CHAPTER II

REVIEW OF LITERATURE
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Review of Literature

The present chapter includes the review of related literature on student learning. It has been done with a view to derive some of the guiding hypotheses, suggestive methods of investigating the complex processes of student learning in higher education set up and to conserve time, energy and resources against unnecessary duplication. For the sake of convenience the present chapter is organised under several sub-headings, namely:

* Approaches to learning and academic performance.
* Learner characteristics, approaches to learning and academic performance.
* Content characteristics, approaches to learning and academic performance.
* Context characteristics, approaches to learning and academic performance.
* Institutional types, approaches to learning and academic performance.

2.1 Approaches to Learning and Academic Performance

Studies relating to learning style preferences, study habits, study strategy, study methods, learning strategies and academic achievement have also been included here apart from studies directly related to approaches to
learning and academic performance. These terms had been used as variables by researchers to explain basic individual differences in learning processes/behaviour in general, and were not treated as mutually exclusive.

Study habits in a way symbolised the consequences of the way a student approached studying. Several studies demonstrated positive relationships between study habits and academic achievement of students both at college and school levels (Duncan and Duncan, 1934; Ames, 1943; Gaugh, 1949; Austin, 1951; Young, 1952; Brown and Holtzman, 1955; Chahbazi, 1956; Jamhar, 1958; Chapman, 1959;). It had been noticed that quite a few students did not waste their time in developing and pursuing good study habits, while failing students often possessed ideal study methods (Lafit, 1963; Maddox, 1963). Desiderato and Koskinen (1969) and Khan (1969) however, have reported that study habits were positively associated with academic achievement both at the school and college level.

A correlational analysis, using a questionnaire method to measure academic motivation, study methods and academic performance over 139 university and 118 college students, revealed superior academic performance of students having good study methods (Entwistle and Entwistle, 1970). Cowell and Entwistle (1971) found that all the subscales of Brown-Holtzman Survey of Study Habits and Attitudes (SSHA)
like work methods, delay avoidance, teacher approval and educational acceptance were significantly related to academic performance of students in a technical college. Subsequently, in a follow up study Entwistle et al., (1971) confirmed that academic performance of students could be predicted by using their scores on motivation and study methods as predictors. In a study by Biggs (1972), over a high school population, the ubiquitous study skills dimension (like scheduling private study sessions, keeping up to date with assignments etc.) emerged most strong, accounting for 10 percent of the variance in performance scores.

The experimental studies of Craik and Lockhart (1972), that used the levels of processing model of memory, demonstrated that subjects showed better recall and recognition memory for a word, the 'deeper' the level of processing they were required to perform on it during the study trial. It was also evident that repetition continued at the same depth of processing. Findings from several other studies demonstrated that the level of processing in which subjects engaged in, could be experimentally manipulated and that such manipulations might have very profound effects on both qualitative and quantitative aspects of the outcomes of learning (Marton, 1975; Dahlgren, 1975).
Marton and Saljo (1976 a,b) in a number of studies consistently, found a clear cut relationship between deep level of processing and the quality of learning outcomes. Svensson (1977) collected detailed information over a sample of 30 first-year education students, who took part in a learning experiment, and described their approaches to learning. Results showed that approaches to learning were closely related to examination results. He further argued this to be the case of functional relationship which also involved study methods and study habits. Students using deep or holistic cognitive approaches in their normal studying became more interested and better organised, and; thus spent more time in studying and structuring their notes carefully prior to revision. It was this combination of characteristics which led to a close link between cognitive approaches and academic performance (measured in terms of examination results). With regard to academic success, Svensson (1977) found that more than 80% of students classified as holists passed all their first term examinations. While fewer than 30% of the admitees performed similarly. It was also seen that depth processors performed better on a test of understanding and were able to write better summaries (Laurillard, 1978).

Biggs (1978) in his model of study processes employed learning strategies as intervening variables which were of three types, namely, macro, meso and micro-
strategies respectively. Macro-strategy referred to the general way in which a student ordered and related data on particular tasks. Meso-strategy was less general than process related strategy but not as embedded as task related micro-strategy. Micro-strategies however, referred to learning styles and study strategies in the context of academic performance. Three such strategies were identified as reproducing, meaning and achieving respectively. Each of these strategy included a motivational component. Biggs further described that the lack of congruence between motive and strategy could lead to underachievement at least in some cases. Empirically it was possible to show that high academic achievement occurred for matched or congruent complexes, whereas low achievement resulted in case of mismatches (Biggs, 1978). Brown and Smiley (1978) found that even when given extra time to study, children did not noticeably improve their retention of a prose passage unless a systematic study strategy was used.

In another study Biggs (1979) administered a Study Process Questionnaire (SPQ) to a sample of 60 students performing two learning tasks. Subjects were instructed to read for factual detail and subsequently for meaning. They were asked both highly factual questions and a general question about the ideas underlying the passages. The latter was designed to elicit a response for SOLO
classification (Structure of Observed Learning Outcomes) to assess the quality of learning, while the former was a measure of the quantity of learning (in terms of the number of facts recalled). It was found that the instructions did affect the quality of learning. A deep approach was found rather weakly correlated to higher levels of SOLO, i.e., to a higher quality of learning. Biggs had suggested that the effects might have been stronger, had the natural rather than experimental learning condition been utilised.

Das, Kirby and Jarman's (1979) model of successive and simultaneous synthesis was found particularly useful in deriving learning strategies relevant to academic tasks. An increase in the performance observed in many experimental studies, on the effects of note taking, reviewing, interspersed questioning etc. was often interpreted as the result of elaboration techniques forcing the learner to engage in deep processing (Bretzing and Kulhavy, 1979; Rickards and Denner, 1979).

Over a sample of 96 college students (Entwistle et al., 1979) reported high positive association between levels of processing and understanding. However, Schmeck and Grove (1979) using inventory of learning processes found positive but low correlations between deep processing subset of the inventory used and the grades obtained in examination. Brown and Hayden (1980) reported that the verbal-imagery
learning styles were related to performance on cognitive tasks relevant to training.

