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VOCABULARY LEARNING STRATEGIES: A CASE STUDY
OF SUDANESE LEARNERS OF ENGLISH

By

Medani Osman Ahmed, BA., MA

In fulfilment of the requirements of the

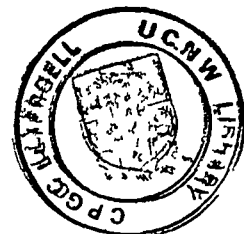
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Department of Linguistics

University College of North Wales

Bangor

1988



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To my mother, Amna

And to the memory of my father, Osman, who was the first to teach me how to read and write, and who had been waiting to see this study finished until he had passed away just six weeks before it was submitted.

ABSTRACT

This study sets out to investigate the vocabulary learning strategies used by Sudanese learners of English, the vocabulary achievement of the same learners, and the relationship between strategy use and four learner factors: (i) the level of overall language achievement, (ii) the use of English as a medium of instruction for other school or university subjects, (iii) the number of years learning English, and (iv) the level of vocabulary learning achievement. The subjects were 300 Sudanese learners of English. The data was collected using self-report, observation, and interview, and was analysed using Cluster Analysis. The major findings suggest that the level of overall language achievement ("good" and "poor") is related to word-learning strategy choice. However, the results also suggest that neither the "good" learners nor the "poor" ones form a homogeneous group. Different stages of development in strategy use were identified for the two groups. The choice of strategies can be said to be related to all the factors included in the analysis (i.e. the simple dichotomy of "good" and "poor" learners is by no means the only factor). The cluster diagnostics illuminated, inter alia which strategies the learners in a particular group (stage) use as a modus operandi and which ones typify the group. The results have also given support to the "atomistic" variable sampling suggested in the study, in that the major differences between the groups lie in the micro- and not the macro-strategies the learners use in vocabulary learning.

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Phonetic symbols

[i] as in sit [sit]

[i:] as in seat [si:t]

[ɔi] as in boy [bɔi]

[u] as in put [put]

[u:] as in boot [bu:t]

Abbreviations used in the text

EA	error analysis
CA	contrastive analysis
CAH	Contrastive Analysis Hypothesis
CS	communication strategies
FL	foreign language
L1	first language
L2	second language
LS	learning strategies
TL	second or foreign language

ERRATA

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CHAPTER (1)

INTRODUCTION

STATEMENT OF THE PROBLEM AND THE ORGANIZATION OF THE STUDY

1.0 THE STATEMENT OF THE PROBLEM

TL research in the 1970s and early 1980s has recently been under strong criticism for the little attention it paid to lexical acquisition. The paucity of research on lexical learning, although disputable, has been attributed to the neglect by TL researchers and pure linguists (Hatch 1978; Levenston 1979 Meara 1980, 1984). Krashen (1981:109) made the point that the teaching profession restricts vocabulary in order to focus on syntax. Levenston went to the extent of claiming that vocabulary learning has been a "victim of discrimination" (Levenston 1979:147). Meara (1984) criticized, particularly, the limitations of the data collection techniques and data treatment, which is analysis of learners' errors. One of the points of criticism is that there is more to TL learning than what errors can reveal (Meara 1984; Ahmed 1987). In addition, using errors to delineate learning strategies - henceforth LS - is dubious (Scholfield 1987a; Ahmed op.cit). The current general tendency is to move from the study of "product" (mostly errors) to what underlies it (often called "process") as well as LS.

One of the most important aspects of vocabulary learning

that has been emphasized by all researchers is the question of which factors affect lexical knowledge expansion and growth (Meara 1980, 1984; Levenston 1979). This general query resulted in specific research questions concerning the factors that were claimed to distinguish between "good" and "poor" learners. TL research demonstrates that there are a number of cognitive and affective factors that may affect success in TL learning. Different factors have been studied such as motivation, age, attitude and strategy use (Wilkins, 1972). These studies have either investigated only one or two attitudinal/motivational variables using methods of correlation, or have made use of factor analysis techniques to summarize the relationship among a number of variables (Gardner 1977, 1980, 1985; Gardner and Lambert 1972). Bialystok and Frohlich (1978) have shown that strategy use and attitude are related to success in TL learning. From such studies it appears that LS can be assumed to be one of the factors that differentiate between "good" and "poor" learners.

The role of LS^{Learning Style} has also been shown in different models of learning (Bialystok 1978; Selinker 1972; McLaughlin, Rossman, and McLeod 1983; Levelt 1978). Since cognitive psychological principles were introduced into TL learning research more and more emphasis has been put on the learner. The significant shift is primarily, from studying the TL language system and that of L1 to predict the areas of difficulty (the strong version of contrastive analysis

hypothesis) to studying the learner and the learning process. The learner is viewed as "an active, self-determining individual... [processing]... information in complex ways" (Weinstein et al. 1979:357). The role of such covert and overt manipulations of input assumed a new importance in the study of TL learning, and prompted a number of interesting and stimulating studies and discussion in recent years.

Learners have been seen to supply information into the learning situation "in the form of individual differences and approaches to learning" (Porte, 1986:2). Recent developments demonstrate that "good" TL learners approach vocabulary, and, indeed TL in general, in different ways (= LS) from "poor" ones (Henning 1973; Cook 1977; Naiman, Frohlich, Stern, and Todesco 1978; Cohen and Aphek 1980, 1981; Cohen and Hosenfeld 1981; Rubin 1981). This new trend is more pedagogically oriented in that it seeks specific and easy to apply implications. Once the LS of "good" learners are identified, the assumption says, they can be taught to "poor" learners. The difficulty in interpreting the results of error analysis studies in a meaningful way to help less proficient learners has probably had some effect on generating this new trend.

Unfortunately, the studies done so far have mainly concentrated on identifying the LS of "good" learners. There is only one study, to my knowledge, which has been devoted to "poor" learners and that study is Porte's MA dissertation (1986). It will be more illuminating if we address the subject with an open mind, that is, studying the LS of both

"good" and "poor" learners so that systematic comparisons can be made. This study is meant to be a contribution along these lines.

Research has shown that not every LS has an absolute value, that is, not every LS can have the same effect on all learners. Research demonstrates that the choice of LS is related to a number of learner factors such as attitude (Naiman et al 1978). What has not been adequately investigated is whether there are systematic differences between "good" learners as well as "poor" ones, (in a norm-referenced sense) at different levels of education. I believe that research on LS can have more pedagogical value if it is applied to learners in a particular situation. This study addresses the problem above in the context of the Sudan. Part of the reality of teaching English in the Sudan is that English is also the medium of instruction for other subjects in Private schools and University. Studying the LS without taking cognizance of the possibility of the effect of this on LS choice may give only part of the truth. Therefore, the factor of using English as a medium of instruction is also considered for investigation in this study.

The differences between "good" and "poor" learners can be accounted for within two general approaches to LS analysis. First, the use of "general approaches" to learning, or macro-strategies, a term suggested by Scholfield (1987b, personal communication), such as "practice"; second,

the "specific LS" or micro -strategies, such as "testing oneself by going through some vocabulary items as a strategy for practice". The former approach I refer to as "holistic", and I call the latter "atomistic". Relevant research has largely used the "holistic" approach. This has led to the similarities between "good" learners being inflated (see chapter 3). The lists of LS given in such research include "active approach", and "practice". Statements like "the good learner practises" are no more specific than saying "'good" learners are more motivated than "poor" ones". What we need are more specific findings concerning questions such as what the learner does to practise. That is, we need more refined categories. This will not only help us deal with the differences between "good" and "poor" learners more adequately but it is a step towards assessing the facilitating effect of the micro - strategies. As the study also purports to investigate the differences between "good" as well as "poor" learners it seems more appropriate to be more specific.

In investigating LS there has been an emphasis in some recent research on verbal reports of TL learners about their own learning, and on observing learners when they are in the process of learning. Important insights have been obtained from the "verbatim" reports of the learners. The literature on introspective methods is accumulating. The use of these methods in TL research has been the theme of some major recent symposiums such as the one organized by Faerch and

Kasper in connection with the First International Conference on Applied Psycholinguistics, Barcelona, June 1985. The papers of this symposium have appeared in a book edited by Faerch and Kasper (1987a). One of the most important conclusions that can be drawn from relevant research is that learners can actually talk about their learning, reflect on it, and evaluate it (Hosenfeld 1976; Cohen and Hosenfeld 1981; Cohen and Aphek, 1980, 1981; Ericsson and Simon 1980, 1987).

In a nutshell, the main subject of research in this study is vocabulary LS, and their relationship with vocabulary competence and the learner factors of overall level of English proficiency, the level of education, and the use of English as a medium of instruction for other subjects.

The question that poses itself is why should we single out vocabulary. Most importantly, are there vocabulary LS per se? To rephrase the question, can we say that there are some LS which particularly enhance interlanguage vocabulary, as opposed to other aspects and skills such as reading and learning syntax? This question is not easy to answer given the present state of the art. The studies on LS either concentrated on a number of aspects, one of them is vocabulary, or on one particular aspect of vocabulary learning such as the use of mnemonics (Cohen and Aphek 1980) (see chapter (3)). From the studies that used a number of aspects it appears that there are some LS which are specific to vocabulary learning such as the use of "semantic or

auditory links" between two TL words, or TL and L1 words as an aid to memory. On the other hand there are some LS which seem to help advance competence in general.

