CHAPTER 2
REVIEW OF RELATED LITERATURE

In the previous chapter theories about thinking and learning have been dealt with. An attempt is made in this chapter to present an overview of a few empirical studies over four decades. This overview will highlight the effectiveness of both direct and indirect methods of teaching. It may be noted that most of the studies have been based on the criteria - Speed of Learning, Retention of Learning, Transfer of Learning, Critical Thinking, Motivation to Learning and Creative Learning.

The studies quoted are presented under three categories namely:

1. Studies related to methods of teaching in the areas other than Physical Education.
2. Studies in the field of Physical Education related to different methods of teaching.
3. Relationship studies among affective factors namely, Body-image, Movement-image, Self-image, Self-esteem, Self-concept and Physical fitness, etc.

I. STUDIES RELATED TO METHODS OF TEACHING IN THE AREAS OTHER THAN PHYSICAL EDUCATION

EXPERIMENTAL EVIDENCE: EARLY STUDIES ON DISCOVERY METHOD

Winch¹ (1913) conducted an experiment to compare the relative effectiveness of discovery and reception methods

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of instructions. It was reported that better retention was obtained from reception learning and better transfer was obtained from inductive method. It appears that Winch's study was the first experimental study on discovery learning.

An early study on discovery learning by Ewert and Lambert\(^2\) (1932) compared four instructional methods, which varied in the amount of teacher guidance. The subjects were required to move disks of different size among three circles until a certain arrangement resulted. A general procedure could be used in the solution of the problem. The subjects were divided into four groups. The first group was given the procedural rules only. The second group was given procedural rules and was asked to find one general procedure which was appropriate for all the problems; the third group was given the rule and the general procedure; and the fourth group was given the rules, the general procedure and a demonstration of the procedure. The performance was measured in terms of time taken to reach the solution and the number of moves made. The best performance scores were obtained on both the criteria by the third group which was given procedural rules and the general procedure, the worst by the first group which was given the procedural rules only; the fourth and the second groups falling between the two in that order. The investigators concluded that the more complete the verbal

instructions the less manipulation necessary to solve the problem.

In a long term study, McConnel\(^3\) (1934) used authoritative and discovery methods to teach addition and substraction facts to second grade students. The group taught by the authoritative method emphasised the rote learning of rules and drills. Whereas the discovery method stressed the meaningful perception of relationships and derivations of generalisation. The study used four hundred students per treatment and the instruction continued for seven months. McConnel found the discovery method superior on speed retention tests.

Fawcett\(^4\) (1938) in an experimental study, compared the relative effectiveness of two instructional methods - "discovery" and "conventional" - for teaching demonstrative geometry to two groups of ninth, tenth, and eleventh grade students. One group was taught by a discovery method and another group by the conventional method. He concluded that the "conventional" method did not improve the reflective thinking ability of the students; but the discovery method


enhanced the reflective thinking ability of the students and this improvement was general in character and transferable to a variety of situations.

In the mid-fifties there were a series of studies which compared "discovery" with "traditional" methods of instruction. A representative of these studies was that of Sobel.

Sobel\(^5\) (1954) compared a discovery method of instruction with a "traditional" didactic (teacher sets-forth knowledge) method by non-randomly assigning teachers and their fourteen classes of ninth grade algebra students to two treatments for a four-week period of instruction. One group of students was taught by the discovery, teachers using inductive method and another group was taught by the discovery, teachers using inductive method and another group was taught by control teachers using conventional deductive method. The inductive treatment appeared to be superior among classes with a high mean I.Q. There was no treatment difference in classes of lower ability. These findings held for both immediate and three month delayed post-tests.

Werdelin\(^6\) (1966) conducted a study to examine the relative effectiveness of external direction (reaction-

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learning) and individual discovery (guided-discovery) in learning of mathematical principles using randomly selected sample of students of Sixth and Seventh grade classes. Sample A (N = 58) was given the principle and applied it to examples, sample B (N = 63) was given most examples first, then told the principles and given additional examples, and sample C (N = 67) was given examples only. Werdelin found that sample A learned the principle better; but sample C was comparatively better as to retention and transfer, sample B was between the other groups.

Research in 'Cognitive Styles' and its bearing on education began during the sixties. The term 'cognitive style' is normally used to refer to what a person 'does' rather than what he 'can do' (Harris, 1974). Witkin et al. (1977) used the phrase 'Cognitive Styles' mainly to refer to 'Individual differences in how we perceive, think, solve problems, learn, relate to others, etc.". For Tamir (1995) "Cognitive styles represent a pre-disposition or a tendency


to respond to and organise information in a particular manner".

The importance of cognitive styles in facilitating the understanding of various factors which influence students' learning outcomes is being realised. This was further accelerated by the findings of Witkin et al. (1977) that cognitive styles are relatively stable and sustainable over time. Such a stability is necessary to make predictions with a certain amount of accuracy.

Cognitive preference, according to Tamir (1995) is a kind of cognitive style. Cognitive preferences are understood as the different modes used by students in learning science and dealing with scientific information. As early as in the sixties, Heath (1964) identified four such models which he called "Recall", "Principles", "Questioning" and "Application". By and large, these modes are acquired as a result of the interaction of the individual with his science-related learning environment. The "Recall" mode refers to the individual's acceptance of scientific information as such without bothering about implications or applications. The "Principle" mode refers to the acceptance of scientific information by the individual on the basis of its acceptability or utility in individual, social or scientific context. The "Questioning" mode refers to the tendency of the individual to consider scientific information critically and evaluate it in terms of
completeness, adequacy, strengths and limitations. The "Application" mode refers to the individual's emphasis on the utility and applicability of scientific information in socio-cultural and scientific contexts.

