching of thinking. In this study relationships were explored between current practices. Critical thinking skills of teachers, academic subjects taught, participation in 20 hrs thinking skills. A weak inverse relationship existed between teacher critical thinking skills as shown on the Cornell Critical Thinking Test level X and the current practices of teachers in teaching thinking skills.

Mahoney and Steven (1993) conducted the study on the efficacy of developing critical thinking and problem solving skills through technology education to eight grade students. This experimental study used the post test only design. The findings from this study reveal that there is no difference
between experimental and control groups on overall critical thinking scores. Thus this study failed to empirically link technology with the promotion or development of critical thinking skills in 12 weeks period.

Patterson, Elizabeth (1993) investigated the impact of reading and writing on critical thinking, attitude and story generation of middle school students. This research compared effects of two reading and writing instructional strategies on critical thinking, attitude and story generation of middle schoolers. One purpose of this study is to determine if two instructional techniques or strategies would effect students performance on critical thinking questions. This researcher implied that higher ability students benefited from the two instructional strategies more than lower ability students.

Halter, M.H. and Lang, B.F. (1994) in their study making choices : life skills for adolescents they designed to help adolescents develop skills which will encourage them to make health and positive choices about life. In addition, its design will assist the adults, parents and, teachers, as they guide young people through process. The book uses a series of written exercises designed to help organize the students’ goal and aspirations for life. The subjects are divided into five sections: appreciating differences, personal development, family and values, making choices, and making difference. The guide contains 96 one hour lessons, including eighteen students-driven classes which are scheduled to occur once a week. Topics in the text includes gender equity, and cultural diversity. The stages of personal development are examined in depth with special attention given to self esteem, creating dreams and skills development (communication, decision-making and time management). The importance of personal integrity and personal health are also highlighted along with the need to maintain health relationships with friends and family. Since choosing a career is among the more important decisions one makes a section on career planning is offered and is supplemented by a discussion of the importance of money management. Finally, ways that students can create change and address world problems are explored. Numerous worksheets and exercises are included to help students learn these solutions.

Helmke, L.M. and Others (1994) studied about life skills programming
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: development of a high school science course and reviewed a top down 11 step model for identifying critical life skills content, describes a high school science courses incorporating a life skills orientation and examines some considerations related to incorporating life skills content into the programs of students with special needs.

Fusco, Phylann, S. (1994) studied about coping styles to solve stressful situations and found significant positive correlation between hardiness and its components and coping styles which actively attempt to solve or alter stressful situations.

Noer, L.; O’Connor (1994) conducted a study on Using Literature to teach critical thinking to social work students. According to them critical thinking asks students to organize and reorganize reality conceptually rather than just accumulate “fixed truths” on facts. The purpose of this study was to discover if literature in lieu of standard texts could enhance critical thinking which involved creative analytical and dialectical skill. A one group design with before and after measures to identify thinking skills after a teaching intervention based in literature and narrative theory was introduced to fifteen senior social work students. Results of content analysis produced with self–designed questionnaire indicated that all social work students showed increased levels of critical thinking.

Burton and Raman (1994) studied William G. Perry’s scheme of critical thinking development which is proposed as a useful means of designing and teaching an introductory United States Government Course. The literature on critical thinking is reviewed which advocated discipline specific analysis of arguments, with the goal of identifying those arguments which are correct. This promotes a teaching environment in which the teacher is an authority from whom students receive the truth and they are not encouraged to form their own opinions and defend them, but are pushed to accept the reversion set by the teacher. When students are in this mode of enquiry Perry calls them dualistic. If students are encouraged to recognise the diversity in opinions, the multiplistic stage of intellectual growth development can be entered. The findings indicated support for the methods that can develop critical thinking. These include
discussion, group problems, unsolvable dilemmas, and writing requiring analysis from multiple perspectives. The choice of text use of handouts, syllabus structure and risk encouraging testing also support for critical thinking.

Navarro and Louise (1994) researched on the dialogic development of scientific concept using critical thinking skills in small group interactions. This study suggests several components to a learning event that potentially provide tools for acquiring new conceptual understandings along with developing thinking skills.

Blackstone, W.J. (1994) studied the comparison of college academic achievement between graduates of public and private high school and found that there was no significant difference in grade point average between graduates of private or public high schools. Among students attending private college, however, public high school graduates achieved first year GPA’s significantly higher than did graduates of private high schools. Finally only public high school graduates attending private colleges achieved statistically significantly higher G.P.A.’s.

Bector (1995) conducted a comparative study of academic stress with intelligence, study habit and attitude of Government and public school children of ninth grade in Chandigarh and reported that Government school subjects and public school subjects do not differ significantly in their levels of academic stress and feel moderate academic stress in the present system of education. Significant negative correlation between IQ and academic stress, study habits and academic stress, attitude and academic stress was also reported by the study.

Bell (1995) conducted the study to identify the relationship between perceived stress levels of life change events and academic achievement of non-traditional community college students. Low correlation from analysis indicated little relationship between life change unit scores and grade point average scores. The additional rate of students require adaptation by non-traditional college students. Studies suggest that stress experienced by these individuals could have an influence on their academic achievements. Understanding the
possible impact of life change events can help educators provide a Learning environment to meet the varying needs of non-traditional students.

**Patthoff, John Gary (1995)** in their study *relationship of cognitive appraisal and stress coping approach* and found negative cognitive appraisal was negatively related to approach coping in response to life stressors demonstrating that individual are less likely to use approach coping if the stressors is perceived as subjective negative.

**Becker, Marilyn Jo (1995)** studied *effectiveness of different strategies of coping stress* and reported that the use of escape avoidance coping was found to be associated with increased levels of all types of distress and the use of confrontive coping with related to increased levels of depression and anxiety. Painful problem solving coping was observed to be related to decreased levels of depression and stress.

**Flathouse (1995)** compared the *effectiveness of a group presentation and on individual audio–cassette presentation of a stress management program to help school counsellors with different levels of experiences*. Results showed no significant differences on the scores of the stress and coping scales for the participants of three groups. Findings were discussed in terms of need as the majority of the counsellors involved in the study said that they would change professions if they could.

**Tucker and Sherri (1995)** sought to investigate a *study on teaching reality–based formal logic to adolescent to improve critical thinking skills*. Lack of critical thinking skills among adolescents is a concern for educators. This study examines the history of teaching of logic and evaluates current programmes and curriculum utilized for enhancing critical thinking. This study suggests formal logic instruction may improve critical thinking skills.

**Squierell, V.P. (1995)** studied the *effects of a developmental reading course on academic achievement of underprepared college students* and found that a developmental reading course seemed to have had significantly positive effects on the academic success of under prepared students.