This study is, therefore, wholly devoted to vocabulary LS. Why devote a whole study to vocabulary? There is no need to say a lot to support the case of devoting a whole study to lexis at this stage of TL research. Meara noticed that "most collections of learner errors showed that lexical errors outnumber grammatical ones by something like three or four to one" (Meara, 1984:235). Similar observations have been made by Alexander (1982) and Marton (1977). Marton argued that TL learners reached some sort of a ceiling when most of their production seems to be syntactically acceptable, but they are still "characterized by a certain un-Englishness of expression and frequent mistakes, mostly of a lexical nature" (Marton 1977: 329). Saville-Troike (1984) investigated the degree of the contribution of the knowledge of some linguistic aspects, e.g. syntactic, lexical, to reading achievement. She found out that the number of vocabulary items used has a higher correlation ($r = .633$; $DF = 17$, $P < .05$) than syntactic knowledge ($r = .291$) and grammatical accuracy ($r = 0.025$) (pp. 206-7). The reader is also referred to Arnaud (1982) for similar conclusions. Moreover, Politzer (1978) asked some native speakers of German to evaluate the "seriousness" of some errors made by foreign learners of German. The categories include phonological, grammatical, and lexical errors. Of all the categories, the lexical errors were judged as the most

serious. Therefore, as Meara puts it, "it would take a lot to convince me that we have a right to turn our backs on a problem of this magnitude..." (Meara, 1984:235).

Despite this importance, vocabulary is the most neglected aspect in teaching English in the Sudan. None of the teacher training courses includes a lexical component. Since the publication of the Junior Grammar book, by Bright (1945), the teaching profession in the Sudan has concentrated on syntax. Bright (1945) said in his introduction to the book that he based his choice of the components of the book on the common reported errors through the years by the teachers of English in the Sudan. The examinations and tests given in schools normally consist of a separate paper on grammar, and another on reading comprehension and writing composition. This of course has made it absolutely vital for a pupil to be able to pass the English examination to pass the grammatical component. The marking schemes for reading comprehension and composition normally include a grammatical component. The most recent course, the NILE course, which seems to encourage vocabulary learning was introduced in the mid 1970s. However, this new course has not been accompanied by the necessary changes in the tests and examinations. They still seem to concentrate on grammar. Therefore, the reasons are abundant for carrying out this study with, of course, the hope that some useful conclusions can be drawn from it.

1.1 THE ORGANIZATION OF THE STUDY

In the previous section I have singled out for examination the basic topic of concern in this study. In reporting the study I shall proceed as follows:

Chapter (2) defines the scope of the investigation. The two basic theoretical constructs of learning strategy and vocabulary competence are defined by, first, giving the definitions proposed by other researchers and, secondly, a working definition proposed by the writer of this study. This chapter also discusses the rationale for choosing some particular aspects of lexical or vocabulary competence for the present investigation. To define lexical competence, reference has been made to textbooks on semantics, theoretical linguistics in general, and some studies in applied linguistics.

Chapter (3) reports and evaluates the relevant (i.e. not exhaustive) research done on interlanguage lexis and vocabulary LS. This chapter evaluates, particularly, the data collection methods used in relevant research to provide the rationale for choosing the tests, verbal report questionnaire and the other techniques used in this study.

Chapter (4) describes the aims of this study together with the present researcher's expectations concerning the results. The bulk of the chapter is however, devoted to the

description of the methodology of this study in terms of the subjects, the data collection instruments and procedures, and the methods of analysis.

Chapter (5) reports the vocabulary LS identified for the whole sample of subjects together with the frequencies of occurrence for the sample. This chapter also reports the results of the statistical analysis concerning the distribution of the identified LS across the sample using cluster analysis. The sample is described in detail in terms of this distribution and its relation to the factors of level of overall achievement in English, level of education, and the use of English as a medium of instruction.

Chapter (6) gives an overall description of the subjects' lexical competence. The main aim of this description is to derive clusters so that we can compare them with the clusters generated by using strategy variables in order to investigate the relationship between vocabulary competence and strategy use.

Chapter (7) addresses the problem of the relationship between vocabulary competence and strategy use. Some of the data that will be dealt with in this chapter are dealt with in chapter (5) and (6). This brings together the data of of chapters (5) and (6).

Chapter (8) is a synopsis of the major findings. The chapter gives some conclusions in the form of suggestions for further research and tips for those concerned with TL pedagogy.

CHAPTER (2)

THE SCOPE OF THE INVESTIGATION

DEFINING THE CONCEPTS

2.0 This study, as stated in the first chapter, is concerned with the investigation of two key concepts: vocabulary LS and vocabulary competence. A researcher who engages him/herself in TL research which involves learning strategies is bound to encounter a plethora of definitions, some of which are explicit, whereas others are implicit. There is no consensus on what constitutes a LS and how it differs from the other types of strategies, e.g. communication strategies - henceforth CS - nor how it is different from the other phenomena of the learning mechanism, such as the learning process. The term "learning process" is used by some researchers as a synonym for LS, whereas others maintain a distinction between the two.

The other basic theoretical construct which also warrants definition, is vocabulary competence, or lexical achievement.

A study such as the present one, which involves LS in a major way, must come to some definitional resolution on these concepts. The basic aim of this chapter is to present and discuss the theoretical complexities involved in defining the terms LS and vocabulary competence and give some definitions of the terms as they apply in this study.

2.1 THE CONCEPT OF LEARNING STRATEGY

This is the most complex of the basic terms of this study. A closer look at the relevant research reveals that the differences in the definition of the term are very much a matter of epistemological interests, i.e. research goals. LS have been researched, in connection with TL, within three completely different approaches, which entail different goals. Of these, two approaches can be differentiated by the type of data each one deals with. ^① One approach exclusively uses the learners' "product", i.e. the learners' performance in interlanguage. This approach mainly dealt with learners' errors, ^② and it is best known as interlanguage research. The other approach uses metacognitive data, i.e. verbal reports, and observation of the overt behaviour of TL learners - trying to get directly at the "process" - when they are in the process of learning. ^③ A third approach is the experimental one of the psycholinguist, where one sets artificial tasks (like learning lists of words in an unknown language by using prescribed mnemonic techniques). The third approach is not of concern in this study because our major emphasis is on what the learners do naturally as far as LS are concerned, rather than on how they get on if they are forced to use a given LS. Further reference to the three approaches will be made below (chapter 3). Undoubtedly, the other two types are all grist to the TL learning analyst's mill, but we believe a distinction between the two approaches should be maintained for the sheer interest of what each one can reveal. In fact, investigating LS is the raison d'être

for the two approaches. The basic tenets of these approaches will be referred to by discussing the features each one assigns to the term LS.

In order to clarify the concept of LS and how best it can be utilized in TL research, a number of issues will be dealt with. These issues are as follows,

1. LS help advance interlanguage competence. This is an obvious, and orthodox, feature, which will be dealt with in the context of differentiating between LS and CS.

2. Are the terms LS and learning process interchangeable? To what extent are both of these concepts "conscious"? The notion of "consciousness" will be discussed with relation to the concepts of LS and learning process because some researchers examine the difference between the two concepts in terms of this notion.

3. Can LS be used as one of the distinguishing criteria between "good" and "poor" learners? Generally speaking, in the studies that used the learner's performance in TL as data the question does not arise, whereas in the studies that used metacognitive data the question is central. This implies that the two bodies of research differ as to what constitutes a strategy.

4. To achieve maximum obtainable pedagogical benefits a distinction must be maintained between the learner's general approach (referred to in this thesis as classes of strategies) and the specific strategies.

Each of these four issues is dealt with separately in this part of the thesis. Our suggestions concerning the definition of the term LS will be given in the final section of this part of the thesis.

2.1.1 LEARNING STRATEGIES AND COMMUNICATION STRATEGIES

Under this heading I will discuss the difficulties involved in differentiating between LS and CS. One of the most orthodox definitions of these terms is that given by Faerch and Kasper:

"Learning L refers to the process whereby the learner discovers the (pragmatic, semantic, syntactic, and phonological) rules of L, and gradually comes to master them thereby developing a discrete system. Communicating in L refers to the way the learner uses her IL system in interactions"

(Faerch and Kasper 1980:51)

This definition gives us the first and most important feature of LS; that they are used with the intention of improving competence. "Using TL system in interactions" can be rephrased to include the four skills of listening,

reading, speaking, and writing (Scholfield 1987a:56). However, in practice, the picture is not that simple. Many problems arise in the process of identifying which strategies are LS and which are CS. This is a matter of preconceived ideas (= theoretical framework) of what a LS or CS is.

The theoretical framework established in the literature for distinguishing between these two types of strategies fails to provide convincing descriptions when listing examples under each category. For example, Rubin (1975), drawing on her own experience as a language teacher, claimed that good language learners used devices such as circumlocution, paraphrase, and direct translation to acquire and expand their knowledge of language. Other researchers, per contra, have seen such strategies as CS (Tarone 1980), achievement strategies (Faerch and Kasper 1980), or resource expansion strategies (Corder 1983), which are primarily directed at facilitating communication, as opposed to advancing learning of TL. Bialystok and Sharwood Smith (1985) claimed that this state of confusion is the result of the lack of flexibility of the criteria proposed (P.113). They noticed that learners "may change goals without changing strategies" (loc. cit). In other words, some strategies are not inherently for communication or learning. To illustrate this phenomenon of multiplicity of purpose for strategies, we will discuss in more detail one of the infamous and classic examples: the strategy of transfer. (For other types of CS the reader is referred to the taxonomies proposed by Tarone,

Cohen and Dumas 1976; Tarone 1977; Faerch and Kasper 1980; Bialystok and Frohlich 1980; and Paribakht 1982).