Following Heath's four cognitive modes, Kempa and Dube (1973)\textsuperscript{10} studied the cognitive preference styles of British High School students in Chemistry. Tamir\textsuperscript{11,12} (1975, 1976) explored the cognitive preference styles of Jerusalem High School students in Biology. Das\textsuperscript{13} (1979) also explored the relation between cognitive preference styles and achievement in biology with a sample of 136 high school students of Orissa. More recently Tamir\textsuperscript{14} (1995) studied the relation between study habits of high school and college students and their cognitive preference and reported significant relationship among them.


AN OVERALL VIEW - ON STUDIES RELATED TO ENHANCING COGNITIVE FUNCTIONING USING INFORMATION PROCESSING CONCEPTS

Recent developments in the area of Cognitive Psychology indicate that cognitive capabilities of individuals can be modified beyond the levels that intelligence tests assign them.

The concept of cognitive modifiability gained momentum with the shift in emphasis from abilities to mental processes in explaining intellectual behaviour.

All cognitive theorists today believe, in the Piagetian spirit, that children develop their minds by active processing of information through spontaneously generated activities, in their attempt to make sense of the environment. Though each theorist has proposed his own set of information process components that account for intellectual development, there is a great deal of overlap between the set proposed. The difference can largely be explained in terms of 'macro' and 'micro' processes. Components in some set of information process activities are more inclusive and describe a broad range of mental processes whereas in other sets, information process components are more specific and refer to single or to a narrow range of processes. Nevertheless, "cognitive development today is regarded as building up of richly organised conceptual networks or structures of declarative and procedural knowledge. The construction of such extensive
complex networks of knowledge in a domain makes possible efficient, skillful, and otherwise very mature looking cognitive functioning possible.

Sternberg provides a generally plausible-seeming account of how cognitive development might proceed-drawing upon his elegant "Componential" theory of intelligence (Flavell, 1984)\textsuperscript{15} His approach to intelligence in the most ambitious and comprehensive attempt to capture the variety of aspects of the most elusive qualities. Sternberg's approach combines the psychometric approach and the Information Process Approach (Benjafield, 1992).\textsuperscript{16} According to Sternberg, intelligence involves the ability, first, to adapt to novel situations, and then convert these responses into automatic processes. "Using what I refer to as 'Componential Approach', I propose to account for intellectual development in terms of changes in the availability, accessibility, and ease of execution of a variety of kinds of Information Process components in task performance" (Sternberg, 1984).\textsuperscript{17} An account of Sternberg's Triarchic Theory of intelligence is as follows:

\textsuperscript{15} Flavell, J.H. 

\textsuperscript{16} Benjafield, J.E. 

\textsuperscript{17} Sternberg, R.J. (Ed). 
SKETCH OF THE COMPONENTS OF THE TRIARCHIC THEORY

I. Information Processing Components of Intelligence

A. Metacomponents

For example, defining problems, selecting strategy, solution monitoring.

B. Performance Components

For example, inferring relations between stimuli, applying previously inferred relations to new stimuli, mapping higher order relations between stimuli, comparing attributes to stimuli.

C. Knowledge Acquisition Components

1. Processes used to determine meaning
   a. Selective encoding
   b. Selective combination
   c. Selective comparison

2. Contextual cues that signal meeting

3. Textual cues that influence apprehension of contextual cues

II. Experience and Intelligence

A. Processes for coping with Novelty
   a. Selective encoding
   b. Selective comparison
   c. Selective combination

B. Automatisation of Information Processing

III. Context of intelligence or Practical intelligence. For example, skills for adapting to, shaping, and selecting environments.

It is important to note this theory suggests that there are very general attributes of intelligence such as
metacomponents, which are part of every intellectual task. As these components are exercised every time a task is performed, they tend to develop. Thus most aspects of intelligence could be learned or acquired rather than innate. It is this very postulate of cognitive theories that in addition to providing optimism, opens up a challenging area of cognitive modifiability. This innovative of ideas about intelligence learning and teaching, in order to create learning environment which promotes cognitive functioning.

Many programmes have been developed to teach thinking. Feuerstein et al. 'Instrumental Enrichment', Lipaman et al., 'Philosophy for Children' and Sternberg's Intelligence Applied' are considered some of the best programmes for teaching thinking.

A wide variety of Information Process Models of Teaching have been designed to develop certain cognitive processes.

Teaching models provide a framework for developing teaching programmes in various content domains to promote various cognitive processes. The task of integrating Information Processing components of intelligence in teaching becomes scientific with the use of models of teaching. It helps to design valid teaching programmes in various academic subjects. Out of the array of Information Processing models of teaching, models with instructional
effects matching Information Processing components of intelligence should be selected to develop intelligence improvement programmes (thinking programmes) in various content domains. Models which are prescriptive as well as descriptive should be preferred as they provide for analysis of mental processes through self-reporting techniques.

