An interest in learning strategies is the natural outcome of a change of orientation from the behaviourist to the cognitive view of learning. The "Stimulus-Response" approach of the behaviourists based on the work of Pavlov, Hull, Spence and Skinner was concerned chiefly with the way presentation of material affected behaviour. This approach, in the words of Farnham-Diggory (1977) was based on the idea that "a stimulus goes in, a response comes out, and what happens in between is summarized by a hyphen" (p.128).

In contrast to this, the cognitive view of learning seeks to investigate how incoming information is processed and structured by the learner in memory. Thus, "with the emergence of cognitive psychology in the 1960's ... now, instead of a hyphen, we have mental structures and processes" (Farnham-Diggory 1977, p.128). According to the cognitive paradigm, the learners are no more empty vessels into which knowledge can be poured, but are considered as active participants in the learning process, who interact with the input and recreate it for themselves. Hence, instead of viewing learning as dependent on what the teacher presents, it is now supposed to rely both on the presented input as well as the learners' own processing of that input,
and learning strategies are an integral part of this mental processing.

Learning strategies are seen as those special thoughts or behaviours of a learner which are intended to affect how the learner processes information. Examples include underlining of key ideas in a text, outlining, or trying to put some newly learned information into one's own words.

Language Learning Strategies: Theoretical Background in SLA

As yet, learning strategies have not been described in a sufficiently comprehensive manner in SLA literature as an essential component of the learning process, though a number of theorists have proposed the inclusion of a cognitive component in second language processes. Language learning strategies could be incorporated either in models of language proficiency or language competence on the one hand and the models of language learning on the other.

Learning Strategies and Models of Proficiency/Competence

Language proficiency is described by Cummins (1984) in terms of the two continua related with task difficulty and context. The task difficulty dimension, although based on the cognitive demands of the task, has not been related to strategic cognitive processes for improvement of learning.
The model of communicative competence developed by Canale and Swain (1980) proposed a theoretical framework in which communicative competence has three major components. The first is grammatical competence, including pronunciation, vocabulary, morphology and syntactical structures. The second is sociolinguistic competence, comprising sociocultural rules for using language appropriately and discourse rules linking parts of a text coherently and cohesively. The third component of the Canale and Swain model is strategic competence, consisting of "verbal and non-verbal communication strategies that may be called into action to compensate for breakdown in communication due to performance variables or insufficient competence" (p.30). Thus, Canale and Swain's view of strategic competence is a narrow one and deals only with a particular type of strategies which are employed only for compensating for breakdowns in communication and does not encompass learning strategies per se.

Learning Strategies in Models of Second Language Learning

Models by Bialystok, Krashen and Others

Bialystok (1978) identified four categories of learning strategies in her model of second language learning: inferencing, monitoring, formal practising and functional
practising. Learning strategies are defined by Bialystok as "optimal means for exploiting available information to improve competence in a second language." Bialystok also identified three types of knowledge: explicit linguistic knowledge, implicit linguistic knowledge and general knowledge of the world, and posited that the type of strategies used by the learner will be dependent on the type of knowledge required by the task. Bialystok hypothesized that strategies introduced explicitly in a formal setting can contribute to implicit linguistic knowledge.

Krashen's Monitor Model (1982), however, does not allow for transfer of explicit linguistic knowledge to the implicit knowledge store. According to Krashen, two distinct processes are involved in language learning, which he terms as "acquisition" and "learning." "Acquisition" takes place spontaneously in natural settings, is subconscious and leads to fluent use of language. "Learning" is a conscious process, resulting from formal study and has a very minor role to play, i.e., that of a 'Monitor' used in correcting or editing one's output. Inevitably, learning strategies as conscious processes would have very little to contribute to acquisition according to Krashen's model.

Wong-Fillmore (1985) and Swain (1984) assigned an important
role to learning strategies, stating that they were the principal influence on the rate and level of second language acquisition.\textsuperscript{6}

Models within a Cognitive View of SLA

A cognitive view of SLA started to emerge with the information processing approach suggested by McLaughlin, Rossman and McLeod (1983).\textsuperscript{7} According to this approach, the learners are seen as active organizers of information but with limited processing capabilities. While motivation is considered to be an important prerequisite factor for language learning, the learners' cognitive system is central to processing. Learners' retrieval or storage of information depends on the degree to which they process information. An important implication of the information processing theory is that learners deliberately impose cognitive schemata on incoming information in an effort to organize it. McLaughlin et al. (1983) also drew on cognitive theory in suggesting that learners may achieve automaticity in SLA by using either a top-down (knowledge-based) approach, making use of internal schemata or bottom-up (input-based) approach utilizing external input. However, McLaughlin ignores the potential role of learning strategies in the execution of these processes.

Spolsky (1980) proposed a model of SLA based on preference rules in which cognitive processes play an
important part. He postulates three conditions of second language learning: necessary conditions, gradient conditions and typicality conditions. As the name suggests, the first type of conditions are necessary to second language learning such as motivation and input. The gradient condition controls learning through the frequency of its occurrence, for example, practice opportunities. The third type of condition typically, but not necessarily assists learning, such as risk-taking. This model explains variability in SLA through varying degrees of application of gradient and typicality conditions. However, learning strategies are not identified or specified as such in the model.

A precise description of the role of strategic processing is thus absent from these theories of proficiency and learning. Though some theories point a cognitive component and some suggest the influence of strategic processing on proficiency, rate or level of learning, the manner in which this influence is exerted by strategies, has not been elaborated upon.

Recently, O'Malley and Chamot (1990) have tried for the first time to describe the role of learning strategies in SLA comprehensively, by placing them in Anderson's (1980,
cognitive theory of learning as complex cognitive skills. They have attempted to integrate the cognitive processes described in Anderson's model with the strategies that have been studied and postulated in SLA.

Learning strategies have been differentiated into three categories by most of the researchers in cognitive psychology according to the level or type of processing involved. Meta-cognitive, cognitive, and socio-affective. Metacognitive strategies are those which are used for planning, monitoring, or evaluating a language learning activity (Brown et.al 1983). Directing attention to a learning task, monitoring of one's production or comprehension while it is occurring, and evaluating one's task after its completion are examples of metacognitive strategies.

Cognitive strategies are those which operate directly on the input. Weinstein and Mayer (1986) subsume the cognitive strategies under three broad groupings: rehearsal, organization and elaboration. Rehearsal involves repeating the names of items or objects, organization implies grouping and classifying words, terminology, or concepts according to some criteria, and elaboration involves linking of ideas contained in new information or integrating new ideas with known information.
Socio-affective strategies broadly represent strategies involved with social interaction or affective control of the learning task. Examples are cooperation with peers, asking the teacher for clarification and using self-talk in order to allay anxiety.

There are two types of knowledge in cognitive theory: declarative and procedural. Declarative knowledge is stored in long-term memory in the form of meaning-based structures termed as propositions and schemata, which can be understood as conceptual configurations of linked ideas.

Procedural knowledge has been represented with what is called "production system". Production systems are represented as goal statements in the form of IF-THEN conditionals and, therefore, provide direction in planning future thoughts or behaviour. For example, if the goal is to guess the meaning of a word, then the learner must pay attention to the linguistic or extra-linguistic context in which it occurs. This planning of the learning process may be termed as a metacognitive strategy applicable to SLA too, for directing the course of language reception and production.

Anderson's theoretical analysis of cognition also includes a number of strategy-like cognitive processes such
as imaging, organization, inferencing, deduction, elaboration and transfer, termed as cognitive strategies both in SLA and cognitive psychology. In fact, elaboration is a key strategy in cognitive psychology. Elaborated memory structures are powerful aids to recall of declarative knowledge, exerting their influence through spreading activation amongst related ideas. The creation of links between ideas by learners enhance recall even more if the related ideas are part of a schema constructed out of prior knowledge.