Ramsden and Entwistle (1981) obtained students self-reported ratings of academic performance and found these closely associated with organised study methods, intrinsic motivation, positive attitudes to study, deep approach and syllabus-freedom. Studies using Biggs Study Process Questionnaire (SPQ) indicated only a weak relationship between academic grades and depth of processing (Watkins and Hattie, 1981). Investigations by Ramsden and Entwistle (1981) and Watkins (1982) using Entwistle's Approaches to Studying Inventory (ASI) revealed that the factors most strongly and negatively associated with academic achievement had high loadings on subscales designed to measure 'fear of failure'; disorganised study methods, negative attitudes to study; and surface approach and two pathologies of learning namely: improvidence and globetrotting respectively. A weak relationship was reported between deep approach and academic grades.

Thomas and Bain's (1982) study examined the use of surface and deep level learning strategies by first year student teachers at an Australian college, who responded to a questionnaire. The behaviours measured were stylistic rather than strategic, context-specific approaches to learning. High levels of achievement on both objective
tests and essay assessments were found associated with the reported use of deep-level learning strategies by students. Deep level rather than surface level learning strategies were found more conducive to academic success also by Filipino School students (Watkins and Astilla, 1982). Schmeck and Phillips (1983) obtained a significant correlation coefficient \( r = .37, \ p < .01 \) between the SOLO ratings (as a measure of quality of learning) and depth of processing subset of Inventory of Learning Processes (ILP). Results of Watkins' (1983) study corroborated the above finding.

Biggs (1984) found that a surface approach was associated with poor academic performance (measured in terms of student's self-ratings) and poor motivation (when assessed objectively) but with good recall of factual detail, when it was appropriate. Whereas a deep approach was associated with good academic performance whether assessed in subjective/objective or in qualitative terms. Subjects using this approach displayed high or academic self-concept. They rated themselves favourably in terms of the performance and satisfaction. The pre and post test results on deep and surface approaches were compared for the two groups, who were followed through an intervention programme designed to capitalize on student motivation and to encourage deep approach to learning and at the same time to discourage surface approach to learning. The programme
seemed to be remarkably successful in terms of both objectives and for males and females (Biggs and Rihn, 1984). Marton et al., (1984) reported that a deep approach to learning was more effective in the long term than a surface approach to learning and that the intervention by a study skills programme was less effective than the skill in studying or learning to learn programme.

In a study Van Rossum and Schenck (1984) attempted to examine the extent to which deep level and surface level approaches could be related to the learning conception and the quality of learning outcomes. The result again confirmed positive association between deep level approach and learning outcomes of relatively high quality along with a constructive learning conception. Several other studies supported the association between deep level approach and the qualitatively superior learning outcomes (Dahlgren, 1984; Watkins, 1984; Biggs, 1985; Cloete and Lolwana, 1985; Entwistle, 1985; Ramsden 1985).

In Clark's (1986) study a modified version of Approaches to Studying Inventory (ASI) was administered to the first year, third year, and final year students of an innovative medical school. The purpose of the study was to see whether the inventory's constructs were also applicable to medical students. The psychometric robustness of the instrument was confirmed and its applicability to these
groups was established. However, the instrument was not found highly predictive of academic success.

Pintrich (1986a,b) in his studies that were designed to evaluate the effects of cognitive, metacognitive and effort management, found effort to be the only direct predictor of academic achievement. The use of the metacognitive and cognitive strategies were influential only via their relationship with effort. Gadzella et al. (1987) examined the relationships among study skills, learning processes and grade point averages. The findings showed that most scales of the computer assisted instruction study skills tests had small but statistically significant correlations with the deep processing subset of inventory of the learning processes and with grade point average. Results of Bigg's (1988) study reported changes in both secondary and tertiary student, motives and strategies following a metacognitively based intervention, with greatest changes occurring in deep motive and achieving strategy and associated enhancement of academic performance. Clark (1988) tried to examine the relationship of study skills and learning style of students to their college achievement and the possibility of discriminating between the successful and unsuccessful students on the basis of study skills and learning styles. The correlations of learning styles, study habits and attitudes with achievement were low although significant.
It thus appeared that good students were often motivated and responsible. They preferred to learn alone rather than with peers, preferred the flexibility and variety in learning, and did not prefer to learn through tactile modality. Good students had good study habits and positive attitudes towards educational experiences. The most salient factors of academic achievement in the final examination were found prior performance at mid-term tests, academic self-concept, expectancies of success, study timing and working strategies. Associations among academic achievement and deep and surface learning strategies however, were insignificant (Overwalle, 1989). Hanpol (1989) conducted a study to examine the relationship between the matching of perceived teaching style and learning style on achievement. No statistically significant relationship was found between matching perceived teaching style with learning style and student achievement.

Ramsden et al. (1989) confirmed that examination performance was negatively related to surface approach and positively but very weakly with deep approaches to learning. Haynes et al. (1989) administered a learning and study strategies inventory (which assessed cognitive skills, study behaviour and motivation), to 148 high, average and low-achieving high school students in an inner-city school. Analysis of variance indicated that low achieving students differed significantly from their average and high achieving
peers on cognitive skills, study habits and motivation. Ramsden et al. (1989) confirmed that examination performance was negatively related to surface approach and positively but very weakly with deep approach to learning. Bonhams (1990) study attempted to investigate the effects of learning style preferences and various instructional strategies on achievement and course completion rate of college freshman in a developmental mathematics course. Canfield Learning Style Inventory (CLSI) was administered. The results showed no interactive effects of learning style preference and instructional format upon academic achievement or completion rate, which occurred for students having an affiliative and independent preference.

Bryant's (1990) study explored the effects of matching of learning materials and students' preferred learning styles upon academic achievement and attitudes. Results revealed that high mathematics achievement group had positive attitude growth for the abstract random learning style whereas all medium and low mathematics achievement groups had positive attitude growth for all learning styles.

Stahlneckar (1990) undertook to determine (1) which learning style elements, as characteristics, can effectively discriminate between the high and low achievers in mathematics and reading; (2) which learning style elements may be predictors of achievement in mathematics and reading.
Findings revealed that:

1. There were significant differences in learning style profiles by grade.
2. There were significant differences in learning style preferences of the high and low achievers in mathematics as well as reading.
3. Motivation, persistence and being responsible were the characteristics of high achievers both in mathematics and reading. Fourteen learning style elements in mathematics and eleven in reading were found significant predictors of achievement.