Out of a wide variety of models of teaching available Concept Attainment Model (CAM) developed from the work of Jerome Bruner\textsuperscript{18} and his colleagues on thinking and Hilda Taba's\textsuperscript{19} Inductive Thinking Model (ITM) are considered most suitable for developing intelligence.

**SUMMARY CHART - RECEPTION ORIENTED - CONCEPT ATTAINMENT MODEL (CAM)**

**SYNTAX**

**Phase One**

1. Presentation of data and identification of concept - Teacher presents labelled examples.

2. Students compare attributes in positive and negative examples.

3. Students generate and test hypothesis.

4. Students state a definition according to the essential attributes.


Phase Two

1. Testing attainment of concept
2. Students identify additional unlabelled examples as 'Yes' or 'No'.
3. Teacher confirms students' hypothesis, names concept, and re-states definition according to essential attributes.
4. Students cite or give examples.

Phase Three

Analysis of thinking strategies

Students describe thoughts

Students discuss type and number of hypothesis.

Note: Syntax means, arrangement of data to derive or discover or even identify or express a concept or to bring out complete meaning in a logical order.

SUMMARY CHART - INDUCTIVE THINKING MODEL (ITM)

SYNTAX

Strategy One
Concept Formation
Phase One: Enumerated and list
Phase Two: Group
Phase Three: Label, Categorise

Strategy Two:
Integration of Data
Phase Four: Identify dimensions and relationships
Phase Five: Explain dimensions and relationships
Phase Six: Make inference

Strategy Three

Application of Principals

Phase Seven: Hypothesis, predict consequences
Phase Eight: Explain and/or support the prediction and hypothesis
Phase Nine: Verify the prediction
Study of the two models indicate that CAM emphasises largely metacomponents. Learning based on CAM of teaching involves efficient solution of the problem through selection and implementation of ideal thinking strategies. This is precisely what metacomponents involve, i.e. (a) recognition of the problem that need to be solved, (b) selection of lower order component of task performance, (c) selection of strategy for combining lower order components, (d) selection of one or more mental representations or organisations for information, (e) allocation of componential resources, (f) solution monitoring, (g) understanding feedback, (h) understanding how to act upon feedback, and (i) acting upon feedback (Sternberg, 1984).

Performance components are exercised whenever plans made by metacomponents are carried out. However, the set of performance components emphasised by Sternberg are involved in Inductive Thinking Model.

Review of performance components of intelligence and cognitive processes involved in Inductive Thinking model indicates almost a complete overlap of Information Process components. The two match perfectly. Knowledge acquisition is a natural outcome of cognitive activities. Thus, knowledge acquisition components are functional in both the models.

Each cognitive act involves all types of components of intelligence. Different types of problems or cognitive tasks involve different degrees of metaperformance and knowledge acquisition components. A systematic combination of appropriate models of teaching emphasising different Information Process components will make a complete programme for training all the aspects of intelligence. Based upon the feedback obtained by content analysis of protocols, remedial teaching can be designed to overcome the existing deficiencies.

Baveja\(^2\) conducted a study on enhancing cognitive functioning using information processing concepts, using elements of Concept Attainment and Inductive Thinking Models. A programme in biology was constructed and tried out on seventy seven students at high school level employing a quasi-experimental design. Results show that individuals can learn effective ways of thinking and thereby improve their thinking ability to solve problems irrespective of their level of intelligence.

II. STUDIES RELATED TO TEACHING PHYSICAL EDUCATION ACTIVITIES USING DIFFERENT METHODS

Neuman and Singer\(^2\) compared the traditional and programmed methods of learning tennis. Two college service

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classes each containing twenty subjects were taught beginning tennis skills. The traditional taught group (Group A) and the programmed group (Group B) were first determined homogeneous in weight, the height (HRDBTT) Revised Dyer Backboard Tennis Test and the American College Test before teaching methods were initiated. After fourteen periods of instruction, the groups were compared on various measures. The results of the study indicated that (1) the general skill level of the groups as measured by the HRDB Tennis Test and a single elimination tournament was not significantly different, (2) the traditionally taught group improved significantly in general skills while the programmed group did not and (3) the programmed group received better subjective rating scores than the traditionally taught group.

Scott\textsuperscript{23} conducted a study to compare the formal method with the informal method of teaching physical education with classes of grade I pupils at different frequencies (four times a week, twice a week and no physical education at all) with respect to physical fitness, perceptual motor development, and creative ability. The subjects were first year or grade I boys and girls from five of the 32 elementary schools in the city of Saskatoon. On the basis of the first physical fitness test and perceptual

motor development test five groups were created with 29 in
each group. No significant difference were found in
perceptual motor development among five groups. A Chi-square
value of 19.03 indicated that there was a significant
difference among the groups in physical fitness.

Mariani\textsuperscript{24} conducted a study to investigate the
effectiveness of the task method versus the command method
of teaching the forehand and backhand tennis strokes. Two
groups of male college student (N = 30) were given six weeks
of tennis instruction, one group by each method. The class
met two hours a week for a total of twelve hours of
instruction. Subjects were given a pre-test at the beginning
of the course and a final test at the conclusion. Sixty days
later the subjects were given a post test to measure their
relation of forehand and backhand tennis achievement.
Results revealed that the task method was superior to the
command method in the teaching of the backhand tennis
stroke, but no significant difference was found between the
two methods in the teaching of the forehand stroke. Both
groups showed significant improvement from the pretest to
the final test within their respective groups. Of special
significance were the results of the post-test for relation
of the two skills which indicated that although both groups

\textsuperscript{24} Tom Mariani, "A Comparison of the Effectiveness of the
Command Method and the Task Method of Teaching the
Forehand and Backhand Tennis Strokes", Research
suffered a regression in achievement the task method group showed a significantly greater relation for both strokes beyond the 0.01 level.