**Stanford, R.W. (1995)** studied the *effect of a co-teaching inclusion*
program on the academic achievement of regular education and specific Learning disabled students and analysed that a comparison of adjusted means from total reading, total maths, listening and thinking, subtests revealed that there was no statistical difference in either of the two types of learning environments except in the area of total reading for the learning disabled students and listening for the regular education students in the inclusion environment. This study indicated that the co-teaching inclusion environment is a viable service delivery model, which may be associated with empirical gains in Maths, listening and thinking achievement and with statistical gains in reading for the learning disabled students.

Paul, Richard et al. (1995) conducted a study of teacher preparation programme to assess the extent to which these programmes prepare conditions for teaching credentials to teach critical thinking and problems solving elementary and secondary schools. With assistance from Sonama State University interview protocols were designed for use for telephone interviews. Sample consisted of 38 public colleges and universities and 28 private ones. The major objectives of the study were (i) to assess the current teaching practices; (ii) identify exemplary recommendations based on the results of the study. The study reported that many teachers have no clear understanding of the basic concepts of critical thinking and very few have a comprehensive sense of how to cultivate it while teaching the content subjects or discipline. It also recommended that students should be assisted to develop certain specialized concepts, give reasons for conclusions arrived at, make interpretation of data, travel implications and consequences of decisions or actions, define problems, concerns and issues, think I the term of other’s points of view and so on.

Brian, C.H. (1996) conducted a study involving the development and testing of a theoretical model consisting of a causal sequence of 13 constructs that influence senior secondary school achievement. The constructs were drawn from studies of both secondary school and tertiary institution students. A sample of students from 10 school was surveyed three times during an 18–months period to gather data on each of the constructs. A path analysis was
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carried out to test the developed theoretical model. The results of this analysis confirmed that the theoretical model was adequate and appropriate in explaining and predicting senior secondary school achievement. As depicted by the model, senior secondary school achievement known as Tertiary Entrance Rank (TER) is affected by: (a) eight exogenous variables (viz., family background, age, gender, locus of control, academic integration, social integration, goal commitment 1 and school commitment 1) measured midway through year 10; (b) late year 10 school achievement (c) two variables, labelled needs accommodation and expectation versus reality which purported to measure a student's academic and social transition from junior (year 10) to senior (year 11) secondary school and (d) modified assessments of goal and school commitment (goal commitment 2 and school commitment 2 taken at the end of year 11.

Esther-Ho-Sui-Chu and J. Douglas, W. (1996) studied four dimensions of parental involvement and assessed the relationships of each dimension with parental background and academic achievement. The findings provide little support for the conjecture that parents with low socio-economic status are less involved in their children’s schooling than are parents with higher socio-economic status, although school varied somewhat in parental involvement associated with volunteering and attendance as meetings of Parent-Teacher organisation. They did not vary substantially in levels of involvement associated with home, supervision, discussion of school related activities at home had the strongest relationship with academic achievement. Parental participation at school had a moderate effect on reading achievement but a negligible effect on mathematical achievement.

Smith and Martin (1997) focused on life skills training and cross age teaching of younger students. Parent involvement included two meetings and weekly postcards from their children. Parents reported, communication with their child about the program, increased knowledge about life skills, support from school and empowerment and greater strengths in their children.

Yeh and Chu (1997) studied on teacher training for critical thinking instruction. The purpose of this study is:
a) To test the effectiveness of teacher training for critical thinking instructions among pre-service teachers via a computer simulation.

b) To explore the relationships among pre-service teachers training involvement level, their critical thinking dispositions and their change in these indices for effective critical thinking instruction.

c) To suggest a model for effective training of pre-service teachers in critical thinking instruction. The study concluded that a computer simulation can be an effective tool for pre-service teachers training in critical thinking instruction. Moreover it suggests that simulations based training in critical thinking instruction can produce more lasting effects if the training improves teachers efficacy as well as to impart skills and knowledge.

Kaplan and Sherry (1997) studies on assessment of the infusion of critical thinking skills into content instruction. An assessment instrument was developed in two forms, a pre- and a post-test format is administered to students in experimental and control groups. Open-ended prompts were utilised for data collection and analysis. A ‘t-test’ was performed and results were analysed for gains. The difference between pre and post test decision making scores was statistically significant at the .01 level.

Brian R. Fang-Shen Chiang and Robert J. Miller (1997) examined employees performance to develop and test a model of teachers effect on students achievement in Maths. A general model of employees performance suggested that the effects of teachers on student’s achievement can be explained by three general classes of variables:- Teachers ability, motivation and work situation. The analysis is revealed that teachers’ knowledge of subject matter and expectancy motivation have direct effects on students’ achievement in Mathematics and that the size of these effects depends on the average levels of ability of students in a school.

Harold Wenglinsky (1997) studied the effect of school district spending on students academic achievement and found that per-pupil expenditures for instructions and the administration of school districts are associated with
students academic achievement because both result in reduced class size, which raises achievement.

Coffey and Knoll (1998) presented in this document. The general purpose of life skills programming is to help persons live more successfully and to function better in their multiple roles as members of a family, community and work force. Life skills training is treated as an educational program emphasizing the world of work, practical living skills, personal growth and management and social skills.

Rotta and Ann Mole (1998) reported a study on content analysis of critical thinking activities in secondary literature analogies. This study examined a largely unexplored area in educational research that has existed in the combined fields of critical thinking and text book usage in the secondary English classroom. Specifically text books have been cited as sources of critical thinking activities. However, the use of interrogative adverbs and the tasks of explanation, reaction, reflection, response and discussion were characteristics of critical thinking activities. The data suggests that it is possible that the teachers could use the aforementioned characteristics to select those activities capable of promoting critical thinking from among the many activities offered in text books.

Murthi and Isaac (1998) conducted a study on the effects of specialized critical thinking skills of teachers on the academic achievement of students. The purpose of this study was to investigate whether there were significant differences in the academic achievement of students who were taught by teachers who had received specialized critical thinking skills training and students who were taught by teachers who had not received such training. The differences in the academic achievement of the two groups were not statistically significant.

Hemming and Evelyn, Smith (1998) studied the teacher’s role in facilitating critical thinking about social issues. The purpose of this study is to examine the nature of the teacher’s role in facilitating critical thinking about social issues within a child-centred, whole language based curriculum. The
findings from the philosophical analysis and the empirically based case study are integrated to construct a framework for understanding the teachers role in facilitating critical thinking about social issues. The qualities and characteristics of such a teacher include directedness, democratic values critical stance, sensitivity, thoughtfulness, authority and courage.