Further, learning strategies are posited within Anderson's model as complex cognitive skills which may be represented as procedural knowledge, and are acquired through cognitive, associative and autonomous stages of learning. As with other procedural skills, they remain conscious at the early stages but can be performed automatically at a later stage. O'Malley et al thus assert that SLA cannot be understood completely without a description of the interaction between language and cognition.

In sum, cognitive theory views declarative knowledge as being acquired most effectively by building upon prior knowledge, while procedural knowledge may be learned more
effectively through cued practice. Learning strategies are viewed in this model as a type of procedural knowledge. In spite of many lacunae that remain (discussed later in the chapter), O'Malley and Chamot's (1990) description of learning strategies in a theoretical model of language learning, based on Anderson is a commendable effort.

**Research on Learning Strategies in Cognitive Psychology and SLA**

**Definition and Classification Research**

The literature on learning strategies in SLA emerged largely independent of simultaneous research and theory development in cognitive psychology. The significant work in cognitive psychology on different types of learning (Rumelhant and Norman 1978), automaticity (LaBerge and Sameuls 1974), declarative versus procedural knowledge (Anderson 1976), and schema theory (Schank and Abelson 1977) had not filtered into the second language acquisition literature. The cognitive psychology literature on learning strategies had already made major contributions by the early 1980s towards the development of a definition and classification of learning strategies, applying different strategies to different tasks and learners, and validating strategy effectiveness through correlational or empirical work or strategy training. At the same time, SLA literature
was also grappling with the above problems. However, neither
the cognitive literature nor the SLA literature has been
able to develop yet a complete theoretical understanding
about the operation of strategies, their effect on learning,
and their relation with underlying mental processes, though
O'Malley and Chamot (1990) have attempted to make a
significant contribution in this direction.

Definitional and Classification Studies in Cognitive
Psychology

The distinction between two type of strategies,
cognitive and metacognitive, is an important contribution
made by Brown and Palincsar (1982) in cognitive psychology
research. Cognitive strategies are concerned with direct
manipulation of input such as inferencing or transforming of
material, while the meta-cognitive strategies are related to
thinking about the learning process, such as directed
attention and self-talk. Commenting on the failure of
strategy training to transfer to new tasks, Brown and
Palincsar (1982) noted that much of this difficulty was
because of teaching cognitive strategies in isolation from
meta-cognitive strategies.13

Dansereau (1985) makes a similar distinction, though
using the terms primary and support strategies in the place
of cognitive and metacognitive. Primary strategies are those
which operate directly on learning material, while support strategies help to establish an appropriate learning attitude or environment. He also noted that different tasks demand different types of strategies.\textsuperscript{14}

Identification and Classification in SLA

Early Studies:

In SLA, learning strategy literature emerged from the "good language learner" studies about two decades ago. These studies were primarily exploratory and were chiefly concerned with the identification and classification of strategies.

Rubin (1975) proposed a classification scheme subsuming the learning strategies under two broad groupings: direct and indirect. The direct strategies of learning included clarification/verification, monitoring, memorization, guessing/inductive reasoning, deductive reasoning and practice.\textsuperscript{15} The indirect strategies included creating practice opportunities, and using production tricks such as communication strategies. Rubin collected her data from classroom observations, observation of a small group of students working on a strip story and self-reports from journal entries. Classroom observations\textsuperscript{1} were reported to be
the least fruitful. Cohen and Apheks' study (1981) corroborates Rubin's finding on the efficacy of observational methods, as they also failed to gain any significant insight into the learning strategy use through their classroom observations.\textsuperscript{16}

Based on observation and intuition, Stern (1975) also presented an impressive list of the characteristics of successful language learners.\textsuperscript{17} These are, a personally relevant learning style, positive learning strategies, an active approach to learning, technical understanding of how to tackle a language, a sustained search for meaning, willingness to practice and to experiment, self-monitoring and development of language as a medium of thought. These techniques outlined in the list were expanded later and were subsumed under four categories: active planning, academic learning, social learning and affective strategies by Stern.

Naiman et al (1978) attempted to extend Rubin's research carried out on the good language learner and conducted retrospective interviews with thirty-four adults considered proficient in a foreign language.\textsuperscript{18} The alternative classification scheme proposed by Naiman et al contained five broad categories of learning strategies and a number of secondary categories. The primary strategies were found to be used with all good language learners while the
strategies in the secondary group were used by a select group of students. Naiman et al's primary categorization includes an active task approach, realization of language as a system, realization of language as a means of communication, management of affective factors and monitoring of one's performance. Naiman et al had utilized in their work a number of data-elicitation techniques such as classroom observations, interviews, questionnaires and ability testing, resulting from their desire to investigate the strategies from a number of varied perspectives.

Wong-Fillmore (1976, 1979) studied five Mexican five-year-old children in a natural setting. She discounted aptitude as a basis for the variation in achievement and focussed on the cognitive and social strategies employed by the children and identified three social and five cognitive ones. Wong-Fillmore considers social strategies to be more important as she found that children were more interested in establishing social relationships than in learning languages. These social strategies are listed as joining a group and pretending to understand what is going on, giving the impression with a few well-chosen words of being able to speak the language, and counting on friends for help. The cognitive strategies in Wong-Fillmore's categorization are assuming the relevance of people's utterances to the situation at hand, getting started with a few expressions,
getting some formulaic expressions, directing attention to 'big things' first, and saving the details for later.

Looking at this early strategy research in SLA, one finds that the research by Wong-Fillmore (1976, 1979) and Naiman et al (1978) is very much in the research-then-theory perspective. While Wong-Fillmore used ethnographic or observational methods in fairly natural settings, Naiman et al employed semi-structured interviews in which the respondents had considerable freedom of expression. In each case, the investigator seemed to have few preconceptions and it was the respondents who were directive. Rubin's (1975) data elicitation procedure on the other hand was more structured as she started with a set of hypotheses loosely relating cognitive functioning to language acquisition.

**Recent SLA Studies of Learning Strategies Classification**

More recent work on learning strategies in SLA has been more focused. Wenden (1983) concentrated on self-directed learning among adult foreign language learners, and explored self-directed language learning activities in a variety of social settings. Reflections on the process of learning, i.e., the metacognitive strategies are given more importance in Wenden's work. She proposed eight questions about the learning process which the learners might ask to enhance
their performance. These questions in turn might lead to decisions which can be placed under three categories: knowing about learning, planning and self-evaluation. These categories are the same as those proposed by Brown and Palincsar (1982) used to describe metacognitive strategies, but for the strategy of monitoring.

Tyacke and Mendelsohn (1986) reported observational studies and found that successful learners actively utilized available resources and also employed strategies of clarification, memorization, monitoring, and self-management. Unsuccessful students on the other hand refused to self-direct their performances. Tyacke and Mendelsohn also observed strategies of practice, group-work, guessing and note-taking.

Oxford (1985) synthesized the earlier classification schemes under two broad categories mentioned before by Dansereau (1978): primary strategies and support strategies. These were the same as the terms used by Rubin (1981) to describe her strategy classifications, but the actual definitions and their specific strategies are different. In Oxford's classification of 1985 primary strategies include nine subcategories (e.g., inferencing, memory strategy summarizing and practice), while support
strategies include eight subcategories (e.g., attention enhancers, self-management, affective strategies, planning and co-operation). Additional examples of substrategies are mentioned within each of these subcategories, yielding a long list of about sixty-four strategies in all. However, Oxford's approach of classification is not very convincing. Criticizing it O'Malley and Chamot (1990) remark, "what Oxford apparently tried to do was to subsume within her classification virtually every strategy that had been previously cited in the literature on learning strategies. The problem with this approach, so far as a taxonomy of strategies is concerned, is that this extended listing is far removed from any underlying cognitive theory, and fails to prioritize which strategies are most important to learning, and generates subcategories that appear to overlap" (p.103). However, Oxford's extended listing served the purpose of providing a foundation for item-generation for questionnaires for the purpose of assessing strategy use and became the basis of the Strategy Inventory for Language Learning (SILL, 1986).24

Later, Oxford (1990) developed a strategy classification system reflecting what she calls a "whole person" view of strategies. This system consists of six broad strategy types: affective, such as anxiety reduction and self-encouragement; social, such as asking questions and
cooperation; metacognitive, such as paying attention; memory-related, such as grouping and imagery; cognitive, such as reasoning, analyzing and summarizing; and compensatory, such as guessing and using synonyms. A subsequent strategy grouping by Oxford and Cohen (1992) is discussed in detail in the next chapter.