Bonnie Purdy and Mary Steelord\textsuperscript{25} studied the effect of two learning methods and two grips on the acquisition of power and accuracy in the golf swing of college women. College women (N = 36) in four beginning classes were taught the golf swing using different combinations of learning methods of grips. The combination were: Part-whole method, Overlapping grip. Part-whole method ten finger grip; whole method overlapping grip and whole method ten finger grip. At the end of the instructional unit, differences among groups in the acquisition of power accuracy and general hold ability were compared. The whole learning method was found to be significantly superior in the acquisition of accuracy and general hold ability while the overlapping grip was significantly superior to the ten finger grip when the whole method of learning was employed.

Knapp and Dixon\textsuperscript{26} conducted a study title "Learning to Juggle: A study of whole and part methods". Two groups of

\begin{itemize}
\item \textsuperscript{25} Bonnie, J. Purdy and Mary L. Steelord, "Effect of Two Learning Methods and Two Grips on the Acquisition of Power and Accuracy in the Gold Swing of College Women", \textit{Research Quarterly}, 38:3 (October 1967), pp. 480-484.
\end{itemize}
matched pairs were formed to test the hypothesis that a combination of whole and part methods induces the most efficient learning. Male college seniors in physical education served as subjects. The men were matched on the basis of previous athletic experience and the opinions of the subjects. One section of Group-I practiced juggling three paddle tennis balls five minutes daily using only the whole method. The other section of Group-I practiced the same task but was formed to follow a fairly rigid part-whole practices procedure. In Group-II one section used exclusively the whole method while the second section followed a free choice part-whole method. Within the limits of the evidence the following conclusions were drawn: (1) subjects using the whole method tended to attain the criterion most rapidly, (2) the hypothesis that a combination of whole and part methods secures the more efficient learning was contradicted, (3) the initial accuracy attained by the subjects using the part whole method did not have transfer value.

Whilden\textsuperscript{27} conducted a study to compare two methods of teaching beginning basketball to junior high school girls. One method involved a maximum of pupil participation in planing, decision making, and controlling of play; the teacher playing the part of consultant and adviser, after an initial period of basic skills and rules instructions. In

tie second method the teacher assumed full responsibility for planning and criticising strategies, group discipline, and officiating. Comparison of the two groups was on the basis of group dynamics as measured by sociometric tests, and quality of performance in competition as rated by unbiased observers. The following conclusions were drawn: (1) the pupil dominated technique appeared to be more effective than the teacher-dominated technique in improving the status of the near-isolated girls, (2) while the teacher dominated group exhibited better command of the basic skills as rated by unbiased observers the pupils dominated group showed greater knowledge of rules, performed better as a team and won three games out of four played against their teacher dominated group opponents.

The twentieth century finds our world at the cross roads of two opposing ideologies. The current world crisis is much more than one of technological warfare. It is an ideological battle which can be truly won only in the hearts of man. Educating youth for democracy involves more than indoctrinating them with the verbal tenets of democracy. Young people must experience it in their daily lives.

Physical Education has innate advantages over many other school subjects for implementing democratic experiences. Play is a powerful motivator and the inherent game elements of co-operation in a framework of competition provide meaningful context for living rather than just
talking democracy. But just exposing youth to athletics is insufficient to guarantee the desired democratic outcomes. The totalitarian dictators capitalised on these potentialities to implement their ideologies. How then can democracy utilize physical education's inherent values to further its ideology? In trying to answer this question -

A study by Frances Todd\textsuperscript{28} was conducted to explore and test some teaching methods in Physical Education that gave promise of contributing to the educational objective of furthering democratic principles by translating democratic tenets into democratic action on the play field and in the gymnasium. The investigation was divided into two parts.

Part one explored the historical evidence that indicated that physical education has been used throughout ancient and modern times to foster ideologies, and set forth sociological and psychological justification for democratic methodology.

Part two described some of the outcomes of this methodology as demonstrated empirically and sociometrically in three division classes in girls' physical education in a large city high school during 18 week semester. 141 girls participated in a programme which aimed to provide

meaningful situations for the practice of democratic living. These situations were created by explicit environmental manipulation devised to foster a democratic class climate.

Sociometric test namely, acquaintance volume test to measure the increase in acquaintanceship in the classes during the term and functional choice tests to serve as the basis for squad assignments to create the chosen and rejected students to determine changes in individual status and group cohesion and to verify empirical observation of the nature of the needs of individuals and groups for guidance aimed at the improvement of interpersonal relationship were administered three times during the term, the first and last day of class, and half-way through the semester.

Explicit effort was made to translate democratic principles into action situations so as to increase interaction through participation; effect upward mobility; increase group cohesion; decrease the number of rejects, isolates and near-isolates; improve physical and communicative skills; and induce pupil cognizance of the process, values, and limitations of democracy. The multifarious devices used to achieve these aims were selected in accordance with the dynamics of each class situation.