The reader who is familiar with the relevant research will have noticed that the term "transfer" is used both for CS as well as LS. During the 1950's and 60's, when contrastive analysis was flourishing, transfer was viewed as an automatic process which had negative effects on performance, and that these effects could only be suppressed by the acquisition of "strong habits". Lado's formulation of the strategy of transfer, to whom the item owes its promulgation, seems to be related to performance i.e. communication rather than competence (in Chomsky's sense). Lado said,

"... individuals tend to transfer the forms and meaning, and the distribution of forms and meaning of their native language and culture to the foreign language and culture, both productively when attempting to speak the language ... and receptively when attempting to grasp and understand the language ... as practised by its natives."

(Lado 1957:2) (my underlining).

This formulation presents transfer as related to performance, i.e. as a CS. However, it suggests that it is not a conscious and deliberately applied strategy. Other researchers have also mentioned some instances of transfer as a CS; in Tarone's taxonomy (1980) of CS, she listed conscious transfer, borrowing, and literal translation; Faerch and

Kasper mentioned foreignization which they defined as "the creation of non-existent or contextually inappropriate target lexical items by applying L2 morphology and/or phonology to L1 lexical items" (Faerch and Kasper 1980:11).

On the other hand, some other researchers treated transfer as a LS (Adjemian 1983). Adjemian proposed a theory of lexical transfer in TL in which he describes transfer as a LS. He said,

"Thus the use of a specific word or feature in a given context may be a borrowing, but the (more or less) regular appearance of a type of verb, let us say (with particular morphological, syntactic, or semantic properties) in a way which differs from TL usage undoubtedly reflects some sort of hypothesis formation on the part of the learner. If the hypothesis or generalization is motivated by languages familiar to the learner, we have a case of transfer."

(Adjemian, 1983:155)

There is a sharp contrast between this formulation of transfer as a hypothesis-testing process and Selinker's formulation. Selinker (1972) distinguished between transfer, and LS on the basis that the latter involves hypothesis-testing (e.g. overgeneralization). In other words, in Selinker's framework, the notion of transfer seems to be the traditional behaviourist's "persistent old habits". However, it should be stressed that the whole point behind Selinker's article is that there is more to learning than this phenomenon of "persistent old habits" which can account for only a small number of errors in the TL learner's performance.

As this is not the place to go into the controversy of the strategy of transfer, the reader is especially referred to Sharwood Smith 1979; Bruner 1978; Taylor 1975; Jordens 1977; and Kellerman 1977 for the discussion of creativity and transfer. The point to be emphasized is that transfer is viewed in relevant research as both a LS and a CS. The question that poses itself now is what criteria were proposed in research for distinguishing between LS and CS.

One of the proposed bases to distinguish between CS and LS is that proposed by Tarone (1980). She claimed that CS and LS can be distinguished on the basis of motivation or, more simply, intention; for CS the "speaker desires to communicate x to a listener" (Tarone 1980:419). However, this is even more problematic. One problem is that this definition of CS seems to be limited to production, the spoken form, only. Secondly, Tarone herself mentioned that motivation is not easy to measure. There is no denying that there are observable behaviours that are clearly one or the other type of strategy, but it is not always as clear-cut. There is little "agreement among authors as to the behaviours which the learner may engage in for the purpose of improving competence in the target language" (Chesterfield and Chesterfield 1985:46). The example of transfer, discussed above, is a case in point. The data used for describing LS is mostly production data, a fact which makes it difficult to decide if the strategy was for learning or communication, as will be dealt with in the discussion of the relevant empirical work (see chapter 3).

There is also the possibility that a strategy may be used both as a CS and as a LS at the same time. In other words, the question is not either-or. However, such a claim will have to be empirically supported. In the present "state of the art" the evidence along these lines seems to be intuitive and anecdotal. Bialystok and Sharwood Smith (1985) claimed that learners "may change goals without changing strategies. An appeal for assistance, for example, might initially have been adopted to achieve a particular communicative goal by filling in an unknown word, but the learner may decide instead to focus on the learning potential...." (Bialystok and Sharwood Smith 1985:113). This multiplicity of purpose for strategies in a single situation seems to be intuitively valid. However, empirical evidence along these lines is needed.

2.1.2 LEARNING STRATEGIES, THE LEARNING PROCESS AND THE PROBLEM OF "CONSCIOUSNESS"

In addition to the complexities involved in differentiating between LS and the other strategies, such as CS, the term LS seems to have wide applications (senses) and often gets confused with another aspect of the learning mechanism, namely the learning process. Some researchers claim that they are the same in that they refer to the same phenomenon, whereas others maintain a distinction between the two terms on the basis that each term refers to a different phenomenon. This section elaborates on these issues.

The researchers who maintained a distinction include Blum-Kulka and Levenston (1978). They used the term strategy to refer to "the way the learner arrives at a certain usage at a specific point in time" and the term processes as the "the systematic series of steps by which the learner arrives at the same usage over time" (Blum and Levenston 1978:402). This definition is based on interlanguage data, or learner's performance. Blum and Levenston's (1978) elaboration on their original definition emphasizes the frequency of usage in relation to time, i.e. a process is a repeated version of the same single usage (= strategy). For instance, in Blum and Levenston's (1978) example, if a particular usage (in most cases error) can be attributed to the learners' L1 then one could say a strategy of transfer is in operation, whereas if the same usage is repeated a number of times one could say that a process of transfer is being used to formulate certain aspects of that individual's interlanguage. This definition seems to treat the terms strategy and process as virtually referring to the same phenomenon, the only difference being that the latter occurs more than once. However, these definitions are tenuous because a particular usage can be accounted for by both LS and CS, or either one. The problem of identifying LS from the learner's performance has already been discussed in Section 2.1.1 above, and will also be dealt with in the discussion of the relevant empirical research in chapter 3.

Rubin (1975) used the terms processes and strategies without distinguishing between Stern's strategies and techniques. She stated that strategies are "the techniques or devices which a learner may use to acquire knowledge" (Rubin 1975:43). Later, in a different place (1981), she used a specific/general criterion. She distinguished between processes as a "general category of actions which contribute directly to learning" and strategies which, are "the specific actions which contribute directly to learning". Wenden (1983) used the same dichotomy, and she said that the "cognitive strategies represent the actual execution of the cognitive processes in specific situations". Rubin's processes, such as clarification/verification, monitoring, and inferencing, seem to correspond to Stern's (1975), and Naiman et al.'s (1978) "strategies". On the other hand, Rubin's "strategies", such as, ask for an example of how to use the word, repeat word to confirm understanding, seem to be equivalent to Stern's and Naiman et al.'s "techniques". By and large, it is quite apparent that what a particular researcher refers to as a strategy another researcher may refer to as a process.

In contradistinction to the criteria of time, and specific/broad, Jordens (1977) distinguished between the terms "process" and "strategy" on the basis that strategies are conscious. He said,

"Whenever problems have to be solved,

strategies are used to solve these problems as quickly as possible. The essential thing is that STRATEGIES can only be applied when something is acknowledged to be problematic. It would not be right, however, to invariably reduce to STRATEGIES of interference and overgeneralization those errors described as a result of (inter-or intralingual) language comparison as errors of overgeneralization or interference (cf. Taylor 1975, Kiehlhofer 1975). Errors of interference and overgeneralization will usually be produced without the learners being aware of the problem."

(Jordens 1977:14-15)

Jordens' comment was made in the context of discussing phenomena such as transfer and overgeneralization for which the terms strategy and learning process were both used in interlanguage research. One of the motives for limiting the definition of strategy in this way seems, as Sharwood Smith commented, "to have been the misleading nature of the term "strategy of overgeneralization" since it seems to imply that the learner necessarily overgeneralizes on purpose (i.e. deliberately deviates from the norm..." (Sharwood Smith 1979:348). This problem of overgeneralization on purpose, does not however, arise in Selinker's account (1972) since he used the term process. It arises in many other accounts (Taylor 1975; Dulay and Burt 1974a).

Bialystok (1978) also uses consciousness as a criterion. She defines LS as "optional methods for exploiting available information to increase proficiency of second language learning" and that they are "at the discretion of the individual language learner" (Bialystok 1978:76-77). This clearly indicates that she views LS as conscious. In contrast to LS, she proposed that "processes obtain

irrespective of any conscious intervention of the language learner." (Loc cit). In this model Bialystok demonstrates that there are three "stores" of knowledge: "implicit knowledge", "explicit knowledge", and "other knowledge". According to this model, these stores of knowledge become activated by learning processes. Further exploitation of this knowledge, through optional devices (= LS) can help improve competence. However, Bialystok, in a different place (1983), took a rather different position. She claimed that LS "reflect the ordinary processes of learning that occur whether or not the learner is attending to and deliberately manipulating them". Thus, according to this definition, learning strategies are not different from learning processes (pp. 255-56).

Bialystok (1983) views her model as contrasting markedly with Krashen's (1981) monitor model on the basis that the latter was "extremely dualistic" in that it differentiates sharply between "learning" and "acquisition". Krashen (1981) postulates that the two processes of learning and acquisition are central to TL learning. "Learning", according to Krashen, involved conscious manipulation of the TL rules, whereas "acquisition" is a subconscious knowledge whereby a learner picks up language through informal exposure to what he calls, "comprehensible input". Self-correction or monitor is a strategy that only works at the conscious level (= learning) and had no contribution to implicit knowledge - acquisition. In other words, monitoring is a conscious strategy.