O'Malley et al's classification of strategies which underwent many minor modifications, marks an important contribution to the field as an outcome of their major research programme carried out over many years during the 1980's. In a first study, O'Malley et al (1985a) collected strategy data on the basis of interviews with secondary school ESL learners, interviews with their teachers, and observation. The teacher interviews and the observations did not yield very productive data and the focus for the research became the self-report data. Interviewers asked for strategy reports for the various classroom activities, e.g., pronunciation exercises, oral drills, vocabulary learning and language use, and identified a list of twenty-six strategies which were broadly divided into metacognitive, cognitive and socio-affective groups depending on the level or type of processing involved (O'Malley et al 1985a). O'Malley et al. based their description and classification of strategies on research done in cognitive psychology.
Metacognitive strategies are described as higher order executive skills that may entail planning for, monitoring, or evaluating the success of a learning activity (Brown et al., 1983). Metacognitive strategies are applicable to a variety of learning tasks such as selective attention, planning for a task, monitoring of comprehension or production, and evaluating or checking performance after its completion. Cognitive strategies manipulate the input directly and include resourcing (referencing), grouping of items or concepts, note-taking, summarizing, deduction or learning through rules, using visual images, learning through auditory representation, elaboration, learning through associations between past and present knowledge or between items of present input itself, transfer, and inferencing. The last category is that of social and affective strategies in which O'Malley et al. include only three strategies: questioning for clarification, cooperation and self-talk.

Compared to other strategy lists, O'Malley et al. pay greater attention to metacognitive and cognitive strategies, as their basic criterion for classification is the type of mental processing involved. They themselves admit, "Affective strategies are of less interest in an analysis such as ours which attempts to portray strategies in a
cognitive theory" (1990, p.44). O'Malley's list is economical and comprehensive at the same time, since it draws a large number of strategies within a few broad categories. Another important advantage that it has is that it is based on mental processing rather than overt behaviours. However, the problem of the taxonomy and classification of strategies has not been fully resolved yet. There has yet to be achieved a consensus on the different strategy names, especially the subcategories and their hierarchical organization within the broad categories. An attempt has been made to deal with this problem in the next chapter.

Variables Research

Studies of Variables Affecting Strategy Use in Cognitive Psychology

It has been found that all learners do not employ the same strategies and strategy use varies according to a number of factors. The variables which affect strategy choice had already been studied to a large extent in cognitive psychology before such studies began in second language acquisition. These studies of variables affecting strategy choice are being mentioned here very briefly.
First of all, age was found to be an important factor in influencing strategy use. Older children are more active and efficient strategy users than younger children (Brown et al. 1983). Strategies in younger children begin as task-specific activities and only later do they become flexible and generalizable. Studies from the early 1970's show that rehearsal, categorization and elaboration emerge between five and eight years of age. Rehearsal of more mature learners entails active, systematic and elaborative procedures as compared to the rote-learning of younger learners. In the same manner summarization used by mature learners entails elaboration, restatement and revision of the goals. Whereas summarization performed by younger or novice learners involves simple strategies such as deletion of unnecessary elements and copying of the remainder verbatim. Metacognitive strategies which involve reflection on one's performance tend to emerge late in cognitive development as they require stepping back from one's learning processes and viewing it more or less objectively.

Drawing upon his extensive work on learning styles, Schmeck (1983, 1988) investigated the influence of learning styles and personal attributes on the use of learning strategies. He proposed three learning styles: deep processing, elaborative processing and shallow processing.
Schmeck (1983, 1988) and Schmeck and Meier (1984) demonstrated that students who scored high in elaborative processing have a more articulated self-concept and they use self-reference as a learning strategy more frequently than students who score low on the scale. Schmeck (1988) calls it a "conceptualizing strategy". The elaborative individual assumes that learning involves adaptation, application, and the development of coping mechanisms. In short, they look for what he calls "personalizing" strategies. The person with a predominantly shallow learning style tends to adopt a memorizing strategy. While the shallow individual will show the greatest interest in memory-directed tactics, deep and elaborative individuals will show an affinity for comprehension-directed tactics (Levin, 1982). However, the dimensions of deep, shallow and elaborative processing are not proposed by Schmeck as "orthogonal" since it is likely that most individuals will demonstrate components of all the three strategies, i.e., conceptualizing, personalizing and memorizing.

The majority of work on strategies in the developmental literature in psychology focussed on rote recall of words or pictures, though some studies also dealt with reading and problem solving. Vocabulary learning was found to benefit from grouping, rehearsal and mnemonic devices (Atkinson and
In reading, the strategies of note-taking, summarizing, outlining, mapping and self-questioning were discovered to enhance learning (Brown et al. 1983). Strategies identified with writing tasks included advanced planning and elaboration, restatement, and revision. The general conclusion from cognitive psychology strategy research was that strategies develop with age; they are used spontaneously with increasing sophistication by older students; their use results in improved performance; they are amenable to instruction and are influenced by individual learning styles.

**Variables Affecting Strategy Use: Studies in SLA**

Oxford (1989) has investigated the effect of a variety of variables on strategy use based on her own research and that of others. She lists a host of factors which may affect strategy choice: language being learned, duration of study or exposure, proficiency level or degree of awareness, age, sex, affective variables such as attitude and motivation, personality traits, learning style, national origin, language teaching methods and task requirements.

**Language Being Learned:**

The language of study can affect strategy use as is shown from research carried out by Chamot and her colleagues.
(1987) who found that students of Russian reported greater strategy use than students of Spanish. Politzer (1983) found that students of Spanish found fewer positive strategies than students of other languages. It is possible, however, that the language of study interacts with many other variables too, thus rendering the above findings inconclusive. Ellen Block (1986) found that L1 and ESL readers appeared to use the same strategies as those of the native speakers of L1, and concludes that strategy use does not seem to depend on language specific features and concludes that some cognitive strategies are transferable from one language to another.

Proficiency Level:

As language students progress to higher course levels, they show a preponderance for somewhat different strategies as shown by various researchers. Politzer's study (1983) revealed that higher level students used more positive strategies. Chamot et al (1987) found that the use of cognitive strategy decreased and was replaced by an increased use of metacognitive strategies. Bialystok (1981) found differences in strategy use as learners advanced in French. Formal practice with rules and forms was found to be less effective as students advanced but functional practice with authentic, communicative language displayed no
such limitation. The findings of Oxford and Nyikos (1989) too support Bialystok's result. Nayak et al (1990) found that although there was no clear evidence that multilinguals were superior in language learning abilities overall, multilingual subjects were found to be more able to adjust their learning strategies according to the requirements of the task. However, advancement in course level or years of study does not necessarily guarantee students' use of better strategies in every case. Cohen and Aphek (1981) in their study with English speaking learners of Hebrew found that both good and bad learning strategies appeared across course levels. Most of the research nevertheless shows that in general the more advanced the learner, the better the strategies used.