Halsted and Washington (1998) examined a study on facilitating creative and critical thinking in middle school science. The purpose of this thesis is to provide six methods for educators to utilise in facilitating creative and critical thinking in middle school science classes. Creative and critical thinking are vital skills required by citizens for the perpetuation of freedom and democracy. The results of the enquiry indicate that educators must first change their pedagogical and theoretical frameworks for teaching science, in order to establish a classroom environment where thinking in all its forms is cultivated. The results support modelling discourse, cooperative Learning and lab and hands on activities as useful methods for facilitating creative and critical thinking.

Kusum Singh (1998) studied part time employment in high school and its effect on academic achievement. In his research, the nationally representative sample of 10th graders, the first follow up of the National Educational Longitudinal Study of 1988 (NELS-88) was used to examine the effects of part time work during the school year on academic achievement, as measured by the standardized achievement scores and high school grades earned in four subject areas. English, Maths, Science and Social Studies. The findings of the study point to a small negative effect of employment on both measures of achievement when socio-economic status, gender and previous achievement were controlled.

Anusavice, S.H. (1998) studied differences in academic achievement school affiliation, student and teacher efficacy beliefs, parents perceptions and teacher instruction between highly mobile students placed at stable and additional schools. The experimental and control student groups were matched demographically across race, gender, grade level, prior academic achievement number of school moves and length in residence at the school. Sources of data
included classroom observations, participant responses to teacher, student and parent surveys, and interviews with students, pre- and post- test scores on a Curriculum Based Assessment (CBA) in reading and mathematics and attendance and disciplinary data for the 1997–1998 school year. Pre and post-test data from the curriculum based assessment, analysed using ANCOVA indicated no significant differences in mathematics gains between the two groups of students. However, the students from other school made significantly greater gains in reading than did the comparison group (p=.04). t-test comparisons of discipline referral and attendance data indicated that participants at Home Base had fewer discipline referrals and higher absenteeism than those at local elementary schools.

Silver, B.B. (1999) designed a study entitled indicators of academic achievement: A structural equation model. The overall purpose of this research was to empirically evaluate the hypothesized structural relationships among five social cognitive latent variables and a latent GPA variable. Data were collected for the latent constructs of study skills self-efficacy, Learning goal orientation, performance goal orientation, perceived future consequences and persistence as well as grade point average. The data set contained 338 community college students. Findings showed that study skills self-efficacy and persistence have a direct positive relationship to grade point average for this sample. Not surprisingly, indirect relationships to GPA were detected for perceived future consequences and performance goals. The performance goals construct was negatively related to persistence. There was also a direct negative relationship between future consequences and persistence.

Meghani (1999) conducted a study entitled a study of effectiveness of a teaching – learning strategy to develop critical thinking in students of XI using Psychology as Content, with major objectives to evolve a strategy for teaching – learning, to develop a critical thinking tool and to study the effectiveness of the evolved strategy. The major finding of the study was that there is a significant improvement in student’s thinking using the evolved strategy.

Jaswinder Kaur (1999) studied the learning environment in residential and non-residential schools and its impact on academic achievement initiative
mannerism and cooperation of high school students and found that the mean academic achievement scores of the non-residential school children were found higher than the mean achievement scores of the residential school children. There was no interaction between management style (Govt./Private) and mode of schooling (Residential/Non-Residential) in relation to academic achievement of IXth graders. Private school students yielded higher mean achievement scores than the Government School Students.

Gelven and Don (1999) conducted a study on problem solving and critical thinking skills development in an applied communications course. The purpose of this study was to ascertain if there were significant differences in the development of the ability to think critically and a positive perception of their ability to solve problems by students who completed an applied communications course as compared to students who completed one of two other English courses. The test instrument used were the problem solving inventory and the “Watson–Glaser Critical Thinking Appraisal” A moderate positive relationship was found to exist between the problem solving self appraisal of students and their critical thinking ability.

Manning and Hembree (1999) studied the relationship between critical thinking and attitudes toward reading of the community college students enrolled in a critical reading course at Roane State Community College. The study was conducted with two sections and 31 students enrolled in critical reading. One class was taught the regular curriculum and the other class was taught the regular curriculum plus instruction in five critical thinking skills. This study established the need for more research on creative attitudes and critical thinking skills of community college students.

Edison and Irene (1999) sought to investigate on out of class activities and the development of critical thinking in college. The purpose of this study was to:

(i) Determine the unique effect of out-of-class activities on the development of critical thinking skills among college freshmen and college juniors.
(ii) To compare the activities that are significant for freshmen and for juniors.

(iii) To determine whether the magnitude of the effects of out-of-class activities depend on a student's gender, ethnic group, age, pre-college critical thinking ability or institution.

Reed and Hardage (1999) investigated the effect of a model for critical thinking on students achievement in primary source document analysis and interpretation in primary source document analysis and interpretation argumentative reasoning, critical thinking dispositions and history content in a community college history course. Three major findings emerged from this study:

(i) Community college students' ability to think historically and to think critically improved in a single course.

(ii) Community college students' end of term knowledge of history content did not suffer when training in critical thinking abilities was integrated into course material.

(iii) Age and gender did not play a significant role in developing college students' critical thinking abilities.

Lewis and Bruce (1999) examined a study on developing critical thinking through an inter-disciplinary approach with social studies simulations and technology in fourth grade classrooms. This research developed and evaluated ways to incorporate MECC's simulation software into the upper elementary curriculum through an interdisciplinary approach to strengthen the critical thinking skills of analysis, evaluation, and synthesis, particularly through the use of MECC's 'The Yukon Trail'. This approach increased critical thinking skills as evaluated by the Cornell Critical Thinking Test level X.

Tsui and Lisa (1999) conducted a study on fostering critical thinking in college students. A mixed-methods study of influence inside and outside of the classroom. This study investigated the impact of college on the development of students' critical thinking skills. Through a mixed-method design a wide range of factors are examined including those which lie inside as
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well as outside of the classroom. One of the most important factors, outside of
the classroom that enhances critical thinking is engagement in critical dialogue
with peers. Critical thinking skills can also be fostered by encouraging more
student faculty interaction creating a campus culture energized by social and
political awareness and providing extra curricular activities that college
students to combine classroom material with experimental learning outside the
classroom.

Rooth (2000) studied an investigation of the enhanced relationship
between participants in life skills courses and the environment. Human needs,
resources and environment publication series. The life skills project in South
Africa provides services to communities in life skills facilitation training.
Empowerment and capacity building in course and workshop participants is an
underlying theme, with emphasis on self concept enhancement for community
enhancement. Aims of the life skills project include:

- Training facilitators in experimental learning techniques with life skills
  as content matter.
- Running life skills workshops on requested Psycho-social life skills
  topics.
- Materials development.
- Provision of networking facilities.
- Consultation services on workshop implementation and design.
- Conducting action research.