Bialystok's (1983) and Krashen's (1981) uses of the word "consciousness" reflect the confusion concerning the use of the word. It seems to me that there are two different applications of this word in TL research. The first is the use of the word to refer to metaawareness, i.e. knowledge of the explicit rules of the language. The second use refers to the manipulation of TL input to advance competence, a process which is carried out by using LS. Krashen's account refers to the former use. What concerns us here is the latter sense. For more information on the question of metaawareness the reader is referred to James (1987). The question at issue is whether the learner is aware, or can be made aware, of the LS he/she employs at the time of the execution of a LS to gain knowledge, no matter whether this knowledge is explicit or implicit. In other words, a learner may be engaged in (say) practising explicit knowledge of which he was quite aware, but he/she may or may not be aware of the psycholinguistic activity that he/she is engaged in; i.e. not consciously aware that he/she applies the strategy of practice on purpose.

It seems that consciousness is not a defining criterion of LS. It seems quite intuitive, as Bialystok (1983) noticed, that learners use a number of systematic LS for which consciousness is not a feature (Bialystok 1983:256). In this context, I feel that the best way is to view LS as problem-oriented and may, thus, be brought to the consciousness of the learner. The term "problem-oriented" is commonly used in CS literature to denote that one CS is used

when a learner is faced by some communication problem (Faerch and Kasper 1980, 1984). It can also be used with learning to signify that a TL learner recognizes learning as a problem and adapts his/her LS accordingly. One way of interpreting this term in connection with learning is that LS are used when the learner encounters a problem. This is certainly unsatisfactory since learners seem to treat the whole question of learning a TL as a problem, as argued by Stern (1975).

Yet another potentially plausible solution to the problem of the distinction between process and LS was proposed by Bialystok and Sharwood Smith (1985). They claimed that "the relationship between first- and second-language acquisition must be implicated in the second-language acquisition" (1985:104). They viewed the difference between the two tasks as lying in the further resources (= LS) the TL learners have at their disposal to facilitate the process (loc cit.). They did not elaborate on these points, but I think this formulation, with some alterations, could be used to resolve the problem of the seemingly contradictory results of the studies based on error analysis, on the one hand, and of those which use "metalinguistic" data, i.e. verbal reports, on the other. Before trying to build on Bialystok and Sharwood's definition, I must point out that it suffers from some drawbacks which we will deal with now.

The first point to be made is that Bialystok and Sharwood's distinction between learning L1 and TL is quite

the opposite of the state of affairs. For one thing, the L1 learner has relatively far more resources (if the cerebral theory was valid), whereas the TL learner works against many odds, e.g. may have the wrong and limited input. The TL learner, as Stern (1975) mentioned, faces a massive problem (see chapter 2).

Secondly, the results of the studies which used the TL learner's "product" revealed processes such as overgeneralization, which were processes rather than strategies. Such processes reflect the ongoing process of internalization of the TL rules and information. This process is facilitated by a number of means (= strategies), and, as we mentioned above, it is more likely that the more effective LS are used by "good" learners. The failure to provide the right facilitating means (LS) is one of the factors that lead to poor learning. Corder (1977) mentioned that simplification is probably not in itself a strategy, but the result of certain strategies. According to this approach the studies that are based on error analysis are studies of the learning process rather than LS. Therefore we reserve the term LS for the "tricks" the learner employs to "easify" the learning process. The learning processes, e.g. overgeneralization, may be universal and apply to both "good" learners as well as "poor" ones. This distinction between LS and learning process bears a resemblance to Jordens' definitions of the term (see above.)

To bring the threads of the argument together, we can

define LS as the optional devices the TL learner employs consciously or unconsciously, to help him/her improve competence in TL. The learner may or may not be aware of the LS he/she uses, but they can be brought to their consciousness because they are problem-oriented. More reference will be made to these points in the final section of this part.

2.1.3. THE DISTINCTION BETWEEN MACRO- AND MICRO-STRATEGIES

As we mentioned above, researchers distinguish between general learning behaviours, and specific ones for carrying out the former type. However, writers differ as to the relationship between these two types. In this section these issues will be dealt with in detail.

There is a general consensus among researchers that there are two types of LS: general tendencies, or approach, and specific tactics. Different terms have been used; "strategies" and "techniques" (Stern 1975, Naiman et al 1978), "metacognitive strategies", and "cognitive strategies" (O'Malley et al 1985, following Brown 1982) to refer to the two types mentioned above, respectively. Stern said,

"Strategy is... reserved for general tendencies or overall characteristics of the approach employed by the language learner, leaving techniques as the term to refer to particular forms of observable learning behaviour, more or less consciously used by the learner"

(Stern 1975: 405).

Researchers differ as to whether the specific strategies, or techniques using Stern's terms, are the manifestations of the general approaches or not. According to Stern's approach, the set of "practice" for example, is considered as a general approach with many possible manifestations (techniques, or cognitive strategies). In O'Malley et al. (1985) and Brown's (1982) approach a different position is taken. A cognitive strategy may not be a direct manifestation of a metacognitive one in the way Stern's techniques may be. For example, O'Malley et al's list includes the metacognitive strategy which they referred to as "self-evaluation" (P.25). As is clear, self-evaluation does not involve a set of cognitive strategies which help learning directly in the way (say) monitoring and practice do. Self-evaluation is a general procedure which applies to metacognitive strategies - the learner's general approach - as well as cognitive ones, in that it involves questions such as "how am I doing? What am I getting out of this?" (loc. cit).

Stern's definitions are rather like Reibel's definition. Reibel viewed LS as "resulting from the learner's application of his innate learning principles" (Reibel 1971:92); whereas O'Malley et al's distinction looks more like Seliger's (1983). Seliger distinguished between two "levels" of learning; one level is innate, "universal, age- and context-independent" (Seliger, 1983:38), whereas the other level, "tactic", is "an infinitely variable set of behaviours or learning activities..." (loc. cit). These "tactics" do not have to belong to a particular "innate" level. In my view,

Seliger's level of universal principles is similar to metacognitive preparations which are "not in themselves strategies but, rather, underlying psychological conditions which heighten the likelihood for the learner to use certain... strategies" (Faerch and Kasper 1980:75).

To conclude and to state my position more clearly, researchers distinguish between two types of behaviour that can be subsumed under the heading LS: general tendencies, and specific behaviours. The former were viewed as either consisting of behaviours each of which has its manifestations (specific behaviours), such as the relationships that hold between different practice techniques and the strategy of practice in general, or they may include strategies which operate on both the other general tendencies and the specific behaviour, as is the case of self-evaluation. The latter approach seems more intuitive and realistic in that learners tend to change their general tendencies with more experience with learning.

The distinction between macro- and micro-strategies is related to two other basic issues:

1. The differences between "good" and "poor" learners. (see next section)
2. The practice of identifying and classifying learning in TL research.

2.1.4. LEARNING STRATEGIES: AND THE DIFFERENCE BETWEEN "GOOD" AND "BAD" LEARNERS.

First, an important distinction should be made. In addition to the feature of "+ help advance and improve competence", some researchers considered the feature "+ used by good TL learners" as a defining criterion of LS, whereas others did not. Some of the latter see the potential benefit of investigating LS, from a pedagogical point of view, in studying the LS of good TL learners and, hence, they neglect those used by "bad" learners. In other words, the latter group did not deny the existence of "bad" LS. The difference between these two approaches is a matter of epistemological interest. These views will be dealt with first, and then our criticism and view will follow.

To put matters in the right perspective, we should not divorce research from the prevailing general theories and interests which form the basis of such research at a particular period. The studies which used the learner's linguistic output, i.e. errors of TL learners, came as a revolution to the Contrastive Analysis hypothesis - henceforth CAH or CA - which says that the errors which a TL learner makes when performing in that language, are caused by the influence of L1. CA flourished during the 1950's and 60's, when research on TL learning was linguistically structuralist and psychologically behaviourist. Corder (1967), to whom the term error analysis owes its promulgation, proposes that errors are evidence of the learner's strategies of acquiring the language rather than

signs of inhibition, or interference of "persistent old habits". The new advent sought to prove that TL is rule-governed behaviour (which indicates the influence of cognitive psychology and Chomsky's new ideas). This general goal is explicitly stated in all the studies, based on error analysis, of TL learning in the late 1960's and in the 70's (see Wilkins 1972; Duskova 1969; Bateau 1970; Richards 1971, 1974 ; Jain 1974; Scott and Tucker 1974). For example, Richards said,

"Simplification may thus be considered a universal learning strategy based on the extension and application of rules. Overgeneralization, and analogy are instances of the same process."

(Richards 1974: 118, my underlining)

Terms such as "approximative systems" (Nemser 1971), "interlanguage" (Selinker 1972), and "idiosyncratic dialects" (Corder 1971), reflect the spirit and underlying goals of such research. These terms were first used to stress the structurally intermediate nature of the TL learner's system, in a "static" sense (Selinker 1972). In later developments, especially by researchers such as Adjemian (1976), Tarone (1983), Andersen (1978), and Huebner (1979, 1983), the focus has been on the "dynamic" nature of the TL learner's interlanguage system, and how it develops. The case of morpheme studies, by Dulay and Burt (1974a, 1974b) and Krashen (1981, 1982) was originally inspired by Brown's (1973) study in L1 acquisition of 14 functor words, and some

noun and verb inflections. Such views in TL learning were first launched in TL learning research by Corder (1973) who stressed the study of "transitional competence" by collecting a large body of data on a longitudinal basis. This is not the place to go into the detail of such issues because the point in question here, is whether such studies viewed LS as one of the factors for distinguishing between "good" and "bad" learners. The findings of such research that many learners' errors result from processes such as overgeneralization and simplification reflect what these studies seek to substantiate; that processes other than L1 transfer are also responsible for the learners' errors. The problem of "good" learners and "poor" learners did not arise in such studies. It was researched in the context of "affective variables", e.g. motivation, attitude. The investigation of the relationship between such factors and success in TL learning continued in the 70's, as far as the studies based on error analysis are concerned, in following the same line as the 1960's. That line of research was that the factors which affect success and, hence, can be used to account for individual differences in TL learning, were separate from the learning process. No claim that processes such as overgeneralization and simplification are characteristic of one type of TL learners has been made in interlanguage research. In fact, the so-called strategies, which I call processes in this thesis, are claimed to be universal (see, for example, Dulay and Burt 1974a:109; Richards 1974, particularly, pp. 116ff; and Blum + Levenston

1978) rather than "good" or "bad". It is worth mentioning that even when the term "variability" was used, the issue of "good" and "bad" learners did not arise because the term variability is, strictly, linguistically-oriented and non-evaluative. McLaughlin (1987) puts it as follows,

"...although they are systematic and internally consistent, interlanguages may contain alternate rules for performing the same functions. On some occasions one rule is used, on other occasions - and at the same stage of development - another rule may be used."