Degree of Awareness:

Metacognitive awareness too, has been found to influence strategy use, i.e., what learners know about themselves, and about their learning process can affect their use of learning strategies (Wenden, 1986b). However, researchers dispute about learner's level of "strategy awareness". Nyikos (1987) found that learners used a very narrow range of strategies and were generally unaware of the strategies they used. Tyacke and Mendelsohn (1986)
reported a diary study in which only one of the learners showed increasing awareness of strategies with advancement of proficiency level. On the contrary, other researchers have found that even ineffective learners were aware of and used a number of strategies; albeit the effective learners reported greater frequency and range of strategy use. These conflicting results might be accounted for as being caused by differing research methods in the above mentioned studies.

Age:

Age has been found to be an important variable of strategy use in cognitive psychology. In SLA, however, very few studies have explored the effect of age on strategy use. Oxford (1986) studied adult language learners who seemed to use more sophisticated language learning strategies than did younger learners in other studies. More studies on the age factor are required in SLA, since it is only commonsensical to believe that the more sophisticated elaboration strategies, involving deductive and inductive reasoning; and metacognitive strategies which require the learners' assessment of their own learning process emerge later in age.
Sex:

Sex differences too, in strategy use remained uninvestigated until an interest was shown by Oxford and her co-workers. In a study of adult language learners, Ehrman and Oxford (1989) found that females, compared with males, reported significantly greater use of language learning strategies in four groups: general study strategies, functional practice strategies (involving authentic language use) strategies for searching for and communicating meaning, and self-management strategies. Oxford and Nyikos (1989) too found that women outperformed men in range and frequency of strategy use which may be accounted for as women having greater social orientation, stronger verbal skills and greater conformity to norms. Nyikos (1987) discovered in their training study of mnemonic strategies that men outperformed women in visual spatial acuity while women surpassed men in colour perception.

Affective Variables:

Social and affective variables affect the use of language learning strategies in a significant manner. They are enumerated by Oxford (1989) as attitudes, motivational level and motivational intensity, language learning goals reflecting motivational orientation, specific personality
traits and general personality type.

Attitudes strongly influence language learning and, therefore, may influence strategy choice too. Bialystok (1981) discovered that learners' attitude was a greater causative factor than language aptitude on the choice of language learning strategies. There has been little other empirical research in this direction in SLA but Wenden (1987) has argued convincingly that no amount of training in effective learning strategies will be of any help unless learners' negative attitudes towards their self-direction are changed.43

Gardner (1985) says and rightly so, that, "The prime determining factor (in language learning success) is motivation."44 Oxford and Nyikos (1989) have found that when all of the variables are measured, motivational level has the most powerful influence on reported use of language learning strategies.

Language Learning Goals Reflecting Motivational Orientation:

In the Oxford and Nyikos (1989) study mentioned above, the most popular strategies were formal rule-related practice strategies and general study strategies. Functional practice strategies involving authentic language use were the least popular which implied a greater personal
investment and effort. These results were attributed to what seemed to be a purely instrumental motivation for language learning, i.e., to earn good grades in a traditional academic environment, stressing analytical rule-learning skills.

Personality Characteristics:

Lack of inhibition has often been termed as a personality characteristic of good language learners. Rubin (1975) suggested that good language learners are willing to take risks and appear foolish for the sake of taking part in communication and learning. Oxford (1990) demonstrates that these personality traits can be encouraged by the use of affective strategies. Reiss (1985) too found that good language learners were less inhibited than anticipated.

Ehrman and Oxford (1989) studied the effort of overall personality type (measured by Myers-Briggs Type Indicator) on language learning strategies of adults. Compared with sensing people, intuitive people were found to use significantly more strategies in four categories: affective, formal model-building, functional practice involving authentic language use, and searching for and communicating meaning. Feeling-type people, compared with thinkers, showed significantly greater use of general study strategies.
Perceivers, defined as those who do not need to come to closure rapidly, used significantly more strategies for searching and communicating meaning than did judgers, who require more rapid closure; but judgers showed significantly greater use of general study strategies than did perceivers. This implies important linkages between personality type and learning strategies which need to be further explored.

In contrast to the above mentioned affective variables, some cognitive variables such as learning style and aptitude are also believed to influence the use of learning strategy use. Little research has been done on the relationship between learning strategy use and learning style in SLA, though research in cognitive psychology indicates the importance of such a relationship.

Aptitude:

Aptitude too, has not been extensively studied as a predictor of language learning strategy choice. As mentioned earlier, Bialystok (1981) found that aptitude was not as influential as attitude in terms of strategy choices. On the other hand Politzer (1983) suggested that intelligence (i.e., general aptitude) might relate to self-reported language learning strategies as well as to language achievement. Leino (1982) analyzed foreign language learning
strategies and found that individuals of high conceptual levels, reflecting high intelligence or aptitude were much more able to give descriptions of their strategies than individuals with low conceptual level.46

Career Orientation:

Several studies have shown that career orientation influences choice of language learning strategies. Politzer and McGroarty (1985) found that the field of specialization (engineering/science, social science, or humanities) had a significant effect on strategy choice of ESL students, with engineers avoiding what were considered to be positive language learning strategies.47 In their study of foreign language learners, Oxford and Nyikos (1989) discovered that students university major (main subject) directly affected strategy use. Humanities, social science and education majors used independent strategies and functional practice strategies more often than students of other streams. Ehrman and Oxford (1989) also found that professional linguists used a wider variety of strategies than did adult language learners and native-speaking language teachers not trained in linguistics. Reid (1987) found that ESL students' field of specialization influenced learning modality preferences (visual, auditory, kinesthetic, tactile) which, as already
mentioned, are probably related to the choice of language learning strategies.48

National Origin:

Some empirical studies have shown that national origin or ethnicity too has an influence on the kinds of strategies used by language learners. Politzer and McGroarty (1985) and Tyacke and Mendelsohn (1986) report greater use of strategies of memorization and rule learning by the Orientals as opposed to more communicative strategies. Orientals, compared to Hispanics were also found not to respond positively to strategy training (O'Malley et al. 1985a; O'Malley et al. 1985b). This fact has led researchers to apprehend that the description of good language learning strategies by them might be biased ethnocentrically. Oxford (1989) points out that the answer may lie in the desired goal of learning, i.e., if the goal is academic achievement, the strategies considered good in the context of social communication may not apply. The present researcher feels that the type of motivation may also be a causative factor in strategy choice, i.e., if the motivation is instrumental, the learners will seek strategies related to academic gain rather than social communication. This is largely true of the oriental communities in today's context, considering an increased awareness and pride regarding culture and
ethnicity among the nations of the third world. Keeping this in view, it would be considered unfair to say that the Orientals seem to use lower level strategies.

Language Teaching Methods:

Politzer (1983) noted a complex interaction between language teaching methods and learning behaviours for students of French, Spanish and German. Oxford and Nyikos (1989) found that students' language learning strategies reflected analytical and rule-based teaching methods of the university. As opposed to strategies used by university students greater use of communication-oriented strategies was found by Ehrman and Oxford (1989) among adults who required the language for their future jobs and who were taught more through communicative methods.

However, it has been found that most language instructors are not aware of their students' learning strategies or how these strategies result in particular kind of errors. (Cohen and Robbins 1976; Hosenfeld 1977a; O'Malley et al 1985a,b). Because teaching methods often affect how students learn, teachers ought to become more aware of their students' learning strategies in order to orient teaching methods according to the students' needs.
Task Requirement:

Bialystok (1981) found that students responded to different task requirements with different strategies. Monitoring one's errors was found more useful for writing tasks than for reading or speaking. Functional practice (in authentic language use) promoted language achievement on all language tasks.

The above variables are significant in that they suggest the factors to be considered in strategy instruction programmes. Since learners use different strategies in different situations, the strategy instruction should be geared to these specific situations. Oxford (1989) suggests that before any programme of strategy teaching, an effort should be made to assess learner's current strategies, their goals, needs and attitudes as well as their background factors. Such measures are extremely important for the success of strategy instruction.