The findings of the study accurately reflected the investigator's empirical observations and lead to the
following conclusions:

1. Democratic methodology in physical education can be justified historically, sociologically, and psychologically in accordance with the current knowledge in these foundational fields.

2. Some aspects of democratically desirable human relationships as evidenced in physical education classes can be measured objectively by use of sociometric techniques.

3. These democratic methods were practical even in an administratively authoritative framework of a large city high school was demonstrated by their use in these girls' physical education classes during one semester.

4. Based on the empirical and sociometric data which evidenced termwise increase in acquaintance volume, upward mobility, and group cohesion, and a corresponding decrease in number of rejects, isolates and near-isolates, plus the approval and satisfaction of the students themselves as shown by an unsigned questionnaire, it was concluded that the use of democratic methods in three girls' high school physical education classes resulted in socially desirable democratic outcomes.

Research has also shown that the verbal interaction between the teacher and pupil is predictive of pupil cognitive output, and also predictive of pupil affective behaviour. That is, pupils who have teachers that use "integrative", "democratic" or "indirect" kinds of verbal behaviour achieve more and create fewer discipline problems than students who have teachers that use "authoritarian", or "direct" kinds of verbal behaviour.

Bahnerman29 conducted a study to investigate the relationship between personality characteristics and verbal behaviour.

behaviour of experienced physical education teachers. Forty-two experienced physical education teachers from a large urban school district were given the California Psychological Inventory and were observed teaching at which time the Flander's Interaction Analysis Category System was used to categorize the teacher pupil verbal interaction.

The California Psychological Inventory (CPI) was used to yield the measures for the following eighteen characteristics:

Measure of Poise, Ascendancy, and Self-Assurance

1. Dominance
2. Capacity for status
3. Sociability
4. Social presence
5. Self-acceptance
6. Sense of well-being

Measures of Socialization, Maturity and Responsibility

7. Responsibility
8. Socialization
9. Self-control
10. Tolerance
11. Good Impression
12. Communality

Measures of Achievement Potential and Intellectual Efficiency

13. Achievement via Conformance
14. Achievement via Independence
15. Intellectual Efficiency
Measures of Intellectual and Interest Modes

16. Psychological-Mindedness
17. Flexibility
18. Femininity - Masculanity

The Flander's Interaction Analysis Category System (FIACS) was used to yield measures for the following Classroom Verbal Behaviour between teacher and pupil.

TEACHER VERBAL BEHAVIOUR

INDIRECT INFLUENCE

1. Accepts feeling: Accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative.

2. Praises or Encourages: Praises or encourages student action or behaviour.

3. Accepts or uses of Ideas of Student: Clarifying, building or developing ideas suggested by a student.

4. Asks Questions: Asking questions about control or procedure with the intent that a student answer non-rhetorical questions.

DIRECT INFLUENCE

5. Lecturing: Giving facts or opinion about content or procedure.

6. Giving Directions: Directions, commands or orders to which a student is expected to comply.

7. Criticising or Justifying Authority: Statements intended to change student behaviour from non-acceptable to acceptable; bowling a student out.

STUDENT VERBAL BEHAVIOUR

8. Student Talk (Response): Talk by student in direct response to teacher.

9. Student Talk (Initiation): Talk by student which he initiates or volunteers.
NO TEACHER-PUPIL VERBAL INTERACTION

10. Silence or Confusion: Pauses, periods of silence or periods of confusion.

The results of the study on the basis of significant correlative efficiencies at either the 0.05 or 0.01 level of probability were as follows:

1. Teachers who used Indirect Verbal Behaviour were found to be Sociable, to have a sense of Well-being, to be Tolerant and Flexible.

2. Teachers who used Direct Verbal Behaviour were found to be Dominant, Responsible, Self-accepting, Intellectually Efficient, and Psychologically Minded.

3. Physical Education classes with a high rate of teacher pupil verbal interaction had teachers who were Sociable and Flexible.

4. Physical Education teachers whose classes had little silence or confusion were Dominant and Self-Accepting.

Though this study does not give any evidence concerning what kind or kinds of verbal behaviours are most effective in physical education classes it is logical to expect that a teacher should be aware of his verbal behaviour predispositions and actual practices. With this information a teacher should be able to alter his verbal behaviour to facilitate learning as the situation dictates, as opposed to approaching students without this information.
This study also revealed that the verbal behaviour of physical education teachers is significantly more direct than that of teachers in other areas.

Yeatts and Gordon\textsuperscript{30} conducted a study to investigate the effects of physical education taught by a specialist on physical fitness and self-image. The AAPHER Youth Fitness Test and Gordon's "How I See Myself" Scale were administered to 75 grade seven students. The subjects were divided into those with elementary school physical education provided by a specialist (N = 46) and those from schools with no such specialist (N = 29).

Those subjects who were taught by a specialist participated in experiences by a rhythmic activities, group games, tumbling and gymnastic activities, and other individual and dual activities each week. The atmosphere was free from threat, providing opportunities for each child experience a degree of success and yet to be challenged further each day.

Results indicated that the subjects with the experience of working with a physical education specialist performed at a higher level and were more able to assess

themselves accurately than were those subjects who had not worked with a physical education specialist in the elementary school.