The life skills project includes courses such as AIDS prevention,
assertiveness, communication, conflict management, coping with change,
leadership, health management and team building. The project was evaluated
through action research. Participants reflections were documented during
workshops and, written evaluations were obtained after each workshop
session at course end, and in follow-up meetings. In addition, facilitator
reflections were recorded. The research concluded that there are advantages of
intervention grounded in experiential learning, and that participant in life
skills courses developed enhanced self perceptions and were more
empowered. They were more likely to interact proactively with the environment as a result of attending a life skills course and the exhibited less stress.

Ripple Thamman (2000) studied relationship of parental involvement and self-concept with academic achievement of high school students and found that there was positive relationship between academic achievement and self-concept and no significant difference was observed in case of independent variables of self concept and parental involvement.

Channel and Weeks (2000) reported study on thinking different: A comparison of the critical thinking abilities of educational majors. This study identified the difference between the critical thinking skills of prospective elementary education teachers and prospective secondary education teacher’s scores and the score of typical college students as measured by the Watson–Glaser Critical Thinking Appraisal. The following research hypotheses were investigated:

i) Prospective teachers have lower critical thinking appraisal scores than typical college students as measured by the Watson–Glaser Critical Thinking Appraisal.

ii) Prospective elementary education teachers differ from prospective secondary, education teachers with respect to critical thinking skills.

Scher and Marie (2000) studied the relationship between stance and critical thinking in seventh graders response to narrative and expository texts. This study was designed to explore students critical analysis in response to extend, meaningful and authentic expository and narrative texts. After reading the texts students were asked to write in response to a critical thinking questions. The questions were designed so that the students needed to think about the reading and integrate the passage in order to formulate an effective response. Students also completed questionnaire designed to tap their approaches towards reading.

Andrew and Faye (2000) conducted a study on critical thinking in South Dakota Public Schools grades 3, 4 and 5 the influence of teachers
behaviours, perceptions and attitudes. A survey was developed to secure the report information concerning.

i) The importance of teachers placed on teaching critical thinking.

ii) How prepared teachers felt to teach critical thinking.

iii) The subjects in which teachers included critical thinking.

iv) Circumstances that teachers considered as obstacles to teaching critical thinking. Data collection ended with a total response rate of 59.67% (179 teachers) significant effects (.05 level of significance were found by using ANOVA and chi–square test of Independence.

Elizabeth and Hughes (2000) reported a comparative study of teaching critical thinking through persuasive writing to average gifted and students with Learning disabilities and found. Gifted students outscored average students who outsored students with Learning disabilities.

Prakash, S. (2000) studied about the mathematical creativity and achievement of elementary school students in relation to problem solving students in relation to problem solving ability, anxiety and socio-demographic variables and found that there is significant relationship between the problem solving ability and dependent variable of mathematical creativity and achievement and show that more congenial the home environment is more the level of mathematical creativity and mathematical achievement of the students at the elementary stage.

Magee (2000) studied the peace leaders: A descriptive study of the life skills gained through conflict resolution training to determine if students, who had completed a minimum of one full year of training in the Citizenship and Law–Related Conflict Resolution Programme, used the skills of communication, problem solving and mediation

Wilkinson, D.Q. (2000) in his study investigated the effects of a seven-session life skills training programme (Botvin and Botvin, 1992; Botvin and Dusenbury, 1987) on knowledge about and self-reported use of alcohol and other drugs by high school students. The outcome measures included the following:
• Knowledge about the consequence of alcohol and other drugs and social competency skills as measured by a multiple-choice test.

• Attitudes towards and reported use of alcohol and other drugs assessed by self-reports.

Results indicated that School B, and all girls’ school outperformed the other school on the curriculum outcome measures due to the increased enthusiasm, increased class planning, or the fact that they were held accountable for a grade. Consistent with other data, the older the students, and the more likely they were to report taking drugs.

Friesenhahn, K.M. (2000) analyzed the leadership life skills development at the 1998 Texas 4-H Congress program and found that participated members (age 15 to 19) increased their self-esteem and self-concept, improved their ability to interact with others, strengthened their communication skills, gained more creative thinking skills, enhanced their ability to make their own decisions and manage their resources and greatly improved their ability to effectively work in groups to accomplish group goals.

Caprara, G.V.; Barbaranelli, C.; Pastorelli, C.; Bandura, A. and Zimbardo, P.G. (2000) in this longitudinal research demonstrated robust contributions of early pro-social behaviour to children’s developmental skills in academic and social domains. Both pro-social and aggressive behaviours in early childhood were tested as predictors of academic achievement and peer relations in adolescence. 5 years later: Pro-socialness included cooperating helping, sharing and consoling and the measure of antisocial aspects included proneness to verbal and physical aggression. Pro-socialness had a strong positive impact on later academic achievement and social preferences, but early aggression had no significant effect on either outcome. Additional analysis revealed that early academic achievement did not contribute to later academic achievement after controlling for effects of early pro-socialness. Possible mediating processes by which prosocialness may affect academic achievement and other socially desirable developmental outcomes are proposed.

Lester, C.L. (2001) in his study character trait comparisons of
adolescent male delinquents determined if the characteristic traits of psychological development, life-skills acquisition, locus of control, Social and general self efficacy, and /or academic success were determinant factors between recidivist of non- recidivist male delinquents (between the ages of 13 and 18). The participants included delinquent males on probation with Department of Family Services. The primary finding in this study was that psychosocial development was statistically significant in comparing differences between recidivist male delinquents.

Horn, M.T. (2001) in the study investigating the construct validity of a life-skills assessment instrument examined the construct validity of the Ansell – Casey life skills Assessment (ACLSA). Structural Equation Modeling (SEM) was utilized to test the ability of the ACLSA to provide life-skills assessment that was consistent with the competency framework. Analyses of chi-square fit indices and SEM parameters confirmed that the modelled relationship among constructs were supported by the conceptual framework which encompassed life- skills and the related constructs self- efficacy and coping resources.

Richey, P.G.F. (2001) analyzed the leadership life skills development through 4-H program. It was found to promoted the development of leadership life skills in six areas (1) understanding self, (2) communicating, (3) relating to others, (4) learning or sharing, (5) managing and making decisions, and (6) working groups. The sample included 4- H members from eighth grade to age 19 in ten of the 22 countries in the North Texas District. The study concluded that participation in 4-H provided more opportunities for youth to learn and practice leadership life skills was effective than non 4-H members in public school.