Pokay and Blumenfeld (1990) studied relations among motivation, learning strategy used and achievement of high school students. It had been found that early in the semester, the expectancies and the use of geometry specific effort strategies influenced grades. Later in the semester, geometry, self-concept and meta-cognitive strategies influenced grades.

Duckwall et al. (1991) purported to determine if the success of students at a highly selective combined baccalaureate/MD degree programme was affected by their different approaches to learning. One hundred freshman students were given the Lancaster Approaches to Studying Inventory [short survey by Entwistle, 1981]. Results showed that there are some relationships between approaches to
learning and success in the programme.

The studies reviewed above indicate the following:

1. That approaches to learning have close association with academic performance; deep approach leading to better academic performance and surface approach leading to poor academic grades in general.

2. That learning style preferences of students are good predictors of their academic achievement.

2.2 Learner Characteristics, Approaches to Learning and Academic Performance

Several learner characteristics could be expected to influence academic performance and approaches to learning. Learner characteristics encompassed socio-economic background, age, gender, motives, attitudes, goals, interests and personal orientation also known as the locus of control etc.

In an early attempt to explore the basic underlying motives or characteristic orientation for learning, Houle (1961) coined a sort of typology of the adult learners. He extensively studied the holistic interview to see whether there could be common threads running through the activities and motivations of learners. Three sub-groups emerged namely: goal-oriented; activity-oriented; and learning-oriented learners respectively. For the goal-oriented
learners, learning included a series of episodes each beginning with the identification of a need or an interest. Activity-oriented learners participated primarily for the sake of the activity itself rather than to develop a skill or learn subject matter. However, learner-oriented students pursued learning for its own sake. They seemed to possess a fundamental desire to know and to grow through learning. It was seen that the above three groups of students having different motives and interests in study performed differentially in an academic situation.

Socio-economic status had generally been treated by researchers as one potential factor contributing to academic performance. Socio-economic status was assessed by the inclusion of subjects' education (Kuppuswamy, 1962), income of parents (Gupta, 1963; De and Sinha, 1968); and occupation of parents (Kamat and Desmukh, 1963; Bennur, 1966; Raina, 1967; Ahluwalia and Gupta, 1968; Choppin, 1968; De and Sinha, 1968; Minor 1968).

Two studies were conducted in Australia that included students goals as affecting the school performance. Pentony (1968), who studied a group of students having difficulties, noted a general lack of sense of purpose and direction in them, but all these students lacked happy relationship at home. Kearney (1969) found that students who had well-defined, or fairly well-defined goals for the
future did about equally well in their courses, but those who could not say what their goals were, did significantly worse.

Burgess (1971) presented a Checklist of possible reasons for learning and asked students to indicate what motivated their learning or desire to learn. He hypothesized eight preliminary motivation clusters, screened a list of 5,773 reasons, and came up with 70 items representative of the initial eight clusters. A factor analysis of the responses of 10,446 adults to a questionnaire having 70 items revealed seven interpretative factors: desire to know; desire to reach a personal goal; desire to reach a social goal; desire to reach a religious goal; desire to escape; desire to take part in social activity and desire to employment as formal requirement respectively. Savage (1972) reported that in a medical course poor students were as intelligent as the 'good' ones and had as good scholastic ability. They did less well due to difficulty in reading and note-taking, poorer concentration, a more inefficient balance between the allocation of study and social time, in addition to having poorer attitudes to study.

Wankowski (1973) compared students who were very clearly motivated concerning their future with students who were very poorly motivated. He found that the failure rate
for the latter rose to 1 in 6. Indeed amongst extremely poorly motivated male students, the failure rate reached 1 in 2, and a similar failure rate of 1 in 2 occurred amongst students of both series, whose reasons for entering university were classed as indeterminate. A measure of motivation, comprising assessment of short and long term goals and reasons for entering university correlated significantly with degree results, for male students and for the stable and introverted female students.

Whereas in younger people the speed of performance varied with the nature of the task and the individual's familiarity with it, the older people tended to adopt a characteristic pace that was consistent across a wide variety of activities (Kidd, 1973).

Morstein and Smart (1974) identified clusters of multiple reasons for learning. They found six underlying factors namely: social relationships, external expectations, social welfare, professional advancement, escape or stimulation and cognitive interest, professional advancement and external expectations.

Morstein and Smart's factors of escape/stimulation and social relationships appeared similar in intent to Houle's activity-oriented subgroup which were of two types: those who participated in learning activities in order to
escape from something boring or unpleasant, as opposed to those who participated for more positive reasons of seeking social relationships. The factor of cognitive interest appeared to be heavily learning-oriented. People in this cluster gave reasons like: to learn just for the sake of learning, to seek knowledge for its own sake or to satisfy an enquiring mind and so on. Factors of external expectations and professional advancement appeared to explain the behaviour of goal-oriented learners.

Biggs (1976) found males and females having differential approaches to learning. Fransson's (1977) study revealed that lack of interest in the text, efforts to adapt to the expected test demands and high test anxiety all enhanced the tendency to use surface level processing and ineffective reproductive attempts at recall. However, an adaptive approach linked to strong interest and low anxiety produced a high proportion of deep level approaches with good factual recall. When acquisition was equated for younger and older learners, age differences in recognition memory disappeared (Craik, 1977).

Biggs's (1978) study suggested that there were several possible ways of achieving success in academic learning. The personal preferences, values and motives predisposed a person to adopt a distinct study strategy. "How we study was a function of why we study" [Biggs, 1979a]
and congruence between predisposition and strategy may lead to academic success. Several other researchers emphasized factors which were likely to encourage students to adopt a deep level approach to study (with an emphasis on understanding rather than a surface level approach (with an emphasis on memorisation). Such factors included the students' level of interest in the task (Laurillard, 1979; Ramsden 1979; Saljo, 1979); and What they hoped to get out of it (Laurillard, 1979). There was also the evidence of differences in approaches to study according to age and sex (Watkins and Hattie, 1981; Watkins, 1982). When an individual had to take responsibility for deciding what criteria were important for him, what goals must be achieved and the extent to which one had achieved these goals, one truly learnt to take responsibility for oneself and for ones of learning (Rogers, 1983). It was an essential aspect of learning for understanding.