Validation of Strategy Effectiveness

Studies designed to validate strategy effectiveness have used anecdotal reports, correlational approaches and experimental training.
Correlational Studies

The correlational work can be placed into two categories: attempts to correlate strategy use with language proficiency and studies designed to correlate learning strategies with improvement in language learning associated with instruction. While all the correlational work has been carried out in the field of SLA; all the empirical work for validating strategy effectiveness virtually belongs to cognitive psychology.

In a longitudinal study, Cohen and Aphek (1981) used anecdotal reports in asking students to record the associations they made for vocabulary learning. English speaking students of an intensive Hebrew program were thus recorded on seven occasions for over 100 days. Cohen and Aphek noted that students who produced associations seemed to retain the words more often than students who did not produce associations.

Bialystok's (1981) study to analyze strategies of SLA also depended on correlational techniques. The students in her study were students of grades 10 and 12, studying French as a second language. They were asked questions about the extent to which they used the strategies of functional practice and inferencing in functional settings and formal
practice and monitoring in formal settings. As mentioned already, functional use implies authentic language use in communicative situations while formal use is defined as study of language with focus on its form. The results of the study indicated that functional practice was more strongly related to achievement than any other strategy irrespective of the task, even though inferencing and monitoring were reported to have been used more frequently.

Politzer and McGroarty (1985) made similar use of questionnaire data in a study linking performance to strategy use in an eight-week intensive EFL course. A point of contrast with Bialystok's study was that whereas Bialystok studied the effect of strategies on achievement, these researchers associated it to language learning. Their 51-item questionnaire was based on prior work by Rubin (1981) and Naiman et al (1978) and was divided into three scales according to the setting in which the strategy was employed. Pre- and post-tests were administered on aural comprehension, English grammar and oral communicative competence, based on responses elicited by pictures. Adjusted gain scores for the proficiency measures were unrelated to the three general categories identified on the learning strategies questionnaire, i.e., classroom learning, individual study and social interaction, but were found to
be associated with specific strategies mentioned in the questionnaire. Gains on oral comprehension test were related to asking clarification questions and monitoring, and grammatical knowledge was associated to practising strategies.

Pardon and Waxman (1988) studied correspondence between strategy use and performance on measures of reading comprehension. Their subjects were Hispanic students of ESL in grades 3-5, representing beginning and intermediate level English proficiency. The students were given a 14-item Likert-type questionnaire on the extent to which students used strategies in reading. Seven of these strategies were considered to affect learning positively while the other seven were negative strategies of learning. Correlation between strategy use and post-test scores revealed that only two strategies were significantly associated with reading outcomes and they were both negative: thinking about something else while reading, and saying the main idea over and over again. These were also the most infrequently used strategies. However, the six out of seven most frequently used strategies were positive. Since the results of the study are unconvincing, they cannot be held conclusive.

Another study by Zimmerman and Pons (1986) related strategies to reading achievement. The researchers
interviewed tenth-grade high and low achievers through open-ended questions focussing on six different learning contexts: classroom situations, at home, during writing assignment outside class, completing maths assignment outside class, preparing for and taking tests, and on occasions marked by a lack of motivation.

Two basic approaches were used to validate the effect of strategy use on learning. In the first one, each of the fifteen strategies was found to discriminate significantly between students in the high and low achievement groups based on findings in a discriminate function analysis. The high achievers reported using significantly more strategies than the low achievers, regardless of the learning context. The three strategies showing the strongest relationship to achievement were seeking information, monitoring, organizing and transforming. The next three strongest relationships were shown for seeking teacher assistance, seeking peer assistance and seeking adult assistance. Self-evaluation showed the weakest relationship to achievement and was also the least frequently used. The second approach to validating the influence of strategy use on learning was to analyze the relationships between total self-regulated learning strategies and performance on a standardized test of reading and maths achievement. The self-regulated learning total
score was the best predictor of both achievement areas.

The above studies suggest that strategy use is associated to learning outcome. The most important strategies showing a marked relationship with language learning were elaboration, monitoring, asking questions, practising. However, learning outcome may also depend on a host of other variables as discussed above, namely, the nature of task, prior exposure, age, sex, motivation, attitude and others, implying the need of more work in the area to confirm these results.

Instructional Studies in Cognitive Psychology

Considerable research on training learning strategies has been carried out outside the SLA field in the areas of vocabulary learning, reading comprehension, memory training and problem-solving. However, studies on production skills of speaking and writing in first language contexts are conspicuous by their absence; probably owing to the fact that learning strategies have been traditionally associated exclusively with the receptive aspect of learning.

This researcher argues that strategies of both reception and production should be included in the province of learning strategies, since learning to produce is after all a strategy of learning. Though most recent research in
first language acquisition has focussed on the identification of the writing process and discourse analysis, some investigation of instruction in strategy use in writing composition has been reported by Graham and coworkers (1987) who studied composition training for learning-disabled students of upper elementary school.\textsuperscript{52} Hillocks (1987) too, investigated the effect of the inquiry approach to writing, involving direct strategy instruction.\textsuperscript{53}

**Instructional Studies in the SLA Field**

Since research in learning strategy started with the assumption that the good language learner possesses a number of effective strategies, the natural outcome of this assumption was an interest in the teachability of these strategies to the not-so-good leaners. While some SLA researchers have concentrated on training just one or two strategies, others investigated the teaching of many strategies at once.

**Keyword Training Studies**

One set of learning strategy studies focussed exclusively on a single language learning strategy, i.e., the keyword, a memory device that links a visual image to a
sound. Research has shown that the keyword may be very helpful in learning target language vocabulary. The technique has proved to be specially successful in experimental settings.

Henner-Stanchina (1982) taught global and local listening comprehension strategies to university level ESL students. These were the strategies of guessing and self-correction taught through lessons in different listening tasks consisting of radio commercials, talk-show interviews and news broadcasts.

O'Malley and Chamot et al conducted a number of important strategy training studies. Their first study (1985b) concerned with intermediate level adolescent ESL students, constituted the second phase of a study which started with think-aloud interviews with students to assess their strategy use on various classroom activities. The sample consisted of one-third Hispanic, one third Asian and one-third other ethnicities. The purpose of the training study was to determine whether a combination of cognitive and metacognitive strategies is more facilitative to learning.
The researchers hypothesized the following:

i) The first treatment group receiving instruction in a combination of metacognitive, cognitive and socio-affective strategies would outperform the second treatment group which did not learn any metacognitive strategies.

ii) The second group would outperform the third one (the control group), which did not learn any strategies at all. Each group had two sets of tasks involving listening and speaking. Students in the two treatment groups were taught in the use of selected strategies for fifty minutes a day for over eight days. Time for practising and applying strategies was built into the instructional programme and teacher effects were controlled. Explicit directions and cues involving strategy use were faded gradually over time.

The results showed that the two treatment groups scored better than the control group in the speaking task. The results for listening did not distinguish between groups, possibly because listening tasks were too difficult. On the vocabulary test too, there were no significant differences overall among the treatment groups. Other conclusions of this study were that strategy training could well be adjusted with regular language teaching and language learning strategies were fundamentally the same as the
general strategies for learning. An intriguing finding was that Hispanic students benefited from strategy training but Asian students preferred their own established rote strategies.

Study II, described by Russo and Stewner-Manzanares (1985) involved soldiers enrolled in an ESL programme and was a second phase of the Army study mentioned previously. The strategy training was embedded in this study in listening and speaking tasks given for 6 hours each day for a five-day period to a single group. Techniques taught included guessing, asking clarification questions, selective attention, self-evaluation and functional planning. Results were remarkably similar to the findings obtained from the study mentioned just above, i.e., while Hispanics responded positively to strategy-training, Asians resisted it.