Yuthim, O. (2001) studied about the evaluation of academic achievement in Bloom’s taxonomic categories in relation to instructional design and achievement motivation and found that there is positive correlation between achievement, motivation and academic achievement in all three taxonomic categories and total academic achievement when students learn through linear and adjunct programme.
Midha (2001) studied about the development of self concept among adolescents in relation to parental involvement and academic achievement and found positive relationship between self concept among adolescents and academic achievement.

Gera, M. (2001) undertook a study with a purpose of studying impact of classroom environment and academic stress on achievement of IX graders. Global achievement scores and scores on Maths, Science and English were analysed separately through 3x3 ANOVA. The sample consisted of 104 students from two schools of Chandigarh. The main findings of the study were:

(i) Moderate classroom environment and low stress level was found to yield higher global achievement scores.

(ii) Moderate classroom environment and low stress level was found to yield higher achievement scores in English, Maths and Science.

(iii) Achievement of students in active and moderate classroom environment was almost the same in global achievement scores in English, Maths and Science.

Schechtman; Levy; Egozi and Leichtentritt (2001) evaluated the impact of length of training in the life skills training program on teachers’ perception of the work climate and sense of self efficacy identifying process components affecting those outcomes. The life skills training program is a psycho-educational model of group intervention designed to improve the well being of children and adults including teachers. Based on the rationale that group training affects relationships between participating teachers it was Hypothesized that such training would lead to improved perceptions of the work environment. Also, specific training in life skills was expected to enhance teachers’ self-efficacy. A representative sample of the 342 Israeli elementary teachers from schools that operated life skills training program completed feedback questionnaires measuring work climate, self-efficacy, and various teacher training issues. Participants were divided into three groups, teachers who did not receive training, teachers in their first year of training, and teachers in their second year of training. Results indicated that teachers with about two
years of training had significantly higher scores on measures of self-efficacy and work environment. Only a few of the process variables such as administrative support, use of books and contributions of teaching related to outcomes.

**Kaur, M. (2001)** conducted a study of emotional maturity of adolescents in relation to intelligence academic achievement and environmental catalysts and concluded that academic achievement of adolescents has not relationship with their emotional maturity.

**Kaur, J. (2002)** conducted research on Career maturity in relation to intelligence self-esteem and academic achievement of senior secondary students and concluded that there will exist significant positive relationship between the criterion variable of career maturity, and independent variables of intelligence, self-esteem and academic achievement.

**Sharma, N. (2002)** studied Effect of parental involvement and aspirations on academic achievement and aspirations of +2 students. Total sample taken was 310 and concluded that (1) Qualifications of parents, economic status and parents self-esteem did not show any association with students academic achievement. (2) The academic achievement scores were different for children belonging to different parental involvement. The mean achievement scores of high parental involvement groups were higher than the mean achievement scores of children belonging to low parental involvement groups.

**Rowland (2002)** studied every child needs self-esteem, creative drama builds self confidence through self expression. This work illustrates how creative drama, when used with socially deprived children under the direction of trained outside the classroom in a structured informal setting, which emphasizes play as a powerful way to learn, strengthens a self concept and increases self esteem. Testing revealed how natural pedagogy, which honours the individual experience and preserves the child’s essential freedom to play, to wonder, to experiment, and to invent allowed children to flourish and to become stable and successful. This theory was applied to a group of children in
a creative drama program. Through the magic of theatre, using the techniques of creative drama, children creativity developed self-esteem and learned corporation and responsibility. These results led to the creation of a child play-based program that nurture’s children’s creative expression all its forms and the development of a handbook to enable others replicate this program in their communities.

Cooper (2002) studied social responsibility and types of service learning: a comparison curricular service learning, and traditional community service. This study investigated social responsibility among college students involved in three different types of service Learning, responsibility; the dependent variable was analysed using on the social responsibility inventory. Three institutions representative of Masters I Colleges and universities was involved in the study and 198 students completed the questionnaire. No difference was reported between traditional community service and curricular service Learning.

Camerlengo (2002) studied the role of coping style, job related stress, and personal victimization history in the vicarious traumatization of who work with abused youth. The purpose of this study is to substantiate the relationship between two way analysis of variance indicated that participants reporting a history of physical, sexual or emotional abuse reported significant higher scores on the overall level of vicarious traumatization and also on the self/other. Esteem and self/other-crest subscales of the TSI belief Scale N than any other group.

Thayer, Fox and Koszewski (2002) studied an extension programme, building Nebraska families, works with employment first families, Nebraska’s welfare reform programme, to each family management and life skills using and individualized, flexible curriculum to help families make successful transitions from welfare to work. Evaluation strategies included an entry/exit behaviour checklist and success markers that document transformational changes and incremental gains achieved.

Russell, L.J. (2002) conducted a study entitled intrinsic and extrinsic
factors affecting achievement and academic self-concept. Forty-three students attended three study sessions in which course-relevant information was presented in lecture format. Exams were administered after which students participated in one of the three feedback conditions: experimental feedback, typical feedback and the control. Retest exams were administered one week later. Analysis of variance tests were conducted on difference in scores of exam 1 and exam 2 indicating that students participating in the experimental feedback process scored significantly higher on retest exams than students who did not participate in the experimental process. Thus feedback regarding the competence of an individual affects self-efficacy beliefs, which influences self-concept. Enhanced academic self-concept provides cognitive appraisals necessary to persevere. Persistence is the key element of a learning goal orientation in which students seek to improve their competence; the master key to learning. The data indicate that there were no significant changes in self-concept or goal orientation, however, a longer exposure period to the experimental feedback process may be required to influence these relatively stable constructs.

Thayer, C.E.; Fox, M. and Koszewski, W. (2002) studied helping families transition from welfare to work an extension program, building Nebraska, families, works with employment first families. Nebraska’s welfare reform programme, to teach family management and life skills using an individualized, flexible curriculum to help families make successful transitions from welfare to work. Evaluation strategies include an entry/exit behaviour checklist and success markers that document transformational changes and incremental gains achieved.

Bonner (2003) studied the impact of implicit and explicit prejudice. This investigation tried to determine the impact of subliminal, priming on the automatic activation of attitudes and reaction time, positive and negative, white and black American stereotypic. Additionally, the relationship between implicit and explicit self-esteem and implicit and explicit prejudice was explored. The findings extends prior research conducted Fario et al. (1995) concerning subliminal priming as well as research by Greenwald and Farnham (2000)
Introduction

concerning implicit and explicit self-esteem.

Sarita (2003) studied *Psycho-social problems family environment and academic achievement of the adolescent children of working and non-working mothers* and concluded that (1) some psycho-social problems lead to poor academic application and concentration resulting in below average performance. (2) High score on Family environment variables had negative impact on the academic performance of adolescent children.