Certain learner characteristics like self-perceptions of ability were expected to influence how students approach and respond to learning tasks [Covington 1984, Schunk, 1984]. A favourable attitude, unwillingness to take risks and the use of effective learning strategies might be more evident among the students who had high assessments of their own ability. Student's personal goals might determine their particular learning strategies that they adopted [Gibbs, Morgan and Taylor, 1984]. Students
monitored their performance in terms of their own goals as well as the perceived requirements of the teacher, department and institution. The focus of attention were not simply the task at hand, but a penumbra of personal and contextual influences. O'Neil and Child (1984) suggested that students tend to adopt learning strategies congruent with their motives for learning. Research from diverse perspectives had shown that student satisfaction and enjoyment were greater when students themselves were committed to understanding and learning [Nicholls et al., 1985]; and were entrusted with a sense of responsibility [Ryan and Grolnick, 1986].

Ames and Archer (1988) studied how specific motivational processes were related to the salience of mastery and performance goals in actual classroom settings. 176 students responded to a questionnaire on perceptions of the classroom goal orientation, the use of specific learning strategies, task choices, attitudes and casual attributions. Students who perceived emphasis on mastery goals in the classroom reported using more of effective strategies, preferred challenging tasks, had more positive attitude toward the class, and had a stronger belief that success followed one's efforts. Students who perceived performance goals as salient tended to focus on their ability negatively and attributed failure to lack of ability.
Gabriel and Pillai's (1988) study investigated how far learning potential [which included aptitude, scientific affect, attitude and college scores] determined the selection of suitable learning strategies under controlled conditions of individualised science instruction, and; how far levels of achievement were influenced by the learner's potential, and the strategy selected or by the interaction between these. This study provided the basis for a rational allocation of learning strategies to learners with various potentials as well as the tools for assessing these potentials. Students' who approached the task with a positive attitude were more prepared to learn how to cope with the new task, whereas students who resented having to do the task simply went through the motions [Higgs, 1989].

Locus of control served as an important learner characteristics in many researches. In Rotter's social learning theory [Rotter 1954], the internal external control construct was considered as a generalized expectancy operating across a large number of situations, which related to whether or not the individual possessed or lacked power over what happened to her. The first attempt to measure the internal-external control dimension as a personality variable in social learning theory was reported in a doctoral dissertation by Phares [1955]. He designed a 13-item scale to measure a general attitude or personality
characteristic of attributing the occurrence of reinforcements to chance rather than oneself.

In 1962, Rotter et al. described the locus of control construct as distributed over individuals, according to the degree to which they accepted personal responsibility for what happened to them. As a general principle, internal control referred to the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control. External control referred to the perceptions of positive/negative events as being unrelated to one's own behaviours in certain situations and therefore beyond personal control. In a study of high school students, Franklin (1963) found internals showed evidence of achievement motivation more than externals. Seeman (1963) reported differential learning between internals and externals in a field setting.

Earlier studies had shown that internals spent more time in intellectual activities, exhibited more deep interest in academic pursuits and scored higher on intelligence tests and other academic tests than did externals [Chance, 1965; Crandall et al., 1965]. Lefcourt (1965) observed that one major aspect of cognitive and perceptual structure which separated the internally-oriented individuals from the externally-oriented was the level of cue explications. He found that the internally-oriented
individuals were marginally affected by the extent of cue explication, whereas externally-oriented persons were greatly affected. As the extent and level of task clarification increased, the performance of externally-oriented individuals tended to improve, while the internally-oriented person utilised the available cues with little or no clarification. Rotter hypothesized that internals would show more overt striving or achievement than the externals, who feel that they have the control over their rewards and punishments. Externally-oriented individuals tended to improve with help, while the internally-oriented person utilised the available cues with little or no clarification. A monograph by Rotter (1966) contained extensive data on the development and validity of the scale and results of general studies which suggested in clear terms that beliefs in personal or internal locus of control tend to be positively related to both grades in school and achievement test scores [Coleman et al., 1966; McGhee and Crandall, 1968].

Other studies showed that internals performed better than externals under conditions where skill controlled the outcome, while externals performed better than internals under chance-determined conditions [Julian and Katz, 1968; Lefcourt et al., 1968]. Eisenman and Platt (1968) and Hjelle (1970) did not find evidence that the locus of control construct was a determinant of academic achievement.
In two studies Gurin et al. (1969) and Lao (1970) noted that students who had a higher sense of personal control had higher achievement test scores and grades, higher academic confidence, and higher educational expectations and aspirations than did students who believed in control of ideology. These results suggested that it was the sense of ideology that differentiated between motivation and performance.

White and Howard (1970) investigated the compatibility between different control orientations in students under student-directed and teacher-directed educational conditions. The results based on students' scores on a standardized science achievement test showed that internal students learned equally well under both teaching conditions; however external students learned considerably more under student-directed teaching conditions. The better performance by internally oriented students was supported by Buck and Austrin (1971) and Morrison and McIntyre [1971]. High male internalizers had been found to be more achievement-oriented [Joe, 1971; Nowicki and Roundtree, 1971]. Ducutte and Volk (1972) found that internal white females had highest occupational aspirations than the external white males. Karabenick (1972) found that success and failure were more important to internals than to externals. He suggested that locus of
control beliefs might moderate the effects in achievement situations.

Biggs and Das (1973) indicated that individuals who were 'internalisers' (endorsed extreme categories on self-rated items) were introvert, divergent and tended to use transformational study strategies/deep approach; while 'externalisers' (endorsed extreme categories on items relating to others) were extrovert, dogmatic and used reproduction study strategies or surface approach. However, both internalisers and externalisers achieved identical grades [in educational psychology]. A considerable amount of literature on I-E concept was found linked to effective learning at the university [Biggs and Das, 1973].