To study the influence of a special camp programme for obese boys on weight loss, self-concept, and body-image, Rohrbacher conducted a study. The sample compressed 204 overweight and obese boys who underwent an eight week special camp programme. Height and weight data was collected on the subjects six months and one year before the camp programme. In addition body-image, and self-concept assessment were made before and after the eight week programme and four months after the camp programme ended and subjects returned to their home environments. The subjects ranged in age from eight through eighteen years. They were grouped for statistical purposes by maturation level, degree of overweight, ordinality, religion, parental status, and parental obesity.

Body-image showed significant positive change as a result of the camp programme. Self-concept remained unchanged. The long term trend of normal weight gain appeared to be interrupted. The weight lost as a result of the programme was not regained after the camp period ended. It was concluded that longer follow-up periods would assist

in the examination of the long term effect of the camp programme.

Riveness\(^{32}\) conducted a study entitled "Multiple task transfer effects in perceptual motor learning" devising an apparatus which enabled subjects to practice one or more tasks varying in degree of difficulty on a distance dimension. Selected multiple and single task practice conditions were introduced, trials were held constant; this was followed by a test for differential transfer effects. Multiple-task practice of relatively easy practice tasks increased transfer, whereas single task practice of relatively difficult tasks was most advantageous. A test also was made for summation effects when transfer was measured at a point intermediate between various practice tasks. The amount of transfer expected from practice of relatively easy task did not combine in a linear summation with the amount of transfer expected from practice of relatively difficult task.

**RELATIONSHIP STUDIES AMONG AFFECTIVE FACTORS NAMELY, BODY-IMAGE, MOVEMENT-IMAGE, SELF-IMAGE, SELF-ESTEEM, SELF-CONCEPT, PHYSICAL FITNESS ETCETRA**

To investigate some of the relationships between self-concept and body-concept Zion\(^{33}\) conducted a study. Measurements in self description, self acceptance, ideal

self and self-description, ideal discrepancy were correlated with measurements of body description, body acceptance, ideal body, and body description - ideal discrepancy, using a sample of 200 college freshman women. The self-concept measure used for this study was the Index of Adjustment and Values, constructed by Robert and designed to measure self-description, self-acceptance, ideal self and discrepancy between self-description and ideal self. The facets were measured by a test developed by the author of this study. This test consists of five different Guttman Scales for each of the first three facets of body concept. Scores for the fourth facet that is body description-ideal discrepancy were determined by finding the differences between the first and third facets.

The results of this study indicated a significant linear relationship between self description and body description, ideal self and ideal body, and self description-and body description-ideal discrepancy. The relationship between self acceptance and body acceptance was ambiguous.

Fretz et al. 34 conducted a study to observe the changes in self-concepts during a physical development


programme. The research was focused on three aspects of the self-concept: the body, interpersonal relationships, and activity orientation. Three hypotheses were postulated: (a) The children's self-concepts of their bodies will be significantly closer to their ideal body-images in post-clinic testing as compared to pre-clinic testing, (b) The children's self-concepts of interpersonal relationships will be closer to their ideals for these relationships in post-clinic testing as compared to pre-clinic testing, (c) The children's self-concepts of orientation to solitary, task, and group activity will be significantly closer to their ideal orientations in post-clinic testing as compared to pre-clinic testing.

Three measures of self-concept were administered to children referred to a physical developmental clinic both before and after the six-week clinic programme. The 74 children studied were referred primarily because of emotional disturbances, brain damage and mental retardation. A comparison of pre-clinic and post-clinic scores indicated the following significant changes: (a) decrease in self-ideal discrepancy on height, (b) increase in willingness to be with larger groups of children, (c) increase in willingness to near the clinician and (d) increase in desire (self-ideal) to be near the father. No significant changes occurred with respect to weight, arm length, leg length, or activity orientation.
Vincent and Dorsey\textsuperscript{35} made study to investigate the relationship between three measures of body-image and two measures of physiological performance. The Fisher-Clevel and Barrier Index, the Second Homonym Test and the Body Catexis Questionnaire were correlated with dominant hand grip strength and the Michael Callon revision of the Harvard Step Test. Pearson's 'r' was employed to determine the degree of relationship. Fifty males were selected at random from general education classes at San Ferando Valley State College constituted the research sample. Of the six possible pairings only one reached statistical significance: The Homonym Test and Grip Strength ($r = 0.33$ at 0.05 level). It was concluded that a general relationship does not seem to exist between the measures of body-image and physiological performance utilised in this study. The findings of this and other studies led the authors to re-examine several questions concerning the nature of body-image phenomena.

Felker\textsuperscript{36} conducted a study to assess the relationship between self-concept, body build, and perception of father's interest in sports in grade six and grade nine boys. Subjects were chosen on the criteria of differing body build measured by the Ponderal Index and perception of high or low father interest in sports. Analysis of variance of the self-concept scores indicated differences in the grade six


sample associated with body build and perception of father's interest. The lack of similar association in the grade nine sample suggests that the relationship between the variables changes in the junior high school level.