(McLaughlin 1987:72)

To demonstrate more clearly the point that the issue of "good" and "bad" learners was not in question as far as error analysis studies are concerned, the investigational design used in these studies involved using either only one or two subjects (Huebner 1979), or a group of learners with different linguistic backgrounds (to investigate the problem of universality).

On the other hand, a different body of research also developed from the late 1970's to the present day. This research used metacognitive data as discussed at the outset of this chapter. It shares some premises with the studies based on error analysis. They share the assumption that understanding the process and mechanism of TL learning mainly involves investigating the learner him/herself. Both bodies of research seek to identify LS. They mainly differ in some of their assumptions and hypotheses. Without denying the

hypothesis of rule-governed process of error analysis studies, metacognitive research unlike EA-based projects, assumes that LS are optional operations that have "considerable potential for enhancing the development of the TL learner's competence" (O'Malley et al 1985:21). The basic questions that this body of research seeks answers for are: what makes good learners tick? What do they do that poor learners don't do? It is what the "good" learner, in addition, does that concerns such research (see Naiman et al 1978). Stern (1975) argues that the TL learner faces three problems. First, "the disparity between the inevitable and deep-seated presence of the first language (and, probably other languages previously learned) as a reference system and the inadequate development of the new language as a new reference system" (Stern 1975:310). Secondly, "the learners have to find a way of dealing with both the linguistic forms and the message to be conveyed. The third problem is that he/she has to choose between "rational and intuitive" learning. To cope with these problems the learner adopts certain strategies, i.e. (1) general or less deliberate approaches, and (2) more specific techniques, i.e. observable forms of language learning behaviour, as we discussed above. As it appears from the latter type, which Stern refers to as techniques, this type of research views LS differently from the studies based on error analysis. The second important thing is that Stern (ibid), on the basis of the considerations mentioned above, has drawn up a list of ten LS of "good" learners and compared them with those of "poor"

ones. He claimed that "good" TL learners are capable of discovering their preferred techniques, whereas the poor learner has little or no insight into his own learning. The poor learner does not develop "any definite and effective study habits" (Stern 1975:311). This claim seems to amount to saying that the difference between "good" and "poor" learners, as far as LS use is concerned, lies in that "good" learners use LS, whereas "poor" ones use very few or none, rather than in that "poor" learners use "bad" LS whereas "good" ones use "good" LS. In other words, Stern and also all the researchers seem to define the learner independently of IS (see the last section of part 1 in this chapter). The claim concerning "good" learners seems to be intuitively valid. Indeed there is empirical evidence supporting it (see chapter 3), whereas the claim with regard to "poor" learners needs to be empirically investigated.

Rubin (1975) has emphasized the need for investigating the LS of "good" learners. It is also important to note that she does not deny the existence of "bad" LS. Her emphasis on the "good" TL learner was pedagogically motivated.

The assumption of such theories is that the successful learner's behaviour forms a model which "poor" learners should emulate in order to advance and improve their learning. This is the case with a large body of research; O'Malley et al (1985); Naiman et al. (1975); Cohen and Aphek (1980, 1981). These studies will be dealt with in the discussion of the empirical research on LS in the next

chapter. The definition, in this context, given by O'Malley et al. (1985) is similar to Stern's. They defined LS as "used by good language learners to assist them in gaining command over required skills, and are positively associated with language acquisition" (O'Malley et al, 1985:21-22). In simple terms, LS can only be good. This is consistent with Politzer and McGroerty's (1985) view.

One question seems to impose itself here: are all LS used by the good TL learner equally effective? In other words, are there any qualitative differences between LS? I would like to propose that any LS adopted by the learner is more likely to help than not, but some LS are likely to have a "potential for a greater pay off than others", as Carver (1984:127) puts it. For instance, while a learner may genuinely improve his/her lexical competence by a self elected technique of rote learning or writing the word many times, as an aid to memory, it is possible that his/her competence may be improved in a more useful way, if not faster, if he/she adopts more sophisticated strategies such as guessing.

The results of metacognitive research, in contrast to the studies based on interlanguage data, show particular strategies such as note-taking, willingness to use the language in real situations, and use of mnemonics to help retain vocabulary items. It appears that studying the LS of "good" learners has a great potential for improving instruction in TL, However, this does not deny that "poor"

learners do use LS. The point is simply, as such researchers claim, that by identifying the LS of good learners "poor" learners can be taught these strategies. In other words, researching the LS of "good" learners is interesting from the pedagogical point of view.

I feel that this proposition needs some qualification. Two qualifying points will be made. First, it is indeed, the LS used by "good" language learners that we wanted "poor" learners to use. It is also pedagogically useful to know what LS the "poor" learners use. I think it is more useful if we can demonstrate to intended learners that the LS they use are less effective, before we directly instruct them to use more effective ones. It is well established now that learning, on the part of the learner, is a matter of beliefs and convictions (see Knowles 1970; Brown et al 1982; and Wenden 1986). What we should aim at then, is to change these beliefs in favour of the LS we want the learners to use. Moreover, some studies have demonstrated that training in the use of LS was more effective and lasting when students were informed about the significance of the strategies, and they were given reasons for their potential effectiveness (Brown et al 1982).

Secondly, within the range of the LS of "good" TL learners there are, at least, some strategies which may be effective for some learners, but they are not necessarily so for others. The studies have demonstrated that the choice of a learning strategy may be subject to many factors such as

the level of achievement within the same range of successful learners. The reader is referred to the empirical evidence in the discussion of the relevant research in the next chapter.

Finally, the involvement of the feature "+ being potentially capable of distinguishing between "good" and "poor" learners" marks a significant shift in the research on LS in that it contributes to our understanding of the term LS itself. LS seems to have a wider sense now in that it includes social as well as psychological factors. Motivation, for example, can easily be seen as part and parcel of some strategies such as "creating opportunity for practice" (Rubin's (1981) taxonomy) and "willingness to practice" (Stern's (1975) list). O'Malley et al. (1985), and Fillmore (1976, cited in O'Malley et al, op. cit) included social strategies in their lists. For example, O'Malley et al. (ibid.) differentiated between metacognitive, cognitive, and social mediating LS. The former two correspond to my classes of strategies, and specific strategies respectively. The "social mediating" LS include micro-strategies such as cooperation among learners, a sign which can be taken as indicating that the learners are "keen" and "interested", which in its turn can be interpreted as signalling high motivation. This, of course cannot be said about processes such overgeneralization and simplification.

By considering these new findings we can improve on our provisional definition of LS, given at the end the previous

section, by incorporating the feature that LS are not inherently good or bad. The effectiveness of a particular strategy is related to a number of learner factors, such as the level of achievement (see chapter 3 for the empirical evidence for this issue).

2. 1. 5. SOME SUGGESTIONS FOR AN APPROACH TO RESEARCH LS

On the basis of the discussion of all aspects of LS, above, I will propose a theoretical framework for researching this important aspect of the TL learning mechanism. This approach is concerned with two major aspects: subject sampling and variable sampling. The approach adopted is based on the assumption that LS can be used to differentiate between "good" and "poor" learners, and that LS are mainly problem-based, and hence, they can be brought to the consciousness of the learner. We have already marshalled some evidence supporting those assumptions, and further reference to them will be made in the discussion of the empirical research in chapter 3.

As to the problem of subject sampling, the terms "good" and "poor" have been used on the basis of the level of proficiency. The term "level of proficiency" is used in some studies on a more or less criterion-referenced basis. That is, a person can be considered as belonging to this or that group depending on his/her distance from the adult native speaker's competence. This can be seen from the description by such researchers of the criteria on which they chose these

subjects, and hence, the descriptions given to these subjects: elementary proficiency, working knowledge, and advanced (native-like) knowledge (Naiman et al. 1978); beginning level (students who have little or no proficiency), intermediate level (limited proficiency) (O'Malley et al. 1985). For Stern the good learner is the one who approaches native proficiency (Stern 1975:305). In other words "good learner" is defined in this way to mean "proficient" without taking into account the time taken to reach that level of proficiency. A "good learner", in these studies is the one "who is good at English" and not necessarily "one who is good at learning". This approach is far from representing reality. We have discussed the evidence given in research that there are many factors which affect LS choice. One of the points that has received short shrift is that it is quite obvious, even with beginners, who may have very little achievement on a criterion-referenced basis, that some of them are better than others, and so, they can be regarded as "good" learners considering their achievement relative to their peers and relative to time learning the language. In simple terms, the time factor being equal, some learners achieve higher in English than others. In other words, we also need to consider the level of "proficiency" relative to peers - defined in this context in terms of the same number of years learning the same language, i.e. on a norm-reference basis we need to know what these "good" learners do and if systematic differences are revealed, then it will be quite legitimate to propose that we can teach their "poor" peers

the same tricks (strategies). The term "achievement" will be used in this study to avoid the misleading nature of the term "proficiency". The term "good" learner, in this study, signifies remarkably high achievement relative to other learners, who will be referred to as "underachieving" or "poor" learners, the time factor being the same for all of them. In this sense the terms "good" and "poor" refer to learning.