The third study, by Chamot et al. (1988b) is slightly different in orientation, since it focussed on awareness and participation on the part of instructors regarding strategy training programmes. The study had three main objectives:

i) discovering the instructors' potential and willingness for incorporating strategy instruction in their classroom;

ii) assessing and exploiting the instructors' in-depth knowledge about their students' most effective strategies;
and

iii) investigating the instructors' method of integrating strategy instruction to their regular teaching.

The five instructors who participated in the study were regular classroom teachers or teachers who had been involved in the foreign language strategy identification studies (O'Malley et al 1985a; Chamot et al. 1987; Chamot et al. 1988a). The teachers were observed by the researchers for listening comprehension, speaking and reading comprehension.

The results showed first of all that not all teachers may be interested in imparting strategy instruction. Even some of the willing instructors might be forced to abandon the attempt to teach strategies because of a general apathy among students. As could be expected, the strategies for listening and reading comprehension were quite similar. In both cases instructors encouraged students to use inferencing to make logical guesses from the context; elaboration of prior knowledge, and transfer of cognates from the first language were also encouraged. In addition, the use of deduction, which led to the application of grammar rules, was used in reading comprehension. The four studies identified and practised for reading were described by the teacher as different forms of inferencing. In the listening comprehension class, the teacher encouraged the
pupils to use the metacognitive strategy of selective attention to specific items apart from other strategies.

The strategies taught for speaking included a metacognitive strategy (self-evaluation), a cognitive strategy (substitution), and an affective strategy (cooperation). Elaboration, considered a significant strategy (Chamot et al. 1987; 1988a; O'Malley et al. 1987), characteristic of more effective language learners was chosen by teachers for receptive language tasks, but was not used for speaking or writing.57

It was found that each participating instructor had an individual manner of providing strategy instruction. One of them provided explicit rather than implicit strategy instruction by informing students of the purpose and value of the specific strategy. Strategy instruction was imparted through the L1 of the students as all the students were considered to be of limited proficiency in the foreign language.

The importance of motivation in learning strategy instruction was evidently demonstrated by this study. Students in three out of the four classrooms received strategy instruction with apparent interest and enthusiasm. The fourth instructor, however, encountered indifference and
apathy on the part of the students. The study showed clearly that while language strategy instruction can be implemented successfully in ESL classrooms, its success is dependent on a host of factors such as teacher's interest, development of appropriate techniques and ability to motivate students for strategy use.

Nyikos (1987) conducted a controlled university-level strategy training study using three treatment conditions and a control condition. She investigated the use of associative memory strategies for learning German noun clusters. Students in the three treatment conditions received written instructions with examples for using three different types of memory strategies one per condition:

i) the colour-only group associated certain colours with grammatical gender of each noun cluster to be learned;

ii) the picture-only group associated each item with a drawing and;

iii) the multiple association on colour-plus-picture condition used a combination strategy involving a colour-coded drawing. Students in the control condition received no strategy training. It was found that men outscored women in colour-plus-picture condition, while women did better than
men in both the picture-only and the colour-only conditions. The control condition showed no advantage over any of the treatment conditions. Nyikos explained the findings in terms of cultural and social expectations of men and women and in terms of physiological differences. Sutter (1987) conducted strategy training of refugees learning Danish as a second language. He found that initial strategy preferences were related to ethnic and personal biases and were influential in the degree of success of strategy training. If the new strategies were totally opposed to learners' own predilections, they resisted the training; so it is sometimes necessary to camouflage new strategies under the guise of familiar techniques. Such strategies cannot be taught in an entirely explicit manner, which most trainers advocate, and implicit instruction is here proved useful for a particular type of learners.

Cooperative strategies have been taught in many an instructional study. For example, Sharan (1985) and his colleagues trained learners of English in Israel to employ cooperative strategies. In a cooperative strategy training study of junior high school students learning French, Gunderson and Johnson (1980) found that cooperative strategies were developed through a shared task and reward structure. Both learners and teachers were happy with the
cooperative atmosphere and the role of the teacher changed as an outcome of such cooperation, simulations, games, and game-like activities encouraged social strategies among French learners of English in a study by Oxford and Crookall (1990). Learners communicated more intensely and for longer periods than in traditional classrooms. Apart from social strategies, they also used a wide range of other strategies including cognitive, affective, and compensation strategies. Another positive outcome of the training was that learners became more self-sufficient and were able to take greater responsibility for their own learning. In conclusion, these studies suggest the following points:

i) Different kinds of strategy often work together for optimal results and this should be taken into account in strategy instruction programmes.

ii) Factors such as duration of language exposure, attitude, motivation, style, age, sex, task type should also be considered in strategy training.

iii) Strategy training is most effective when integrated into regular classroom activities rather than presented separately.

iv) Explicit and informed training is desirable, but sometimes a need may arise to camouflage new strategies to
safeguard against learner resistance.

**Important Issues in Strategy Instruction**

**Data Collection Methods**

Different methods have been used for the purpose of data collection by researchers in the language learning field, which aim to study the mental processes either externally or internally. They are as follows:

**Observation**

Observation was used by many researchers in the early studies for collecting data on learning strategies. For example, Rubin (1975) and O'Malley et al. (1985a,b) used it in classroom settings, but the method was found to yield little result because of the vagueness and uncertainty about the strategy being used, as well as the teachers' focus in general on eliciting the right answer rather than encouraging students to use strategies.
Introspective Methods

Introspective methods can be of the following types:

i) Simultaneous Introspection:

Simultaneous introspection involves reporting of the concurrent processing of the task given; for example, think-aloud tasks. Many researchers such as Naiman et al. (1975 and 1978); Cohen and Aphek (1981); Cohen and Hosenfeld (1981); Wenden (1986) and; O'Malley et al (1985a,b) have used the method successfully. Think-alouds have become very popular in the learning strategies field, since it is believed that strategies that occur only fleetingly in the memory can be identified and reported through this method. The drawbacks of the method are the difficulty of reporting exactly what one is doing while being engaged on the task at the same time. This may decrease the reliability of such reports. At best, it can give a very incomplete picture of the learning processes. Brown et al. (1983) also note that thinking aloud can detract from learning if it interferes with the fundamental processes that must be reported.

ii) Immediate Retrospection:

This happens when the learners are asked about the mental processes just after the completion of the task.
Alternatively, respondents may be interrupted at various points as they are engaged on the task and asked to describe their strategy after that. The advantages of this method are that the chances of the reports to interfere with the learning task are low. However, Cohen and Aphek (1981) found that the best time to interview was soon after the event rather than interrupting the learners to what they were thinking.

iii) Delayed Retrospection:

In delayed retrospection learners are asked to report on their strategy use long after the completion of the task as in diary reports, questionnaires and some interviews. It is pointed out that though convenient to handle, this method encourages learners to generate strategies according to the expectations of the researcher, and thus becomes less reliable (O'Malley and Chamot 1990, p.223).

Hence, none of the data collection procedures mentioned above is foolproof and self-sufficient. To counteract this problem many researchers have employed multiple data collection procedures. (Naiman et al. 1978; O'Malley et al. 1985a,b). The data elicitation instruments may vary along the dimensions of time elapsed after the task, the degree of structure given to the instrument, the language (whether L1
or L2) and the mode of expression, i.e., oral or written. There is an evident need for comparing the efficacy of the different instruments with respect to different tasks and their further refinement.