West (2003) studied contextual variability in the transfer of problem solving skills. The purpose of this study was to describe how Individuals learn from examples and relates known problems to help solve new ones. Of 94 participants from the university of Florida and surrounding community participated in three studies that employed transfer and similarity matching tasks to investigate relationships between contextual variability in practice and a training group given contextual variability in practice was more likely to solve transfer problems accurately and recognize principles embedded in novel problems compared to controls. In addition, solvers who did not receive contextual variability in training but solved a simple transfer problem showed improved transfer and recognition of embedded Principles. It was believed that the variation across surface features in problems de-emphasized the utility in problems that used to categorize problems.

Zollinger, T.W.; Saywell, R.M.; Muegge, C.M.; Wooldrige, J.S.; Cummings, S.F. and Caine, U.A. (2004). *Impact of the Life Skills Training Curriculum on middle school students tobacco use in Marion County, Indiana* Survey Data (n=1, 598) were used to compare tobacco use behaviour, attitude, knowledge of those exposed with those not exposed to the program. Of the students surveyed, 12.5% were current smoking. There were significantly fewer current smokers, and more students exposed to the program indicated intended to stay smoke-free. Fewer of those participating in the program hung out with smokers and more students should easily refuse a cigarette if offered one. Students completing the life skills teaching curriculum were more knowledgeable about the health effects of smoking. Program effects were different for male and female student for white and black students.
Mehan, U. (2004) in her study on the topic of effect of visual aids on achievement in science in relation to cognitive skill found that achievement of students on post test was better when taught through visual aids than the students taught without visual aids.

Van, E.; Williams C. (2004) investigated the effect of information rich feedback an achievement and motivation of middle school science students. Using a within subjects crossover design, treatment students received written formative assessment feedback on all homework and class assignment. Control students received completion score for their work but no feedback. Result indicated size of 7 for low achievers and 4 middle level achievers on the performance measure as a result of feedback intervention.

Thomas and Patel (2004) studied incorporation of selected critical thinking tools in classroom transactions and its impact, on enhancing students’ critical thinking. All students studying in Standard X of Por Vidyalaya, affiliated to Gujarat Secondary Education Board (GSEB), during academic year 2201-02 and who opted for English as one of the subject were purposively selected as sample for the study. The findings of this study suggested that it is possible to enhance critical thinking of students provided we use the content in certain way that stimulate thinking processes.

Hyatt (2004) was used to determine the influence of a self-efficacy based substance prevention curriculum on increasing knowledge of substance use, developing life skills to resist substance use, and improving self-efficacy to install the belief that preadolescents can resist the pressure to consume alcohol, tobacco, and other drugs eighty-nine ten years old participants in the National Youth Sports Program (NYSP) began the study at Weber State University. The study suggested that self-efficacy based substance abuse prevention curriculum is effective in increasing the dependent variable of knowledge, life skills, and self-efficacy but is not superior to the traditional knowledge–based curriculum.

The development of life skills through experiential learning is the cornerstone of 4-H youth programming. Various studies have investigated the relationship between participation in 4-H animal science projects ad the
and only two types of approaches to Learning i.e. Deep and Surface approach.

OPERATIONAL DEFINITIONS OF THE TERMS USED

- **Academic Achievement**
  
  “Academic achievement is knowledge attained or skill developed in the school subject usually designated by the test scores or by marks assigned by the teacher or both” Good (1973).

  In the present study academic achievement has been operationally defined as the marks obtained by the students in their final test after getting experimental treatment. Its measurement is the score on the achievement test in geography developed by the investigator.

- **Life Skills**
  
  Life Skills are abilities to adapt positive behaviour that enable us to deal effectively with the demands and challenges of every day life while interacting with others culture and environment. So, the life skills means ability based on behaviour that enables us to create circumstances for self-happiness and safety in society. In the present study, investigator selects four life skills as :-

  a) **Subject Performance/Acquiring knowledge/Achievement.**

  b) **Decision making** :- “The whole range of activities involved in establishing a corporate or an effective means of executing an existing policy including the collection of facts needed to make judgements on a specific proposal and the analysis of alternative means achieving a desired goal.” The students are able to decide what to do? The students weigh all the consequences and decide which choice is best for him.

  c) **Critical thinking** :- It consists of examining and testing new ideas to see whether they will work. Critical thinking tests idea for any deficiency and flow.

  d) **Coping with stresses** means the effort to control, reduce, or learn to tolerate the threats that lead to stresses.
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The development of life skills through experiential learning is the cornerstone of 4-H youth programming. Various studies have investigated the relationship between participation in 4-H animal science projects and the
development of life skills in youth. Youth programmers are a viral part of the horse industry, with over forty percent of all horses owned or ridden by youth.

Slocum (2004) compared leadership life skills development of youth participating in riding and non-riding competitive 4-H horse events in Mississippi. A self-report mail survey was developed as the data-gathering instrument for this study, using the youth Leadership Life Skills Development Scale (YLLSDS) as its core of the 520 surveys distributed, an accessible population of 496 was determined. Based on the findings of this study, it can be concluded that participation in non-riding competitive 4-H horse activities increased the level of leadership life skills development when combined with participation in the 4-H riding events.

Goddard's (2004) study on an assessment of the effectiveness of the CHAMPS/Life Skills program at the University of North Texas: a pilot study, attempted to measure the extent to which the student athletes feel that the program had value; if they received helpful in information to support them with skills to encourage better self-esteem; leadership and character education. The study shows that if a student athlete was involved in the program for more than two years, the CHAMPS/Life Skills program at UNT was more valuable for them than those enrolled for a shorter period of time.

Locke (2005) conducted a study on service-learning and leadership life skills: An experimental study done by examined the effect of service activities on the development of leadership life skills in youth and if having a reflection component as part of the activity makes a difference. Participants in the study were from two samples. One group represented the El Paso national Youth Service Day; the other represented the District 11 4-H leadership Lab in Brenham, Texas. The major findings of the study were as follows:

(i) Overall, the participants reported their perceived leadership life skills to be high in four of the five subscales;

(ii) The inclusion of a reflection component did not significantly affect perceive leadership life skill;

(iii) Type of service, whether direct or indirect, had a significant impact on
perceived leadership life skills;

(iv) 4-H membership had a significant impact on the Personal Leadership Development subscale.

**Harder’s (2005) study on the secondary and tertiary prevention of child abuse and neglect: An evaluation of the Parent Aid Program at the Child Abuse Preventing Centre in Dallas, Texas** showed parents who successfully completed the Parent aide program showed a significant reduction in risk for child abuse, increased parenting skills, problem solving and like skills, and social support, and had more of their basic needs met.