However, such instruction cannot operate with a total neglect of what strategies the "poor" learners employ. To help such learners achieve success we should build our instruction in LS on the LS they use. There is empirical as well as anecdotal evidence to support this. Wenden (1986) has noticed that her students resented the use of particular strategies she wanted them to use because they ran against their metacognitions about TL learning. Knowles (1970:45) suggests that an unfreezing experience built in the early phase of teaching help the learners "look at themselves more objectively and free their mind from preconceptions" and hence, makes them receptive to suggestions to use particular LS. The studies demonstrated that training in the use of LS was more enduring when students were informed about the significance of the LS than simply giving reason for their potential effectiveness (Brown et al. 1982). Therefore, there is a need to study LS by considering the different levels of achievement of good learners (on a criterion-referenced basis) and also their underachieving (on a norm-referenced basis) peers. This study is a contribution along these

lines. That is, the achievement measure used in this study is norm-referenced.

Concerning the problem of variable sampling, it appears from the foregoing that there is an excessive degree of confusion concerning the definition of the term LS. One of the serious problems is the distinction between what is referred to in this study as strategies (Stern's techniques) and what we referred to as classes of strategies (Stern's strategies). The question of which of these should assume a major role in research is important not only from TL learning research point of view but also from the pedagogical point of view. It has been made clear by researchers, e.g. Rubin (1975), Stern (1975), Naiman et al. (1979), O'Malley et al (1985), that once the LS of "good" learners have been identified, they can then be taught to "poor" learners. The question which poses itself is whether we should teach micro or macro-strategies. If we choose to teach classes of strategies we would need to devise specific strategies. We will return to our example of note-taking to illustrate this point. If we choose to teach the micro-strategies used by "good" learners in (say) note-taking, then we would apply, directly, the findings of our research. On the other hand, if the research mainly concentrated on identifying classes of strategies, then we would end up with only categories (macro-strategies) such as "note-taking" on the list. So if we wanted to apply such research in the classroom we would need to devise specific strategies for note-taking to teach to the

"poor" learners. Hence, it seems it is more useful to examine specific strategies.

From a practical point of view, if our basic aim is to find the LS that are characteristic of "good" TL learners we need to resolve the problem of whether the distinction between "good" and "bad" learners is a matter of strategies and/or techniques, in Stern's sense. The question which we must find an answer to is whether a LS is best thought of as the "instance" we happened to find in the verbatim reports and the observational data, or is it the general term (the category) that encompasses a number of instances? Instances are what Stern (1975) referred to as techniques (see section 2.1.3. for the terminological and definitional differences among writers concerning this issue). Our concern in this section is with the question of which is more useful (from a practical and research point of view) to examine, micro- or macro-strategies. To illustrate this problem we might say a learner uses note-taking on the basis that he/she has a vocabulary book in which he/she writes words and their L1 equivalents. The same could be said of a learner who also keeps a vocabulary book, but he/she writes the words and their English synonyms and paraphrases. Here, we have two instances (i.e. ways of using the strategy of note-taking). In most studies these instances (exemplars) were only used to establish a broad classification of the strategies such as note-taking, practice, and when the process of classification finished, these instances were lumped together. We refer, in this study to the instances as

specific or micro-strategies, whereas the terms that tie up a number of instances are classes of strategies or macro-strategies. Hence a distinction is made in this study between the approach that deals with the differences between "good" learners and "poor" ones in terms of classes of strategies and the approach that uses specific strategies. We will refer to the former as "holistic" and the latter as "atomistic". Most researchers maintain the distinction between the two and give each one its due importance on a theoretical basis. Stern (1975) distinguished, as we mentioned above, between strategy, as referring to general tendencies or overall behaviour and specific techniques (= exemplars, in the sense described above). However, she used the "holistic" approach in her actual description. Naiman et al. (1978), on the other hand, used both types in the actual analysis. They claimed that classes of strategies, such as affective task approach, and monitoring, "appear to be essential to successful language acquisition... [and that specific strategies, such as learning words in context]... are not necessarily applicable to all successful language learners" (Naiman et al. 1978:13). The general conclusion that these studies reached is that the classes of strategies were constant for "good" learners, whereas the specific techniques may not be so (Naiman et al. 1978; Wesche 1979; Seliger 1983).

However, metacognitive research focused on either highly successful adult students (Wesche 1979:415), or "good" TL

learners in general. This is certainly useful, but leaves some questions unanswered. For instance, to what extent do "good" learners differ in both the classes of strategies and the specific strategies they employ? The general framework for analysis postulated above needs to be applied to a wide range of TL learners, including both "good" and "bad", so that systematic and specific comparisons and contrasts can be made. In this context, the present study included a wide range of both of these two types of learners. Some factors, such as medium of instruction, which may have an effect on the choice of LS were included.

The approach chosen in this study is what is referred to above as the "atomistic" approach. That is, the subjects of the study were described in terms of the micro-strategies they used. The advantage of this approach is that it displays the whole range of strategies to the reader instead of disguising them under big cover terms. Using only classes of strategies in the analysis presupposes that the "good" and "poor" learners do not differ in particular strategies. This hypothesis needs to be tested before it is taken for granted. Another disadvantage of using cover terms is that there is little consensus in many cases as to which class of strategy a particular strategy belongs to. For example, Porte (1986) classified the strategy of "making use of new words when speaking" as belonging to "memorization", (Porte 1986:67) whereas Rubin considered it as a "practice" strategy, (see chapter 3 for more details). However, this is not to say that the use of categories is totally useless. I believe

they are useful in that they provide easy reference to a group of strategies, provided that the analysis had been done on the specific strategies and that the readers have access to these strategies. In this way the use of cover terms will be relegated to the position of easification of reference.

This approach is only tentative at this stage, although it can easily be argued for theoretically, as we discussed above. We hope the results of this study will give some evidence to support it. We will also deal with it in more detail in discussing the relevant empirical research.

To sum up, a distinction between LS, CS and learning process must be maintained. The term learning "process" refers to the ongoing hypotheses the learner makes in order to internalize the TL system, whereas strategy refers to the means and ways the learner adopts more or less consciously to help and easify the process. Thus the definition of LS adopted in this study is similar to Stern's definition of technique. Part of the controversy about the nature of LS is justified by the epistemological interests of the researchers. However, this controversy is partly unjustified in that excessive abstractions were involved. The whole TL learning task is a problem, which the "good" language learner tackles in a different manner from the "poor" one. LS are not necessarily conscious, but they can be brought into consciousness. Finally, a revision of the term "good"

learner as well as variable sampling is necessary. We need to adopt a more detailed approach in order to account adequately for the differences between "good" learners and "poor" ones, instead of lumping instances into dustbins labelled with terms such as note-taking and practice.

2. 2. VOCABULARY COMPETENCE

It is commonly believed, especially among TL teachers, that knowing a word involves knowing its spelling and at least one meaning ("conceptual meaning" in Leech's (1974) terms). One can also argue that minimum knowledge of a word is knowing that a particular sound/spelling exists as a word in the language, without knowing its meaning, i.e. there are degrees of learning. No denying that knowing the conceptual meaning of a lexical item is a *conditio sine qua non* for knowing it, but there are other aspects which are also important, especially in the actual production of vocabulary items (i.e. in writing or speaking). This section deals with what is involved in knowing a vocabulary item, as this study involves vocabulary knowledge in a major way.

2. 2.0. WHAT DOES IT MEAN TO KNOW A WORD?

The answer to this question is not as simple as it seems. The word "word" itself has been the object of controversy. However, this is not the place to discuss it. "Word" in this thesis refers to the lexemes that are listed as words in dictionaries. As far as the TL learner is concerned, knowing a word can be regarded as involving two prime questions: one is purely linguistic; whereas the other is psycholinguistic. As to the former, knowing a word is knowing the lexical information (aspects) that is related to it, whereas the latter involves the question of whether the information, about a particular lexical item, is available (easily accessible) for both comprehension and production, or whether

they are only available for comprehension, i.e. whether the learner has developed the ability to use the word in active production. In other words, knowledge of lexis involves linguistic information - in memory (mental lexicon) - and cognitive control - access to memory - as generally seems to be accepted (Bialystok 1981, 1984; Bialystok and Sharwood Smith 1985; Palmberg 1987; Levenston 1979;). In the next two sections we will deal with each one of these in more detail.

2. 2. 1. COGNITIVE CONTROL: RECEPTIVE V. PRODUCTIVE LEXICAL KNOWLEDGE.

Knowing a word "is a matter of degree rather than a question of either/or" (Faerch, Haastrup and Phillipson 1984:99). A learner may know a word in the sense of recognizing it and the aspects related to it, but the word itself may not be available for him/her for active productive use. Hence, vocabulary knowledge and passive vocabulary knowledge. This issue will be dealt with first because it recurs throughout the discussion of the lexical aspects of interest in this study.