Cratty and Sams\textsuperscript{37} conducted a survey study to investigate the extent to which blind children could identify various component of their body-image, utilising a revised and expanded form of the Benton. Ninety three children participated in the investigation ranging in age from five to sixteen years. Conclusions were as follows: (1) The scores obtained from the blind children roughly paralleled those which might be expected from sighted children of similar age and IQ. (2) Particular difficulty was noted when the blind children were asked to project themselves into the experimenter, that is, determine her left and right body parts and dimensions. (3) The gross movements of the children and of the experiments were more accurately perceived than were various left-right judgements on the part of the children. (4) A correlation of 0.043 was obtained between IQ and the body-image score. The data suggested that programmes for blind children emphasizing body-image training should be sequenced to initially promote awareness of the body planes, then of the body parts, next the left-right dimensions of the body and of space, and finally the left-right dimensions of other people and things in space.

In a study to investigate the influence of competitive and non-competitive programmes of physical education on body-image and self-concept, Read\textsuperscript{38} found significant differences in self-concept scores between those identified as consistent winners and consistent losers. The subjects that were consistent winners had significantly higher self-concept scores than did the consistent losers. The subjects who were neither consistent winners nor losers did not drastically change in body-image or self-concept.

Clifford and Clifford\textsuperscript{39} reviewed the effects of the outward Bound programme in Colorado. The stated purpose of the programme was to build physical stamina and push each individual to his physical stamina and push each individual to his physical limit. Self-concept measures dealing with ideal-self (What I would like to be) and actual-self (What I am) were administered before and after the month long programme. At the conclusion of the programme the gap between ideal-self and actual-self scores were lessened, with a positive change occurring in the actual self-concept.

Leithwood\textsuperscript{40} in a study examined the relationship of motor cognitive and motor affective among sixty four-year

\begin{itemize}
  \item \textsuperscript{38} Read, Donald G. "The Influence of Competitive and Non-Competitive Programmes of Physical Education on Body-Image and Self-Concept", Unpublished Doctoral Dissertation, Boston University, 1968.
  \item \textsuperscript{40} Kenneth A. Leithwood, "Motor, Cognitive, and Affective Relationship among Advantaged Pre-School Children", Research Quarterly, 42:1 (March 1971), pp. 47-53.
\end{itemize}
old nursery school children advantaged intellectually and socio-economically. Both simple and complex motor measures were correlated with eight dimensions of intellectual functioning and a multi-dimensional scale of Psychological Adjustment. Several cognitive abilities were identified as having significant correlations were found between intellectual measures and complex as compared with simple motor ability, psycho-social adjustment appeared to be unrelated to either the cognitive or motor spheres.

Mohamed Aasham⁴¹ conducted a study to ascertain the extent to which teacher evaluation and self evaluation procedures influence the performance on a drafting task by students with high and low self-concept. The Tennessee Self-concept Scale was used to quantify the self-concept of 105 ninth grade students in a drafting course at a junior high school. Thirty two subjects from the top of the range of self-concept scores were assigned to a group identified as the high self-concept group. Thirty students from the bottom of the range were assigned to a group identified as the low self-concept group. The results obtained were that the students with high level of self-concept performed at a significantly higher level than those with low level of

self-concept on drafting performance test. Students who experienced the self-evaluation approach received significantly higher mean performance scores than those who experienced the teacher evaluation approach.

Jane Pate\textsuperscript{42} designed a study to investigate the relationship between change in physical fitness level and changes in locus of control and self-concept. Participants of adult fitness programme were volunteered to participate in the study. The subjects were tested for cardiovascular fitness. Locus of control was assessed with Rotter International- External Scale and Self-Concept was qualified with Tennessee Self-Concept Scale. The subjects were participated in the Adult Fitness Programme, three times a week for twelve weeks. Aerobic exercise was prescribed at 65 per cent to 75 per cent maximal heart rate. Results revealed that (a) percentage of body fat decreased, (b) self-concept increased significantly, (c) locus of control did not change significantly.

Spilman\textsuperscript{43} established a study to compare self-concept among students in relation to their physical fitness, motor

\textsuperscript{42} Jones Jane Pate, "The Effect of Increasing Physical Fitness Level on Locus of Control, Self-Concept and Reported Changes in Life Styles", Ph.D. Dissertation, University of Georgia, 1983.

ability, and an overall physical performance. This study included 665 girls in grade five, seven and ten as subjects. The subjects were classified into High and Low Physical Fitness groups according to grade level. The subjects those who have scored in the top 25 per cent of all subjects tested were considered as high fitness group. The subjects those who have scored in the bottom 25 per cent of all subjects tested were considered as low physical fitness group. The analysis of data revealed that no significant difference was identified when comparing self-concept among students in relation to the physical fitness, motor ability, and composite score in fifth, seventh, and tenth grade girls.

The decision making in elementary age children, effect of motor skills and self-concept was investigated by Martinek. The treatment group consisted of 230 Boston School children grades one to five, participated in a physical activity programme in which teacher made all decisions (Verbal Model) and in a programme in which they scored in the decision making process (Horizontal Model). An additional in 115 elementary school children were used as a control group. The body coordination test was used to test motor skill development. Results indicated that teacher directed approach appears to be the best for the development of motor skills. The students sharing approach has a

definite positive effect on the development of motor skills are positively and significantly related with self-concept.