Procivk and Breen (1974); Bar-Tal and Bar-Zohar (1977); Otten (1977); and Faroqui and Tharakan (1978) observed that internal perceptions of control were systematically related to behaviours, which increased the probability of successful performance. Mishra (1978) conducted a study to test the effect of feedback on performance in relation to locus of control. Significant differences were observed between the scores of internals and externals and between the groups with feedback and without feedback. Weiner (1979) reported that self-perceptions of pride and competence were enhanced by success only, if the person accepted responsibility for that
success. Performance was optimized when students accepted responsibility for their success and understood that effort and persistence could overcome failures [Stipek and Weisz, 1981]. Kirby and Das's (1981) study had shown that students' perceptions of what constituted success influenced significantly their approaches to learning and learning outcomes.

Findley and Cooper (1983) found an average correlation of around $r = .30$ between measures of locus of control and academic achievement. They further emphasized that the locus of control and academic achievement relationship was considerably weaker at college as compared to the high school level. Owie's (1983) study attempted to assess the influence of students' locus of control on their achievement in biology following conventional and programmed instruction in the classroom. Students who were internally oriented performed much better under conditions, where intrinsic reinforcer constituted the stimuli. On the other hand, the externally oriented students were found more comfortable under conditions where extrinsic reinforcements defined the foci of learning. The findings thus, posited a definite relationship among locus of control, instructional style and achievement.

A significant relationship between an internal locus of control and deeper level of learning was noted in many
researches [Watkins, 1984; Watkins & Astilla, 1984]. Several writers stressed the likely importance of self-control of learning, if a student adopted a deep level approach to learning where the focus was on meaning generally [Biggs, 1985; Ramsden, 1985; McCombs, 1986]. Such an approach was necessary, if the student was requested to achieve high-quality learning outcomes.

Results of Watkins's (1987) study supported the earlier finding that the acceptance of personal control over one's learning success had a causal factor in the adoption of less superficial but more achievement oriented approaches to learning. Surprisingly there was no evidence that internality was related to the adoption of deep level approach. Smalarzi (1989) designed a study to determine whether differences existed in locus of control and learning style related to age and major among adult women, enrolled in two different programmes in an institution of higher education. Demographic Data Sheet, Learning Style Inventory and Internal-External Control Scale were used. Results indicated no statistically significant relationships among learning style, locus of control, age and major subject.

Overview: It was evident from the above discussion of various learner characteristics, learning approaches and academic performance that several characteristics inclusive of internal locus of control were consistently related to
approaches to learning and academic performance. However, the conflicting or contradictory findings suggested that relationship may not be direct and causal in nature.

2.3 Content Characteristics, Approaches to Learning and Academic Performance

The term content evoked words like subject-matter, values, abilities and skills. Content connoted what was included or covered by a course. Contents were usually determined by the teacher or by the course committee who approved a detailed description. Some of the content characteristics, like, the quality, form of expression, method of presentation, sequencing of materials, assessment demands etc. were expected to be related to approaches to learning and academic performance.

Meyer (1935) compared the influence of two different 'examination sets', i.e., recall and recognition and found that the type of the test expected had a considerable impact on performance as measured by immediate as well as delayed testing. A recall test and particularly the anticipation of an essay test led to higher performance except on immediate testing with recognition questions. Some interesting parallels between subjective reports on the level of processing and performance were also found. Vallance (1947) did not find support for this finding. Bousfield (1953) showed the importance of seeking meaning to make sense of
the materials learnt. Becker et al. (1968) in their intensive study over medical students demonstrated that the students' views of the curriculum and their academic work were mediated significantly by their perceptions of assessment requirements. Hudson (1968) made use of the term 'syllabus-boundness' and 'syllabus-freedom' to explain that some students preferred to have clear instructions, deadlines, and defined courses, while others demanded much more autonomy in their studying/learning. Both groups however performed well in examinations, though the syllabus-freedom students were most at risk.

Several attempts had been made to stimulate the students to change their comprehension and retention activities with experimenter generated pre-post and interspersed questions [Frase, 1968]; with pre and post-supplementary organizing materials [Frase, 1969; Allen, 1970]. Biggs (1970a] conducted a research to study the behaviour of students. He found that success in Arts was related to two rather different types of strategies, namely reproductive and transformational. Success in science was unrelated to either strategy; the most important predictor being the prior mastery in the content area concerned. Watts and Anderson (1971) demonstrated that repeated exposure to questions affected the type of processing that students were engaged in. When demands became evident,
students adopted their levels of processing to the type of questions expected. This finding was also confirmed in other researches [Marton, 1973a,b; McKenzie, 1973].

The approaches to learning were differentially effective depending on several factors like the method of combining marks for the final evaluation [Biggs and Braun, 1972]; objective and essay type tests [Biggs, 1973]; and Arts and Science subjects [Goldman and Warren, 1974]. Positive effects on performance resulted from instructions to reorganise the incoming material [Divesta et al., 1973; Frase, 1973]; and to state the material in the students' own words [Delgiorno et al., 1974]. Dahlgren et al. (1974) reported that students subjectively experienced that learning was affected by the type of the test anticipated. The general result of this study indicated that the expectation of an objective test led to a more superficial level of processing, while the expectation of an essay or oral test led to a deep-level processing.

The efforts to induce deep level processing either by inserting questions in the text [Marton, 1974; 1975b; Saljo, 1975] or/and content-oriented guidance [Dahlgren, 1975] were not altogether successful. The results of the experimenter's efforts to induce deep level processing in many cases turned out to be a narrow technified learning process. It was further observed that students remembered
more information when induced to process at a semantic level. However in another study, Edfeldt (1976) concluded that every form of disruption between the reader and the content of the text had negative effects on the outcome of learning. Brown and Smiley (1978) found that even when given extra time to study, students did not noticeably improve their retention of a prose passage; unless a systematic study strategy was used. Mathias (1978) identified two general types of approaches to learning; course-focus and interest-focus. He explained that these approaches did not represent static mental characteristics of students fixed in time, but those varied over time.

Elton and Laurillard (1979) pointed out certain assessment tasks which required deep learning strategies and discouraged students from using reproducing strategies. In terms of the mode of presentation of material, Riding and Ashmore (1980) compared match-mismatch effect between learning style and presentation mode and found that imagers learned better from the pictorial presentation and verbalizers from the written material. With respect to the type of content, Riding and Calvery (1981) presented students with two types of written materials, of which one consisted of mainly familiar and another of the acoustically difficult new terminology. They found that the imagers did best on former type whereas the verbalizers did so on latter type. Ramsden (1984) stressed the point that it
was the students' perceptions of assessment which influenced their behaviour. It was not simply a matter of teachers' designing an assessment scheme, which they believed will promote an independent approach to learning. Students must believe this to be so and find that a deep or autonomous strategy on their part was rewarded.