The terms "receptive" and "productive" lexical knowledge, together with "passive" and "active" vocabulary referring to receptive and productive knowledge respectively, have been quite often used without recognizing that there are different approaches to distinguish between them. At least two main approaches can be identified in the literature: one uses "use" as a criterion, while the other uses "degree of mastery" (as a criterion). The next section deals with each

of these two approaches in more detail.

2.2.1.1. DEGREE OF MASTERY AS A CRITERION FOR DISTINCTION.

One way of handling the distinction between receptive and productive lexical knowledge is to use degree of mastery, or "competence", as suggested by Scholfield (1986, personal communication) as a criterion. This approach is adopted by writers in L1 acquisition as well as in TL learning.

First, in TL learning, Nation (1983) distinguishes between receptive and productive knowledge on the basis that receptive knowledge involves the ability of how to receive a lexical item, as opposed to productive knowledge which involves the ability to use the lexical item him/herself, for productive purposes. Receptive knowledge of a particular word "involves being able to recognize it when it is heard (what does it sound like?) or when it is seen (what does it look like?)....."(Nation 1983:21). This contrasts with the productive knowledge which involves the receptive knowledge, but more importantly, the ability to use words (i.e. how to pronounce them, how to spell them, etc.). To make this distinction clear, I repeat below part of the table given by Nation as an illustration of what type of ability is involved in each type of information. It seems that using the degree of mastery as a criterion means that the cognitive control is a matter of linguistic knowledge, i.e. being able to produce a particular aspect requires some linguistic knowledge (different from the knowledge one requires for the

recognition of the same aspect).

Form	Spoken form	R What does the word sound like? P How is the word pronounced?
	Written form	R What does the word look like? P How is the word written and spelt
Grammatical Position patterns		R In what patterns does the word occur P In what patterns must we use the word?

R = Receptive
P = Productive

(Nation 1983:22)

Secondly, this criterion has much been used in L1 acquisition research. Clark, Hutcheston and Van Buren said,

"The child can process adequately utterances by other people which are more complex than he is capable of producing."

(Clark et al 1974:39)

In other words, the child can perform better in his role as interpreter of speech than by his performance as a speaker. An example from Brown's (1973) study will make this clear. Adam - one of the subjects of Brown's longitudinal study - at some stage of acquiring his L1, responded appropriately to

the locatives "up" and "down", but only "up" appeared in his productions. Put another way, he developed the comprehension ability for both "up" and "down"; but, at the same time, he managed to develop a productive ability for "up" only. Comprehension ability, in this way, is given priority in time in relation to productive ability. But, there are some researchers who disagree with this. Clark et al (ibid:44) argued that "in interpreting what is said to him the child has the advantage that adults will usually not use a linguistic message in situations where it is inappropriate". Even when a linguistic message is used there are all sorts of aids: non verbal cues, paralinguistic cues, etc. In other words redundancy in situation helps the child understand the message. However, this is not the place to go into the detail of the problem as it has no obvious implication for TL learning.

2.2.1.2. "USE" AS A CRITERION FOR DISTINCTION

The other approach, employing "use" (performance) as a criterion, is represented by Corson (1983), but he is talking about native speakers. According to him passive lexical knowledge includes (1) words which are partly known and cannot be actively used, and (2) words which are known to the speaker but are not needed in every communication (unmotivated), while the active vocabulary is the words that the speaker feels free to use in everyday communication. Corson 's approach seems to include both degree of mastery, as can be seen in the category of words which are partly

known (1 above), and use (performance) as can be seen in the latter group (2 above).

It is clear that there are many differences between the first and the second approach. First, Nation used the terms receptive and productive because his concern is pedagogical, in that the learner, for example, should not only be trained to manipulate his articulatory apparatus to pronounce words, but also he/she should receive ear training so that he/she could recognize and differentiate between different words produced by other people. Per contra, Corson used the terms passive and active vocabulary, partly to differentiate between words that a speaker is likely to produce in everyday communication and those that he/she is not likely to use. In Corson's view it is the extralinguistic context (sociolinguistic and stylistic considerations such as formal/informal style) that controls the individual's lexical selection such that a person "consistently relegates certain words, which can be available for active use, to a passive vocabulary, and hence they become unmotivated words" (ibid:5). This process of alternation between the two types of vocabulary is not possible as far as Nation's approach is concerned. For example, the ability to pronounce a word cannot usually be "relegated" to an ability to recognize what the word sounds like, only in the sense that one "relegates" his production ability to a receptive one when he/she is at the receiving end (listening or reading).

The two approaches outlined above are not necessarily

contradictory. The difference between them can be accounted for by the epistemological interests of the researchers. Using degree of mastery as a criterion is especially necessary for TL learners as well as for children acquiring their L1 in that by testing both passive and active knowledge we will be able to judge what features are only within the grasp of these learners and what features are within the grasp and can also be correctly produced by them. The process of testing should be an ongoing process used by the teacher to help him proceed with teaching in an effective way. In this study, we tested these types of knowledge on the basis of the mastery criterion.

The "use" criterion is best limited to adult native speakers of a language. It is useful for the TL teacher and learners only indirectly in relation to vocabulary selection in that it reveals which words frequently occur in general (frequency), and which words occur more frequently in which situations (availability). A lot of research has been done on this phenomenon, which resulted in frequency counts such as West's frequency count, Francais Fondamental Project, etc. Such information is useful for the preparation of vocabulary materials for learners.

2. 2. 2. LEXICAL LINGUISTIC KNOWLEDGE

In the previous section we dealt with the cognitive control and degree of mastery of lexical knowledge by the learner. As to the types of linguistic information itself, a

lexical item is viewed as a complex of morphological, syntactic, and semantic information. The basic aspects, based on these three levels of representation, can be listed as follows:

1. Meaning:

- (1) conceptual.
- (2) connotative.
- (3) collocative (or syntagmatic aspects of meaning).

2. Lexical-grammatical aspects:

- (1) morphemic constituency i.e. word-formation.
- (2) inflectional form.
- (3) syntactic frame (Scholfield's 1981 terms), lexical-related grammatical information.

3. Formal properties:

- (1) spelling.
- (2) pronunciation.

4. Stylistic properties, i.e. formal, informal styles.

This reflects the recognition how the lexicon (= dictionary) of a language consists of different aspects. These aspects are variously categorized by different scholars; the semantic, phonological, and syntactic (category status and subcategorization, to use transformational syntax terminology) information (Fillmore 1971; Lyons 1977; Radford 1981).

The practical usefulness of these categories has been shown both in the literature on language teaching as well as in research on vocabulary. As to the former, since Corder's article (1969) on the teaching of meaning, which was in part an attempt to explore the implication of Lyons' work in structural semantics for vocabulary teaching, a number of writers have used this framework for preparing exercises, Blum (1981) utilized synonyms for this purpose. As to the other aspects, the literature has many suggested exercises on all of them; to name but a few, Brown (1974), Terence and Natalicio (1982), and Stieglitz (1983).

With regard to research on vocabulary learning, these different aspects provided a scheme for classifying errors in some error analysis projects (see the scheme proposed by Scholfield 1981, and its revised version by Scholfield, 1987a). Describing subtypes of lexical errors was used to advantage in some MA projects (Acebedo 1984). This issue will be dealt with in detail in the review of research in chapter 3. By way of summary, I can state that knowing a word fully, from the point of view of the lexical information one needs to learn, means knowing all the above aspects.

Having said that, in this thesis we are only concerned with the conceptual and collocative meanings, morphemic constituency and grammatical class, and syntactic frame. This does not mean that the other aspects are not equally important; but the aims of the study (see chapter 4) necessitate that norm-referenced tests should be used

because we are interested in the differences between the learners. This does not mean that the other aspects are so easy, or so difficult, that they do not distinguish between the Sudanese learners of English. In fact, in my experience, it seems that only a few errors occur with respect to stylistic overtones. This could be explained by the fact that these aspects are kept to a minimum, in general. It is important to stress that it is not my belief that one learns what, and only what one is taught. What I am referring to by teaching in this context is the input (teaching materials) that may be available for the learners. The teaching materials used contain semantic lexical-grammatical and collocational information. The main aim is to help learners read and write. Hence, taking the official position, it is the aspects that can affect writing and can not be avoided no matter what the modality or situation is, that are of interest in the Sudanese context. These aspects are: meaning in its conceptual and collocative sense, the lexical-related grammatical information. They can hardly be controlled in the sense that the others, such as stylistic overtones, can be, as far as designing teaching materials is concerned. Spelling may distinguish between "good" and "underachieving" learners, but it is very unlikely that it can distinguish between subtypes of "good" or "poor" learners, and it is for this reason that it was omitted from the tests.

For the discussion of connotation the reader is referred to Leech (1974), Palmer (1976), and Lyons (1977). In the

next sections we will explain what the aspects of relevance in this study mean, and how they were tested to collect some of the data. The examples that will be given were extracted from these tests and from relevant research.

2. 2. 2. 1. MEANING

To explain the areas of interest in this study, as far as meaning is concerned, I will utilize what James described as "interlingual equations" (James 1983:95), which simply means establishing which lexical items(s) in one language correspond to which one(s) in another. In this way the areas of incongruence between the two languages will be revealed.

Unlike the other aspects of language lexis, meaning is the only area where enormous quantities of evidence of L1 influence have been reported, or, at least, admitted by many scholars as L1 influence, in TL learning (Kellerman 1984:115). First, let us explain what theoretical linguists mean by the word "meaning". The areas of interest which were tested in this study will be discussed at the end of this section.