Types of Strategy Instruction

Separate versus Integrated Instruction

An important consideration in learning strategy instruction is whether the teaching of strategies should be carried out independently or as a part of regular classroom instruction. People who favour independent training programmes advance the argument that in this manner a strategy can be generalized to different contexts (Derry and Murphy 1986, Jones et al. 1987) and concentration of attention on strategy learning will yield better results than if it is diverted by parallel learning of the subject content. For example, Dansereau's (1985) Computer-Assisted Cooperative Learning (CACL) Programme, designed to train reading comprehension strategies, presented and practised by computer and his learning strategy system referred to as MURDER (acronym) aims at providing strategies of comprehension, retention, retrieval, utilization; and support strategies of planning, monitoring and management of concentration.
Proponents of integrated learning strategy instruction advance the argument that learning in context is more fruitful than decontextualized learning of strategies through separate intervention programmes (Wenden 1987b). It is also argued that practising strategy use on authentic language tasks facilitates the transfer of strategies to similar tasks in other situations (Campione and Armbruster, 1985).

Realizing this difficulty later, Dansereau (1985) developed strategy training programme designed for specific types of science texts and suggested developing a learning strategy system which would integrate both content-independent and content-dependent strategies. Such integration is also advocated by Derry's (1984) incidental learning model, in which students receive short periods of separate strategy training followed by reminders to use the strategies in content classrooms. Both separate and integrated strategy instruction programmes have been developed by Weinstein and Underwood (1985). The separate training comprises a special university course designed to teach students effective use of learning strategies, and providing practice in applying them to other subjects. The integrated training component aims at training the teachers how to incorporate strategy instruction into their regular
teaching.

**Direct versus Embedded Instruction**

Direct or explicit instruction is the type of instruction in which explicit description of the strategy regarding its operation and value is given to the students whereas in embedded or implicit instruction the students are simply engaged in activities involving the use of these strategies. Some researchers have found the implicit or embedded approach ineffectual in promoting transfer of strategies to new tasks (Brown, Armbruster and Baker 1986). Hence, recent studies underscore the need for a metacognitive component to strategy training which would provide explicit instruction on the purpose and operation of these strategies. This metacognitive component has been found beneficial in retaining the strategy and transferring it to other tasks (Brown et al. 1986).

The argument in favour of implicit or embedded instruction is that it requires little training on the part of the teacher (Jones 1983). The strategies may be implicitly used by the text-book itself and students might get practice in them by engaging in the relevant exercises and activities. However, when Barnett (1988) attempted to study the effect of implicit strategy training, he found
that the differences between the achievements on reading comprehension of his control group and experiment group were not significant.\textsuperscript{71} Hence, most researchers plead for an explicit instruction of strategies or recommend at least some direct guidance and explanation to be added to embedded or implicit training.

Winograd and Chou Hare (1988) list the following elements as essential to direct explanation of learning strategies based on their investigation of a large number of instructional studies:\textsuperscript{72}

i) **What the strategy is:** The teacher should explicitly define the strategy and describe its essential features.

ii) **Why the strategy should be learned:** It is important for the students to know the potential benefits of the strategy and the rationale for its use.

iii) **How to use the strategy:** The strategy is broken into small components and each component is explained as clearly and articulately as possible.

iv) **When and where the strategy is to be used:** Teachers should specify the circumstances in which the strategy can be employed and those when it cannot.
In brief, the above points demonstrate that careful and detailed explanation is a critical component of direct instruction.

Though recognizing the benefits of explicit instruction, the present researcher found in her own work that for some types of strategy training, implicit rather than explicit instruction may become a necessity. For example, in her own strategy training programme for the instruction of L1-based or translation strategies, it was considered necessary for the researcher to closely monitor the strategy use herself, since L1 use in second language teaching has to be selected very judiciously, otherwise the students might develop a tendency towards overdependence on their mother tongue.

Other Issues in Strategy Instruction

Considerations of Teacher Training

Another important issue concerning strategy instruction is the need for developing among the teachers an awareness regarding the significance of learning strategies, as well as training them for the instruction of these strategies. To date, little attention has been paid to acquainting teachers with techniques for strategy instruction. Teachers generally exhibit a woeful lack of knowledge about the concept of
learning strategies as opposed to teaching strategies and need extensive practice in designing and providing learning strategy instruction.

In the cognitive psychology field, Derry and Murphy (1986) have discussed a number of strategy training studies conducted in memory training, reading comprehension, problem-solving and affective strategies; elaborating on issues such as materials, curriculum design and training procedures. However, the issue of how teachers can be trained to teach learning strategies to their students is left unmentioned. In SLA too, the role of the teacher in strategy training programme is largely unclear. Holec (1987) has reported a series of studies in which the students took the responsibility of monitoring or self-directing their own learning in cooperation with a teacher as a counsellor. In this work too, the teachers' role remains largely vague. In other SLA studies, the researchers have worked directly with students but teachers have only been used for interviews.

However, Jones and her colleagues (1987) have specified some guidelines which go into the making of what they call a "strategic teacher". According to them, such teacher training involves presentation of the new approach, followed by immediate practice and feedback in the training setting.
Development of a basic level of knowledge and skills with the new approach is also a necessary, though time-consuming requirement for successful training. The teachers need to be presented the rationale for the use of a new, strategy-oriented method of teaching as well as a demonstration of its classroom application by practice and feedback opportunities followed finally by a consolidation phase.

The Level of Language Proficiency

An important consideration in the implementation of strategy instruction is the proficiency level at which strategy instruction would be considered appropriate. O'Malley and Chamot (1990) note that while in a monolingual setting, strategy instruction can be given from the start, in a bilingual setting the strategy instruction should either be delayed until the students are in a position to understand the instruction in L2 or it should be imparted through the native language, at least initially. Problems might be faced, however, in a monolingual setting, where it would be possible to impart strategy training through very simple language, or to postpone instruction till a later stage.
Individual Differences

It is also very important to consider the influence of different learner characteristics such as aptitude; motivation; learning style; age; sex; prior learning; educational, cultural and linguistic background; and goal of learning on the process of language learning. It is necessary that these factors are taken into account before planning and implementing any strategy instruction programme.

Motivation or the will to learn is obviously the most important prerequisite for any learning to take place. It may be called as both the cause and the effect of successful learning, since motivated students achieve success in learning and this success motivates them to learn more. On the other hand, students who have encountered failure in learning lack in motivation. Hence, every strategy instruction programme should incorporate a component specially to create motivation in the student. (Jones et al.1987; Paris 1988a; O'Malley and Chamot 1990).74

Another important characteristic is learning style, or the way in which an individual prefers to learn (Kolb 1984).75 Several dimensions of learning styles such as field independence versus field dependence, visual versus auditory
learning preferences, reflectiveness versus impulsiveness have been proposed. Alternatively, Schmeck refers to deep elaborative and shallow learning styles based on his extensive work on learning styles. Thus, a visual learner may naturally use imagery while an analytic learner may be attracted towards imagery. Admitting the importance of learning styles, O'Malley and Chamot (1990) point out that though it is usual to consider individual differences across students and make allowances for them, it is more desirable to aim at providing learners with those strategies which are best suited to their tasks.

Consideration of the appropriate age at which strategy instruction can appropriately be imparted is also an important factor in strategy teaching. Differential strategy use by males and females has been explained to some extent by Oxford and her coworkers. The results show that male and female students probably required different treatments in strategy instruction. (Oxford, Nyikos and Ehrman 1988). Apart from the above mentioned factors, cultural and linguistic background, career orientation, goal and needs of learning may also play important roles in deciding the type of instruction to be provided to learners.

Politzer (1983) and Leino (1982) found in their studies that intelligence or aptitude might relate to self-reported
language learning behaviour. Aptitude seems to be a controversial construct in the language learning field. However, recent research by Skehan (1986) on language analytic aspects of aptitude also showed that children who developed more quickly in their first language, as indicated by such measures as mean length of utterance (MLU) and sentence structure complexity performed better in learning a second language. Thus, there appears to be a general language processing capacity that affects language learning ability in first and second languages.