Singh and Kalpana studied the competitive performance and self-concept of Indian male gymnasts. The study has been conducted on seventeen male gymnasts who had attended the first National Gymnastics Coaching Camp for the preparation of Indian gymnastic team for Tenth Asian Games, 1986. On the basis of the competitive performance, the subjects of the study have been divided into two groups namely groups I and II. Group I comprises of nine gymnasts who had scored more than 45 marks while group II comprises of eight gymnasts who had obtained less than 45 marks. Self-concept inventory devised by Sagar Sharma was administered to measure positive-negative dimensions of self-concept. The results of the study showed that groups I and II significantly differ in their self-concept and better performance group was better in self-concept score also. It was also found that the high positive relationship exist between self-concept and competitive gymnastic performance.

An exploratory study of creative movement as a means of increasing positive self-concept, personal and social adjustment to seventh grade students was conducted by

Margaret Gwen. One group was chosen as the treatment group and the other as a control group. The subjects in the control were 20 and treatment group were 19. The treatment was three school weeks in duration. Pier's Hareis Children Self-Concept Scale and California Test of Personality were administered to both the treatment and control group. The treatment consisted of daily an hour. In the first half session, the children discovered new ways to move their bodies and new ways to move through space. The children were guided in their explorations by the researcher. The remaining half-an-hour was spent recording their thoughts, feelings, and answers to questions of the day. The results revealed that creative movements seems to reduce anxiety. A high positive correlation exist between self-concept and creative movements.

A study on the relationship between self-concept and achievement motivation among the selected two years college students was investigated by Charles Myers. The subjects consisted of 51 females and 61 males all of them were belonged to socially disadvantaged circumstances. It was observed that (a) self-concept develops out of specified


47. Greene, Charles Myers, "Relationship between Self-Concept and Achievement Motivation among Selected Black Students in a Two Years College", Doctoral Dissertation, United States of International University, 1976.
experience such as fair competition and encouragement for success during early development, (b) self-concept and achievement motivation were not significantly correlated, (c) unless the phenomenological experiences of the subjects are afford opportunities for achievement there will be no significant correlation between self-concept and achievement motivation.

Sharelson\textsuperscript{48} conducted a study on Self-concept: Interplay of Theory and Methods. The purposes of this study were (a) to test the assumptions of a multifaceted hierarchical construct, self-concept, with increasing stability toward the apex that can be differentiated from academic achievement; and (b) to examine the causal predominance of self-concept and achievement; and (c) to demonstrate how the analysis of covariance structures can simultaneously examine measurement, structural and theoretical concerns. With 99 junior high school students and multiple indicators of subject-specific (example, English) area (that is, academic) and general self-concept, they found support for a multifaceted hierarchical interpretation. Moreover, they could distinguish the facets of the construct from achievement; and self-concept appears to causally predominant over achievement. But, their data did not support the assumptions that facets of self-concept

become increasingly stable toward the apex of the hierarchy or that changes in self-concept operate from the base to apex.

Brown and Schmidt\(^49\) conducted two studies to explore the relation between self-esteem and self-enhancement biases. It was proposed that people with high self-esteem engage in forms of self-enhancement in which the self is directly linked to positive identities and outcomes, whereas people with low esteem engage in forms of self-enhancement in which self is indirectly linked to positive identities and outcomes. To test the hypothesis, high self-esteem subjects were most apt to display favouritism when they were directly involved in group processes, whereas low self-esteem subjects were most apt to display favouritism when they were not directly involved in group processes. Furthermore, consistent with the view that these tendencies reflect a motivated desire to enhance self-worth, these effects were less evident after subjects had received positive feedback than after they had received negative feedback. The discussion centres on the nature of high and low self-esteem and the influence of self-enhancement and self-consistency motives in social behaviour.

In three studies, Buhrmester and others investigated the utility and distinguishing among different domains of interpersonal competence in college students' peer relationship. In a study one, they developed a questionnaire to assess five dimensions of competence: initiating relationships, self-disclosure, asserting displeasure with others actions, providing emotional support, and managing interpersonal conflicts. Initial validation evidence was gathered. They found that self-perceptions of competence varied as a function of sex of subject, sex of interaction partner, and competence domain. In study two, they found moderate levels of agreement between ratings of competence by subjects and their room-mates. Interpersonal competence scores were also related to predictable ways to subject and room-mate reports and masculinity and femininity, social self-esteem, loneliness, and social desirability. In study three, they obtained ratings of subjects competence from their close friends and new acquaintances. Relationship satisfaction among new acquaintances was predicted best by initiation competence, whereas satisfaction in friendships was most strongly related to emotional support competence. The findings provide strong evidence of usefulness of distinguishing among domains of interpersonal competence.

A study was undertaken by Haynes and others to examine the differences in the six self-concept dimensions among 148 above average, average, and below average achieving sophomores in an urban high school. A multiple analysis of variance indicated significant differences on four of the six self-concept dimensions. Scheffee Post-hoc analysis indicated that students in the below average group differed significantly from their higher achieving peers. The average and above average students however did not differ significantly on any of the self-concept dimensions.

Related studies available in the literature with respect to the effectiveness of direct and indirect methods of teaching are few and the findings were different from one another. No study was concentrated to study the effect of the teaching methods on all the three learning domains namely, cognitive, affective and psychomotor. Most of the investigators studied only the effect of different teaching methods in relation to learning skills in different games. Even the relationship studies quoted in this chapter confined to investigate the relationship between the fitness and motor ability factors with self-concept. Therefore, the author was prompted to take up this study to investigate the effect of different teaching methods and identify the method which is more useful to realise most of the learning objectives of physical education.