Differences between effective and ineffective learners were found in their use of content-specific strategies in areas such as reading and mathematics [Rohrkemper and Bershon, 1984; Schoenfeld, 1985; Paris and Oka, 1986]

Collins (1990) investigated the transfer of learning effects between related and less related tasks using content specific and content general learning strategies. The study hypothesized that general learning strategy would produce more transfer of learning both across the related and less related tasks, than the content specific learning strategies. Results indicated that a general learning strategy [learning how to learn] was more productive for learning achievement in situations where transfer of learning was desired.

Overview: It was evident from the above discussion that various content characteristics particularly assessment demands, perceived relevance, presentation of materials etc.
influenced directly the use of study strategies/approaches to learning. These also influenced the academic performance. However, whether these relationships will hold good in case of students in open and traditional universities (alike) ought to be explored.

2.5 Context Characteristics, Approaches to Learning and Academic Performance

The different approaches to learning tasks were more intelligible if seen as characteristics of the student in relation to a particular learning context. The learning context or environment can be conceived of as having three dimensions:

a) physical dimension involving the student; interrelation with the physical aspects of the environment;

b) learning process dimension including the training features that either through design or accident, have a direct impact on the rate of student learning; and

c) social dimension involving the interpersonal dynamics directly related to the preceding factors.

The importance of learning environment has been recognized by many researchers. McDill et al. (1967) attempted to assess the influence of different pedagogical and social dimensions of school environment on achievement of students, while controlling the relevant personal
variables. The analysis revealed that the effect of the socio-economic context of the school on individual achievement disappeared, when personal variables were controlled. It was evident that various dimensions of school environment had significant effects on students performance. These results indicated that when intellectualism, achievement and competition were stressed by faculty and students, it was reflected in higher achievement. Hinton (1968) studied the effects of environmental frustration on creative problem-solving. He concluded that the environmental frustration significantly reduced creative problem-solving.

An early study by Becker et al. (1968) examined the relationship between students' perceptions of academic context and their approaches to learning. Results indicated that the academic situation did not reward students for showing intellectual involvement even though the institution professed it to do. Students' approaches to learning were found dominated by the grade-point average perspective. High grades in assessment tasks were the most important goals. Student's achievement was dependent on the degree of their adaptation to the departmental procedures imposed upon them. Biggs (1970) emphasized the importance of recognising the complexity of a learning situation in the sense of presupposing higher order interrelations between the person, task and learning conditions.
Becker, Miller, Parlett and others [Snyder, 1971] had identified many disjunctivities between the formal requirements of academic environment [like thought, creativity, competence, development, thinking, critical thinking and so on] and the actual requirements as perceived by students [memorisation, fact-gathering, conformity, rote learning and so on]. These discrepancies in perceptions in turn, affected the approaches to learning directly and academic performance indirectly. While students' indifference in various subject areas could be differentiated in terms of 'pure' versus 'applied' interests. No differences between high and low performers in different faculties were found with respect to study behaviour per se. Goldman and Warren (1973) identified two approaches to study namely "diligence" and "cognitive-activity" that were helpful in discriminating between the good and poor performers, irrespective of their faculty orientation. Miller and Parlett (1974) were of the opinion that the academic environment defined by examinations led to the employment of distinctive strategies of learning by different students. The most important dimensions of the academic environment to students at the departmental level were: student-faculty relationships; interest and engagement in teaching; satisfaction with instruction and grading process [Bowen & Kilmann, 1975; Gaff et al., 1977; Hartnett and Centra, 1977; Morstein, 1977]. Fransson (1977)
investigated the effects of anxiety by contrasting learning in a stressful and relaxed experimental condition. An initial analysis of the differential treatment conditions showed no significant differences in the approaches to learning. However, students who perceived the situation as threatening were more likely to adopt a surface approach.

Laurillard (1978) found students' styles and strategies of learning age highly context-dependent. She emphasized the influence of learning context and environment on students' approaches to learning and their academic performance. Writing about the effects of climate at an aggregate level, Vyskocil and Goens (1979) argued that the qualities of trust, respect and care were necessary for a positive climate.

Ramsden (1979) found contextual variables related to students' approaches to learning. In another study, Ramsden and Laurillard (1979) confirmed these findings. Rotter et al. (1979) and Wynne (1980) investigated the relationship between teacher-teacher and teacher-student interactions and perceptions of the learning environment.

Ramsden and Entwistle (1981) explored the effects of academic departments on students' approaches to learning. They administered Approaches to Studying Inventory and a Course Perception Questionnaire to 2208 students from 66
academic departments in six contrasting disciplines from British universities and polytechnics. Results revealed that departments with highest mean scores on meaning orientation were perceived as having good teaching and freedom in learning. Departments with highest mean scores on reproducing orientation were seen to have a heavy workload and lack of freedom for learning. Watkins's (1982) study also revealed similar results.

There was adequate research evidence to indicate that situational demands affected the salience of specific goals, which resulted in differential patterns of cognition, affect, and performance [Ames, 1984b; Covington, 1984; Covington and Omelich, 1984]. Striking illustrations helped students both to share the lecturers' enthusiasm vicariously and in some instances, to shift conceptions and approaches to learning [Hodgson, 1984]. Laurillard (1984) pointed out that explanations of problem solving in information processing terms, which concentrated exclusively on processes, were related to the academic component of the situation experienced by students. Their learning strategies depended as much on the assessment procedures as on the nature of the problem to be solved. Similar conclusions were drawn in Ramsden (1984) study. Marton and Saljo (1984) reported that when students perceived themselves to be under threat, they adopted surface-level approaches.
Although there had been considerable research on students' knowledge or awareness of general learning strategies, little attention was paid to the context of learning and its effects on the use of actual strategies by students [McKeachie et al., 1985; Thomas and Rohwer, 1986]. In some experimental studies, students reported the use of self-instructions and self-monitoring strategies under rewarding conditions or emphasizing self-improvement rather than social comparison, and when they believed in the efficacy of effort [Schunk & Cox, 1986].