**Taylor (2005) conducted the descriptive study Linking formative assessment and collaborative decision making: A systemic approach improving reading instruction** and explored the strengths and limitations of this process, the instructional interventions were identified, and the changes in student achievement profiles were studied. The main limiting factors identified were communication difficulties and conflicts that surfaced among teachers based on philosophical differences about reading instruction.

**Jenkins, K.E. (2005) examined the influence of parental attachment, gender, and academic major choice on the career decision-making self-efficacy of first-year African college students.** Two instruments were used in this study: The Career Decision-Making Self-Efficacy–Short form (CDMSESF) and the inventory of Parent and Peer Attachment (IPPA). The Belgian model was used to categorize students’ choice of major. The study investigated the four questions: (i) Is there a significant correlation between student’s career decision-making and parental influence? (ii) Does parent’s educational level affect students’ career decision making in terms of choice of major? (iii) Is there a relationship between gender of first year African American college students and the gender of the parent that influenced the student the most in his/her career decision, and the students’ career decision making? (iv) Finally, does choice of major affects constructs of parental attachment, communication, trust, and alienation had low significant correlation and there were no correlation and there were no correlation found.
Introduction

when parental communication was examined. The second question found no relationship between parents’ educational background and students’ ability to make good career decision-making skills. Also, no differences existed between students who have at least one parent who possess at least a college degree and students whose parents do not possess a college degree. The third question examined relationship between gender, the gender of the parent who influenced the student the most in the student’s career decision making and the students’ career decision making skills and no significant relationship existed. The final questions examined of choice of college enrolment as clarified by Biglan Model are important factors in first year African American college students’ career decision making skills.

**Liebman, S. (2005)** was to develop a valid and reliable assessment instrument that measures functional life skills in persons with major mental disorders. Other goals included were the examination of the association of life skills with clinical and personal characteristics, land an exploration of the relationship between the various life skills and the number and length of rehospitalizations, measured during a 12-month follow up. The functional life skills assessment (FLSA) consists of 76 items and were voted upon by various mental health professionals, regarding their importance to independent community living. A total of 150 consecutively discharged persons from an inpatient psychiatric ward of a general hospital, who responded to the inclusion criteria, and who was diagnosed with a major mental disorder participated in this study. The FLSA showed inter after and moderately low retest reliability. The construct, content and predictive validity were found to be satisfactory. The results showed that the women scored significantly higher than the men on the total FLSA score. Significant associations between subscale scores; gender and diagnosis were also observed.

**Morgan, John (2005)** was to determine the extent, if any, that decision making Life skills taught to retired delta Airline pilots’ in recurring applications of Crew Resource Management (CRM) Training continue to guide and apply their decision making behaviour when interaction with friends, family, neighbours, and associates subsequent to formal training applications.
The research design was both qualitative and quantitative. The qualitative component was achieved by interviewing five retired Delta pilots. The quantitative data was achieved by utilizing an online survey instrument in the form of a research questionnaire. The test population comprised of 1700 retired Delta pilots. The data suggested that

(i) Pilots demonstrate high level of proficiency for problem solving, decision making error avoidance and critical thinking.

(ii) Pilots discuss options when making decisions. The data also suggested that it is unlikely that pilot’s role model have effective interpersonal and professional verbal and non verbal communication skills, techniques, and processes when interacting with family and friends additional research and a more informed understanding of the mission/vision planning characteristics of the said city were strongly encouraged.

**Phelps (2005)** compare *self reported perceptions of personal and leadership life skills development of Louisiana high school 4-H leadership activity participants*. The target population for this study was all high school students who participated in either the Character Counts (CC) peer teaching program or the 4-H Junior Leader Club (JLC). A survey instrument was mailed to 321 high school students with 165 surveys returned. Results showed that no difference existed in the perceived personal and leadership life skills development among the three groups on the leadership and personal development inventory (LPDI).

**Carmack, Chad Curtis (2006)** studied about *implementation of drug and alcohol program to ninth grade students and determine the impact in student attitudes and resistance skills*. The study addressed a problem that was found at John Dickinson High School. Delaware department of education personnel recommended that use of a curriculum called Life skills, which was written by *Gibert J. Botvin*. Pretest, post-test and survey results were from Thomas McKean High School were used to measure the impact of the curriculum on students’ attitudes and resistance skills. The comparison results indicated overall improvement in students’ attitudes after completion of the
drug and alcohol preventing curriculum. There were subgroup improvements in resistance skills.

As the young people constitute a significant part of the population in most of the countries, there is a growing need to integrate them with mainstream development of the nation. The review of related literature also indicated that adolescents would be receptive of new ideas if they are exposed to enjoyable and meaningful experiences that they feel will contribute to resolving their problems and fulfilling their needs of life.

EMERGENCE OF THE PROBLEM

Ever since the formal system of education came to existence in civilized societies for the transmission of accumulated knowledge and experiences to the next generations, a number of instructional methods and strategies have been devised and tried out. The different methods and techniques for imparting instruction in a formal classroom setting has been continuously changing in which the old ones were replaced by the new ones. This activity has not come to an end today and the researches are going on to devise still newer approaches of instruction. The motivation behind these efforts has been the need and desire to devise a strategy which when used in the classroom situation will help to produce desirable changes in the learner’s behaviour.

Till mid-fifties, it was generally felt that students learn the same amount, whether teacher delivers lectures, holds discussions combines lectures and discussions or students learn on their own. Since, significant differences reported in research literature were rare, improvement of teaching was not taken up seriously. Hence, the problem of low and very low academic achievement remained unattended. After mid-fifties, interest in individualized instructional strategies were developed to bring improvement in teaching-learning process. So, there came a change in the thinking that all can learn well under a set of certain conditions. The change in thinking has revolutionized, in a way, the whole concept and process of teaching in the classroom. The concentration of the teacher now is not only limited to a small section of students rather takes into its fold all the students in the class since all
Mastery Learning Strategies are based on this principle.

A critical review of the literature in the field of Mastery Learning reveals that little work has been done to examine the conditions under which Mastery Learning is more or less effective and the limits of student Learning through the Mastery Learning approach. Moreover, there are few studies conducted in India in relation to Mastery Learning. Whatever studies are available all correlate Mastery Learning strategy only with academic achievement but for the all round personality development we need to relate Mastery Learning Strategy with other aspects of developmental process also.

Very less amount of work is done on the Mastery Learning Strategy with single feedback correctives. Life Skills and Approaches to Learning are the concepts which are relatively very new and it is very significant to do research on these topics.

The present research is thus a humble attempt to study the effect of Individualised single feedback correctives in Mastery Learning of Life-Skills in relation to learning approaches.