Carrol (1981) has prepared a model of language aptitude which attempted to account for variance in foreign language learning, consisting of the sub-components of phonetic coding ability, grammatical sensitivity, rote learning ability, and inductive language learning ability. These components were arrived at by statistical analyses of correlational data involving Carrol's Modern Language Aptitude Test (MLAT) and other tests of language aptitude and classroom language performance.

As pointed out by Carrol (1981), the tasks contained in aptitude tests are similar to the performances described in information processing accounts of cognitive functioning. However, as McLaughlin suggests, aptitude should not be
viewed as a static personality trait because novices can become experts with experience. There is evidence to suggest that the more expert language learners demonstrate greater flexibility in recreating their internal representations of linguistic rules (Nation and McLaughlin 1986; Ramsey 1980). However, this ability to exert flexible control over linguistic representations and to shift strategies may be a result of their experience with a number of languages which makes them more aware of the structural similarities and differences between languages.

Materials and Curriculum Development

Instructional Materials in Cognitive Psychology

There are a host of instructional materials available for strategy training in first language contexts, e.g., the Computer-Assisted Cooperative Learning Programme (Dansereau 1985). Job Skills Educational Programme developed for the Army by Derry (1984); and Derry and Murphy (1986). As a welcome development, in the SLA field too, a few learning strategies instructional materials have started to appear.

Procedures for planning the scope and sequence of strategy training activities entail identification and assessment of students, current strategies by the teacher, explanation of the specific strategy, and provision of ample
opportunities for practice. Table-1.1 (Appendix-A) reproduced from O'Malley et al. (1990, pp. 158-59) summarizes some learning strategy instructional sequences suggested by researchers. All these four sequences have the basic structure in which the teacher first identifies the students' strategies or informs students how to identify their own current learning strategies, explains the rationale and application for using additional strategies and provides materials and opportunities for practice and evaluates or assists students in evaluating their performance with new strategies. These sequences also imply use of explicit rather than implicit or embedded training.

Instructional Materials in SLA

The lacuna for instructional materials in SLA is filled to some extent by the appearance of some new materials in the field. For example, Chamot and O'Malley (1987) have developed a set of instructional materials aimed at teaching both language and content for upper elementary and secondary school students at the intermediate level of English proficiency known as the Cognitive Academic Language Learning Approach (CALLA). The objectives of this course are to develop academic language skills in English and teach learning strategies along with teaching of subject content of
mathematics and social studies. The learning strategy scheme is approximately the same as O'Malley et al.'s (1985a), but for a further condensation of the list.

Teachers initiate learning strategies instruction by finding out what strategies students already possess and what need to be taught, through interviews or think-alouds. After this initial assessment, teachers select the strategies they need to teach from the proposed classification scheme. The strategy is explained explicitly and then modelled by the teacher. This is followed by repeated opportunities for practice in strategy use. Finally, the students are helped in developing skills for transferring these strategies to other tasks and other subjects. The whole model consists of five phases: preparation, presentation, practice, evaluation and expansion activities.

CALLA requires a high level of knowledge and skill on the part of the teacher. The teacher requires a solid understanding of the content areas of mainstream curriculum as well as the ability to integrate language activities with different subject areas. However, the model has been implemented and found useful across situations in providing the students additional support for greater school success.
Ellis and Sinclair (1989) have also developed actual instructional materials for intermediate level EFL and ESL students in the language classroom. The book aims at making the students more efficient and responsible language learners as well as providing the teacher with a model for learner training and to help the teacher incorporate strategy instruction into regular language instruction, though the materials themselves address only strategy instruction. Various classroom activities are suggested with examples of strategy application. A teacher's guide is also given to provide an overview of the background knowledge on strategies for the teachers. The model for strategy instruction comprises three phases. While the first phase deals with an initial assessment of the students' needs, resources and learning approaches; the second is concerned with direct instruction and practice in learning strategies; and the third hands over the charge of learning to the students themselves through activities that help them identify their resources and plan for future strategy application in the course of their study in a realistic manner.

Oxford's recent book, "Language Learning Strategies: What Every Teacher Should Know" (1990) presents her newly developed classification system for giving the teacher an
understanding of students' strategies. The book offers many concrete suggestions and contains as an essential component of every chapter, discovery-learning activities designed to be carried out by the learner as well as sample classroom exercises to be used with students.

Rubin and Thompson (1982) have developed a set of suggestions, guidelines and explanations of the language learning process to help foreign language students become more efficient language learners. This book, which happens to be historically among the first learner materials to adopt explicit learning strategy orientation, aims at providing the learners an explanation of the language learning processes in non-technical language and encouragement to use new language learning strategies. The book provides direct advice to the students for becoming more successful language learners. Fourteen learning strategies are described that students can use to improve their foreign language acquisition.

Each strategy is described through a phrase beginning with an imperative, such as "Find Your Own Way", "Be Creative", "Learn to Make Intelligent Guesses". For each strategy, suggestions are made for a variety of activities. These practical suggestions are useful for highly motivated and mature students for their self study. For use in a
classroom, the suggested strategies and activities require to be organized into an instructional sequence consisting of the stages of description and explanation, modelling of strategies, practice, and evaluation of strategy use. This adaptation would require on the part of the teacher a thorough knowledge of the theoretical background of learning strategies as well as the ability to develop instructional materials based on suggested activities.

George Kutash's (1990) recent book for strategy orientation also uses a direct advice approach providing discussions about resources for learning, "do's and don'ts" in the learning process and insights about both teaching and teachers.82

Conclusion

This chapter started with a consideration of the available theoretical background for language learning strategies. Though learning strategies have been recognized now as an important construct both in cognitive psychology and SLA, they have yet to be explained in a sufficiently elaborate manner in a theoretical model of language learning.
Secondly, the chapter described the definitional and classificational studies based on different modes of data collection, i.e., retrospective and think-aloud interviews, questionnaires and observations. Though the debate about the taxonomy of language learning strategies is not closed yet, most researchers agree upon the broad categorization of strategies into cognitive, metacognitive and social and affective strategies. O'Malley and Chamot (1990) point out that contradictions regarding different strategy names could be because of differing data collection instruments. For example, a classification based on retrospection would be different from one based on concurrent processing instruments such as think-alouds and talk-alouds. Further, they suggest that probably different strategies are appropriate at different levels of knowledge, and different instruments should be used to assess them accordingly, since different cognitive constructs may appear during the three modes of learning, i.e., accretion, tuning and restructuring (Perkins and Linville 1988; Rumelhart and Norman 1978).  

The chapter dealt next with strategy research relating to variables affecting strategy use. A myriad of factors such as task type; proficiency level; motivation; attitude; learning style; age; sex; educational, linguistic, and cultural background have been found to bear upon strategy
use.

Studies related to validation of the effectiveness of particular strategies and their trainability are very meagre in number in the SLA fields as yet. O'Malley and Chamot (1990) remark that, "The application of learning strategies to second language acquisition would rest on uncertain ground if there were not such a strong theoretical basis for their effects and if there were not so many extant training studies in educational psychology verifying strategy effectiveness with a variety of first language tasks" (p.224).

However, the studies that have been carried out, demonstrate that students can be trained successfully to use strategies both with integrative and discrete language skills and their use by students lead to enhanced performance. Correlational studies of validation face many problems such as reluctance of students to participate, and establishing the reliability and validity of self-report data and observation. Strategy validation through training research is beset in addition with the problems of designing appropriate training programmes, random assignment of students, and executing the training with fidelity according to the original design. A lot more work needs to be done in the area of testing the efficacy of particular strategies in
relation to different tasks across all the four skills, and their trainability. SLA studies can obtain considerable guidance regarding such studies from the cognitive psychology field. Finally, awareness regarding the usefulness of incorporating strategy training in language curricula needs to be disseminated on a large scale.
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