Ramsden (1985) highlighted the importance of learning context strongly in a review paper on student learning research. He concluded that "it is now clear that both styles of learning and approaches to learning are intimately related to the assessment and teaching context". Newble and Clarke's [1986] study was designed following the model of Lancaster studies on learning in a problem-based learning context of a medicine course. They used the Lancaster inventory to compare traditional and innovatory courses in terms of their impact on approaches to learning. They found that the innovative problem-based courses were perceived higher on meaning orientation than the traditional ones.

Anderson (1987) suggested that students' perceptions of their classroom environment and the instructions received
by them influenced their academic achievement and attitudes. Hattie and Watkins (1988) indicated that the deep level learning strategies were found conducive to high quality learning outcomes by students who (a) preferred classrooms to be enjoyable, (b) were orientated to do their own research rather than relying on the teacher or on the text, and (c) were being allowed to work at their own pace and choose their own way of learning.

Ramsden et al. (1989) in a study reported that the perceived school environments and pupils' learning were related in a systematic way. School environments, offering supportive teaching, coherent structure, emphasis on autonomy and moderate stress on achievement, were associated with learning involving an active search for understanding, organised study methods and the avoidance of superficial approaches. Schools characterised by extreme emphasis on formal academic achievement, in which teaching focused narrowly on examination success, have associated with a tendency towards minimalist, reproductive and uncompromisingly competitive approach to learning. Similarly Overwalle [1989] demonstrated in the context of university that factors operating within the educational context affected learning outcomes significantly.

Entwistle et al. (1989) conducted a study to explore the relationship between a set of inventory scores
describing perceptions of school and teachers and another set indicating school motivation and approaches to learning. 516 students in five British schools and a comparable sample of 602 students in Hungary were given the inventory. The factor structure of the combined inventory correlational analysis suggested that the relationship does exist between perceptions of school and teacher, levels of school motivation and approaches to learning. In another study, Bonham (1990) examined the effects of learning style, preference and various instructional strategies on achievement and course completion rate of college freshman in a developmental mathematics course.

Speth and Brown (1990) designed a study to examine the effects of two person-dependent variables: learning style and gender and one context-dependent variable: type of examination, on test preparation strategies. Instruments used were Approaches to Studying Inventory (ASI, Entwistle and Ramsden); Inventory of Learning Processes (ILP, Schmeck et al.) and a Test Preparation Activities Survey developed for this study. Factor analysis of this survey yielded six subscales: time-effort, integration, selection, cognitive monitoring, peer orientation and average student. Cluster analysis of ASI scale scores was used to assign students to groups based on four combinations of high and low scores on deep processing + elaborative processing and fact retention
Results of ANOVA and MANCOVA revealed significant differences among clusters on all six strategies, among groups on all but peer orientation. The MANCOVA yielded a significant three-way interaction of cluster, gender and type of test. Male and female students in the four clusters appeared to react differently to multiple choice or essay tests and the patterns varied by strategy.

Overview: The foregoing discussion showed that the perceptions of context-related characteristics affected students' approaches to learning and academic performance. However, similar relationships for students in an open and a traditional university set up were yet to be tested.

2.6 Institutional Types, Approaches to Learning and Academic Performance

Although there were many structural similarities at an aggregate level, institutions differed from each other in their methods, compositions and techniques particularly the quality of human inputs. The type of institution therefore may be an important source of variance in approaches to learning and academic performance of students. High school students enrolled in a supervised correspondence study were compared with those taking courses in regular classrooms in a study by Childs (1949). The criterion variable was the academic achievement. The results indicated that on the
standardized achievement tests, the students in correspondence courses had better performance than their counterpart in regular classes.

Walsh (1962, 1963) conducted two studies consecutively. In the first study he sampled 1500 students undergoing correspondence courses and combined programmed instruction with correspondence instruction. For the second study in the following year he added 500 more students and followed the same process as in the previous year study. Results indicted that in both cases, students' achievement remained the same. However, in completing the number of assignments, the programmed instruction was found to improve the motivation of the students. Sjogren (1964) and Schoen (1964) corroborated the above findings. Gardner (1966) carried out several studies in England to examine the effects of open or informal teaching methods. The results were generally consistent with the American findings, in that little difference was observed between informal and traditional schools on measures of academic achievement.

The Bank Street College of Education Report [Minuchin et al., 1969] was one of the most comprehensive study that explored the psychological effects of open versus traditional teaching methods in American Schools. Because of the large number of dependent measures included and the confounding influence of home and parental factors, the
findings were complex and difficult to summarize. There were no significant differences between modern and traditional schools on group tests of academic achievement, individual problem solving tasks or tests of imaginative thinking. Open school students were found to have more differentiated self-concepts and had much more positive attitudes towards the school.

Sashi (1972) designed a study to investigate the achievement of regular and correspondence students of Delhi University. The analysis and interpretation of the obtained data revealed no significant differences in the mean achievement of students passing through either the correspondence course or the regular college course. Quite interestingly in a study, Bennett (1976) showed superior attainment by students in the traditional school.

Horwitz (1979) reviewed approximately 200 studies by using the "box-score" approach. Although, the box-score form was non-judgmental and treated all studies as equal it paved the way for a rapid overview of a existing data and provided a right perspective to the balanced findings. Of all the variables investigated in open classroom evaluation studies, one which received the significant amount of attention was academic achievement. The overall pattern of findings was quite mixed. Of the 102 studies reviewed, the 14 per cent or so favoured open schools; 12 per cent
favoured traditional schools, 29 per cent showed mixed results and 47 per cent or so revealed no significant differences. These findings failed to demonstrate a clear superiority of open/informal methods in the teaching. Horwitz made it clear that any conclusions must be qualified by the variations in definitions of openness and other differences among studies, which were not analysed in the review.