**STATEMENT OF THE PROBLEM**

The present research is entitled as: “Effect of Individualised Single Feedback Correctives in Mastery Learning of Life-Skills in Relation to Learning Approaches”.

**DELIMITATIONS OF THE STUDY**

a) The study will be limited to acquisition of geographical concepts only. The Mastery Learning packages were prepared on topics of Geography.

b) The study will be limited to a sample of 200 students of IXth class only.

c) The study will be limited to students studying in various schools located in Chandigarh only.

d) The study will be limited to only four type of life skills i.e. subject, performance, decision-making, critical thinking and coping with stresses.

e) The study will be limited to only Bloom’s Mastery Learning Strategy
and only two types of approaches to Learning i.e. Deep and Surface approach.

OPERATIONAL DEFINITIONS OF THE TERMS USED

- **Academic Achievement**
  “Academic achievement is knowledge attained or skill developed in the school subject usually designated by the test scores or by marks assigned by the teacher or both” *Good (1973).*
  
  In the present study academic achievement has been operationally defined as the marks obtained by the students in their final test after getting experimental treatment. Its measurement is the score on the achievement test in geography developed by the investigator.

- **Life Skills**
  Life Skills are abilities to adapt positive behaviour that enable us to deal effectively with the demands and challenges of every day life while interacting with others culture and environment. So, the life skills means ability based on behaviour that enables us to create circumstances for self-happiness and safety in society. In the present study, investigator selects four life skills as :-
  
a) **Subject Performance/Acquiring knowledge/Achievement.**

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c) **Critical thinking** :- It consists of examining and testing new ideas to see whether they will work. Critical thinking tests idea for any deficiency and flow.

d) **Coping with stresses** means the effort to control, reduce, or learn to tolerate the threats that lead to stresses.
Introduction

• Approaches to Learning

It is conceptualised as an attitude derived from the five orientations of studying: a deep approach, a surface approach, a strategic approach, clarity of direction in studying and academic self-confidence towards studying.

• Mastery Learning

It is a very logical process. It helps most students to learn excellently, quickly and self-confidently. It minimizes failure and maximizes the chances of success.

• Feedback Correctives

It is a type of specific supplementary instructional procedure. Whereby each pupil can correct his particular unit Learning difficulties. Feedback correctives provide each learner with the clearest and most appropriate instructional cues, the requisite amounts of active involvement in and practice of the Learning and the amounts and types of reinforcement his Learning requires.

OBJECTIVES OF THE STUDY

The following research questions raised for investigation:

• To develop Mastery Learning packages in the subject of Geography for IXth class students.

• To study the effectiveness of Mastery Learning strategy in Geography in terms of life skills (Skill of acquiring knowledge, decision making, critical thinking, coping with stresses).

• To study effect of individualised single feedback corrective on academic achievement and other life skills.

• To study effect of approaches to learning of students affects the acquisition of geographical concepts and other life skills.

• To study the interactional effect of Mastery Learning Strategy with single feedback and learning approaches on life skills.
HYPOTHESES

The following hypotheses were formulated and tested:

**Ho.1)** There will be no significant difference in gain means of students on skill of acquiring knowledge studying through Mastery Learning with single feedback, Mastery Learning with multiple feedback, or conventional learning group.

**Ho.1.1)** Students studying through Mastery Learning single feedback and Mastery Learning with multiple feedback achieve equal gain means on skill of acquiring knowledge.

**Ho.1.2)** Students studying through Mastery Learning with single feedback and conventional learning group achieve equal gain means on skill of acquiring knowledge.

**Ho.1.3)** Students studying through Mastery Learning with multiple feedback and conventional learning group achieve equal gain means on skill of acquiring knowledge.

**Ho.2)** There will be no significant difference in gain means on skill of acquiring knowledge of students with deep and surface learning approaches.

**Ho.3)** There will be no interaction effect of Instructional Strategy (Mastery Learning with single feedback, Mastery Learning with multiple feedback, or conventional learning group) and learning approaches (Deep and Surface) to yield differences in gain means on skill of acquiring knowledge.

**Ho.4)** There will be no significant difference in gain means of students on skill of critical thinking studying through Mastery Learning with single feedback, Mastery Learning with multiple feedback, or conventional learning group.

**Ho.4.1)** Students studying through Mastery Learning single feedback and Mastery Learning with multiple feedback achieve equal gain means on skill of critical thinking.
Ho.4.2) Students studying through Mastery Learning with single feedback and conventional learning group achieve equal gain means on skill of critical thinking.

Ho.4.3) Students studying through Mastery Learning with multiple feedback and conventional learning group achieve equal gain means on skill of critical thinking.

Ho.5) There will be no significant difference in gain means on skill of critical thinking of students with deep and surface learning approaches.

Ho.6) There will be no interaction effect of Instructional Strategy (Mastery Learning with single feedback, Mastery Learning with multiple feedback or conventional learning group) and learning approaches (Deep and Surface) to yield differences in gain means on skill of critical thinking.

Ho.7) There will be no significant difference in gain means of students on skill of decision making studying through Mastery Learning with single feedback, Mastery Learning with multiple feedback or conventional learning group.

Ho.7.1) Students studying through Mastery Learning with single feedback and Mastery Learning with multiple feedback achieve equal gain means on skill of decision making.

Ho.7.2) Students studying through Mastery Learning with single feedback and conventional learning group achieve equal gain means on skill of decision making.

Ho.7.3) Students studying through Mastery Learning with multiple feedback and conventional learning group achieve equal gain means on skill of decision making.

Ho.8) There will be no significant difference in gain means on skill of decision making of students with deep and surface learning approaches.
Ho.9) There will be no interaction effect of Instructional Strategy (Mastery Learning with single feedback, Mastery Learning with multiple feedback or conventional learning group) and learning approaches (Deep and Surface) to yield differences in gain means on skill of decision making.

Ho.10) There will be no significant difference in gain means of students on skill of coping stress studying through Mastery Learning with single feedback, Mastery Learning with multiple feedback or conventional learning group.

Ho.10.1) Students studying through Mastery Learning single feedback and Mastery Learning with multiple feedback achieve equal gain means on skill of coping stress.

Ho.10.2) Students studying through Mastery Learning with single feedback and conventional learning group achieve equal gain means on skill of coping stress.

Ho.10.3) Students studying through Mastery Learning with multiple feedback and conventional learning group achieve equal gain means on skill of coping stress.

Ho.11) There will be no significant difference in gain means on skill of coping stress of students with deep and surface learning approaches.

Ho.12) There will be no interaction effect of Instructional Strategy (Mastery Learning with single feedback, Mastery Learning with multiple feedback or conventional learning group) and learning approaches (Deep and Surface) to yield differences in gain means on skill of coping stress.