Peterson (1979) attempted a meta-analysis of the studies reviewed by Horwitz in addition to several other studies. It was found that where achievement was the outcome variable, the difference between open and traditional classrooms were within the range of 10 standard deviation, favouring the traditional rather than the open classrooms. Results in the areas of creativity and problem solving as well as independence and attitude towards school favoured students in open classrooms, although in most cases the effect of size was very small. Little or no differences were found on self-concept and locus of control. Peterson, (1979) also sought an explanation of some of the inconsistencies by examining the effects of student characteristics, such as the ability and personality on outcomes in open and traditional settings, but with little success. Panda (1980) compared the academic achievement of students passing through regular with those in correspondence courses. The samples consisted of 106
regular and 106 correspondence students in Orissa. The results of the study showed significant differences in the achievement of students studying through correspondence and through regular college courses. There was no gender difference in the achievement of these two groups of students. When the means for regular and correspondence course students were compared, it was found that in general the regular students achieved higher than the control group [correspondence students].

Percy and Ramsden (1980) evaluated two schools at North East London Polytechnic and the University of Lancaster in which students learned through independent study. It was found that the lack of clarity in course materials hindered the promotion of autonomy and deeper learning. Taylor et al. (1981, 1982) compared the personal orientations of students at the University of Surrey with adults enrolled in the open university there. Although the samples were small, it appeared that school leavers were motivated predominantly by varying combinations of vocational, academic and social concerns. The open university students gave personal development a higher priority than the regular students in taking up studying again. Vu and Galofre (1983) demonstrated institution-specific differences between the learning behaviours of students in two contrasting American medical schools. Also,
Ramsden (1984) indicated that students in different tertiary institutions and faculties had different and usually explicable scores on the orientations of the approaches to studying inventory.

Institutional differences were found significant between college and university students. Given their course structures, extent of vocationalism, emphasis on research and self-selection of students, it had been demonstrated that college students scored higher than the university students on deep approach. Also there was a strong faculty by institution interaction with surface approach, due to the need in university science courses' for both deep and surface approach. Biggs and Rihn (1984) attempted to investigate the learning styles, characteristics and needs of students in distance education university in Sains Malaysia. The findings revealed that the students in distance education had varied learning preferences. However, students in certain programmes had higher preferences for certain styles of learning, which also had effects on their academic performance.

Bahuguna (1986) designed a study to compare the academic achievement, socio-economic status, the cost of education, the quality of education and the quantity (number of qualified) students of both correspondence and formal system of education. His findings showed better academic
achievement of the formal students than correspondence course students. The achievement was better due to the provision of better teaching facilities and full-time learning. The correspondence course students had mostly poor academic background and were part-time learners. The problems relating to receiving the required course material and proper contact programmes were some of the causes of lower achievement of the students of correspondence courses.

Kember and Harper [1987] in a later study indicated that tertiary institutions brought down the levels of attrition and academic failure by dissuading students from adopting a surface approach and by assisting those, whose customary inclination was towards surface learning to adopt and develop more effective approaches to studying. While the former would require the attention be given to course design and learning environment, the latter would need study skills and initiative additionally.

The differences between traditional and non-traditional nursing students on selected variables like learning styles, learning preferences and personality types were investigated by Gardner [1988] by using the Kolbs Learning Style Inventory, Learning Preference Inventory and Myers-Briggs Type Indicator instruments. A significant difference was found on the Active-Reflective learning style dimensions. Traditional nursing students did not differ
significantly from the non-traditional students in their learning preferences and personality types, although personality factors were found significantly related to learning styles and preferences.

Brown and Hayden (1989) compared the learning styles of undergraduate students at two higher education institutions having different educational missions. 222 participants representing three academic divisions took the original Kolb's Learning Style Inventory and Learning Style Questionnaire. Data were subjected to a step-wise regression analysis. Results indicated that the learning styles of career-orientated students were relatively more predictable. Also there were significant differences in learning styles of groups of students choosing different divisions in higher education.

Nah (1990) examined the relationship of learning style with academic achievement in Korean Language, Mathematics, English, Social Studies and General Science, using a 2 X 2 multivariable analysis of variance (residence by gender). The use of group embedded figure test and the ten factor scores of Learning Style Preferences indicated that differences in learning styles existed between urban and rural as well as between male and female students. Multiple correlation (R) showed that the learning style was quite a good predictor of academic achievement. In another
study, Piscopo (1990) used Kolb's Learning Style Inventory (LSI) to test learning style preferences and the course performance of nontraditional students in an undergraduate computer science course. The results indicated the difference in course grades based on the course type, learning style preference and teaching style preference. Chartrand (1990) and Puryear and McDaniels (1990) reported that non-traditional students (25 years of age or older) differ significantly from traditional college students on many personal, vocational and maturational variables.

Keller et al. (1991) compared traditional college students' perceptions of effective teaching behaviours with non-traditional students' perceptions. Non-traditional students viewed personality and interaction behaviour as more indicative of effective teaching, whereas traditional students focussed on behaviours that potentially would enhance grades.

2.6 Overview

The above discussion revealed that the findings were not unequivocal with respect to the relationship of academic performance with approaches to learning of students in open and traditional universities from the existing literature. It was observed however, that there existed a close association between approaches to learning and academic performance.
* Various learner characteristics inclusive of internal locus of control were positively related to approaches to learning and academic performance.

* Several content characteristics such as assessment demands, perceived relevance of the materials, mode of presentation etc. influenced approaches to learning and academic performance;

* Contextual characteristics had direct bearing on approaches to learning and academic performance;

* Approaches to learning and academic performance of students were subject to the influence of institutional variations/types.

However, in contrast to the above findings, several contradictory results suggested that the relationships may not be direct and causal in nature. The mixed results call for further investigation. Moreover, most of the studies sampled high school and college students only. Studies taking university students as subjects were rather few. Among the studies focussing on learning processes and patterns of study of adult matured students, the factors affecting their learning processes, success and failure in non-traditional/open university, were not singled out/identified. Moreover, the concept of approaches to learning had wider ramifications in various domains of knowledge such as science subjects, arts subjects, medical
education etc., its relevance to management education was yet to be ascertained. Lastly, there were not many Indian researches as the open university experiment was novel in India and its utility ought to be explored in a comparative manner, so that the two systems could be used in a complementary manner to improve each other. The present study is designed to address some of the above shortcomings.