To begin with, the word meaning has many popular uses. There are also some other terms referring to these uses. It is beyond the scope of the present study to go into these theoretical issues. In the interest of clarity and consistency the terminology which will be used here, is that of Leech (1974) unless otherwise stated. Within the fields of semantics and lexicology meaning has not been given one

definition. Some people used it to mean "all that is communicated by language" (ibid). Firth (1957) refers to meaning "as a complex of contextual relations, and phonetics, grammar, lexicology, and semantics.... [and each one of these handles].. its own components of the complex in its appropriate context" (p.19). In other words all the aspects we outlined above are "levels" of meaning, to use Firth's terms.

Different writers used different terms to refer to meaning. For example, Lyons(1977) used the term "sense", whereas Leech (1974) used "conceptual meaning", both referring to cognitive meaning. Lyons' "sense" is different from Firth's "meaning" in that the former refers to only one level of the meaning of the latter. Anthony (1975) defined the term meaning as follows,

"It is a slice of the non-language world used as a reference and connected to a lexical world. When I say that the word "pitch" means a number of different things; the statement is a shorthand for saying that the word "pitch" is bonded to a group of referents."

Anthony ties meaning with the real world. Conceptual meaning, on the other hand, in the way established by Leech (op. cit) is related to cognition rather than necessarily referring to the real world. More precisely it refers to the contrastive defining features that distinguish any concept from the rest of the concepts in a language. For example, the word woman could be defined as [+ human, - male, +

adult], as distinct from boy which could be defined [+ human, + male, - adult]. In other words, these features give the criteria for defining lexical items. This process of analysing word-meanings could be seen as a process of breaking down the conceptual meaning (sense in Lyons' terms) of a lexical item into its minimal componential features. The procedure resembles the process of breaking sounds, or phonemes into their distinctive features, such as breaking [p] into [+ consonant, - voiced, bilabial....]etc. In so far as componential analysis is associated with conceptualism, the meaning-components may be thought of as atomic, and the conceptual meanings of particular lexemes as molecular concepts, to use Lyons' (1977:317) analogy.

Central to the procedure of breaking down the features of lexical items, apart from analysing the meaning of individual lexemes, is to identify the different meaning-relations that may exist between these lexemes in a language. This analysis resulted in the identification of some paradigmatic meaning relations such as synonymy (= sameness of meaning), incompatibility (if one lexeme contains a feature contrasting with a feature in the other), hyponymy (if one componential formula contains all the features present in the other formula). Thus woman is a hyponym to "grown-up", the two features making up the definition of "grown-up" as [+ human, and + adult] are both present in the definition of woman, as [+ human, + adult, and - male]. Polysemy is the same form having more than one meaning.

Of these meaning-relations only synonymy and polysemy were included in the tests for probing vocabulary knowledge. The problems will be discussed from a theoretical point of view in the final part of this section. Now we will explain in brief what synonymy and polysemy mean in structural semantics.

It should be pointed out that, from a theoretical point of view it is not always easy to identify meaning-relations between words. For example, incompatibility encompasses many phenomena such as the relationships that exist between words like man, boy, and girl.

As to synonymy, the point to be stressed is that there are no real synonyms. In other words "no two words have the same meaning" (Palmer 1976:60). This is important from the TL learning point of view in that what will be interesting is whether TL learners maintain the differences that do exist between synonyms. Palmer mentioned five ways in which synonyms can be seen to differ. First, some sets of synonyms belong to different dialects of the language. The work of dialectologists (especially on geographical dialects) is full of such cases, e.g. fall is used in the United States, whereas in Britain autumn is used.

Secondly, there are synonyms which differ in the style or register in which they can be used. Palmer (1976) mentions the example that a nasty smell might be, in the appropriate setting, an obnoxious effluvia or a 'orrible stink, the

former being, of course "posh", and the latter colloquial.

Thirdly, some synonyms differ in their collocative meanings, i.e. some words are collocationally restricted. They occur only with other words. The word rancid occurs with bacon or butter, and addled with eggs or brains (ibid.). This does not occur because of the "criterial" features (conceptual meaning) of the word rancid, but because of their syntagmatic idiosyncrasies; some words do not collocate freely with every word.

There is also what Palmer (1976) refers to as loose synonymy. This is the kind of synonymy that is much exploited by the lexicographer. For example, mature = adult, ripe, perfect, due; govern = direct, control, determine.

The most significant point to be made here, is that the native monolingual speaker of a language might be tempted to think that the meanings of lexemes (conceptual meaning) are independent of the language that he/she happens to speak and that translation from one language to another is simply a matter of finding the lexemes which have the same meaning in the other language. Knowledge of the meaning-relations that exist between the lexemes of a language allows us to draw the line in comparing and contrasting lexical items in two different languages.

As the reader will have noticed, the discussion of synonyms above leads us to say that one of the points of interest in this study is the learners' ability to

differentiate between synonyms rather than the learners' ability to spot the common attributes. This is true because the general observation is that the words under consideration have generally been regarded as complete synonyms by Sudanese learners of English, that is, the learners know that the words are related but they do not know they also differ from each other. The reason for the inclusion of such a phenomenon in this study is that the learner treats such words as complete synonyms because they have one equivalent in Sudanese spoken Arabic - henceforth SSA. This is not a case of L1 transfer in the traditional sense. It is more likely that this phenomenon will differentiate between learners. From a strategy perspective, I hypothesize that the learners who use L1 in their learning, such as using bilingual dictionary only, will translate such words into one word in their L1 and, consequently, these words will be treated as complete synonyms.

1. A simple lexical item in L1 = more than one simple lexical item in TL (the lexical items being synonymous)
- e.g. yasu:f = look/see/watch.

What this equation says is that there are some L1 words each of which has more than one equivalent in English and that these equivalents of each word are synonyms. However, if it turns out that the learners treated such words (in each subset) as complete synonyms one may argue that the cause may be that these words are actually near synonyms in English.

To assess the hypothesis more adequately another set of words was added to the test. This set represents the interlingual relation that can be represented in the following equation.

2. A simple lexical item in L1 = more than one simple /complex lexical items in L (the equivalent TL are not necessarily synonyms

sa?a = watch/clock

The TL words under investigation here are not synonyms but each two or more TL words, as in (1), have one equivalent in SSA. So, if the learner treats each subset of these words as complete synonyms, it is more likely that our hypothesis above is valid.

The other important paradigmatic relationship is that of polysemy. For example, part of the definition in the Longman Dictionary of Contemporary English - henceforth LDOCE - of the word

rider is as follows,

- 1.a person who rides or is riding especially a horse.
- 2.a statement, opinion, or piece of advice added especially to an official declaration or judgement...

One of the theoretical problems that faces lexicographers is whether a word like rider is one form that has several meanings (polysemous), or whether that there are several words, having the same form (homonymous). This is not the place to go into the discussion of such issues. The reader is especially referred to Lyons (1977:550-569), and Palmer (1976:67-71). From the TL learner's perspective the load of

learning is the same no matter whether it is of polysemy or homonymy. It simply involves assigning different meanings to a single form. The problems in learning English polysemous words for SSA learners can be shown in the following two interlingual equations:

- | | |
|--|---|
| <p>3. A simple lexical item in TL
e.g. uncle</p> | <p>= more than one simple
/complex item in L1
= Khal/?am</p> |
| <p>4. A polysemous TL word

e.g. right</p> | <p>= more than one word
in L1, each word
being the equivalent
of each sense.
= sahi:h (=correct)/jami:n
(=the opposite of left)</p> |

To reiterate, vocabulary learning involves mapping the L1 and TL conceptual meanings. Thus, examples (3-4) say that the learner has one TL word which he/she has to treat as polysemous (having the senses of both the L1 equivalents). The word uncle is a real English polysemic word; but it is used here in only one sense as defined by LDOCE as "the brother of one's father or mother". In SSA there is a separate word for the brother of a father and another for the mother's brother. (4) contains a real polysemic word for each sense of which there are a number of L1 equivalents, each of which correspond to one of the senses ([sahi:h] = correct, and [jami:n] = the opposite of left) of the word in question.

2. 2. 2. 2. Syntagmatic aspects of meaning: collocative meaning

In the previous section we have dealt with the conceptual meaning and the paradigmatic relations that exist between the lexemes in a language. Here we will deal with the syntagmatic aspects. By syntagmatic aspects, we refer to the meaning-relations holding between pairs of syntagmatically connected lexemes. In simple terms, this phenomenon refers to the lexical (i.e. not syntactic) environment a word can occur in, on the linear (syntagmatic) level. The words with which a word can co-occur are its collocates, hence, the term collocation. As usually explained, the term collocation can be broken into col- (from con- = together, with), loc-(=to place or put), -ate (a verb suffix) and -ion (a noun suffix). To illustrate this let us consider the examples:

- 1.*The water is in love with my friend
- 2.*Happiness is green.
- 3.*The girl assembled.

As it can be seen (if one is not being too imaginative!), the sentences above are anomalous, irrespective of the fact that their syntactic structure is intact and proper. They are erroneous because they infringe the proper collocations of some words. For example, water cannot occur in an environment such as "being in love". The word green as a qualifier requires the feature [+ physical object] in connection with the word which it qualifies.

Two types of the syntagmatic relations of words have been discussed in the relevant research: collocative meaning (Palmer 1976) - the general expectancies of words in terms of what they usually allow in the environment in which they occur; and selection restrictions - what the word can allow in its environment as far as the componential features of the word are concerned. These two types will be discussed in more detail below. However, before we do that we will discuss the whole phenomenon in general.

Collocation is treated here as part of the meaning of a lexical item. This view is wide spread among many semanticists i.e. Leech's "collocative meaning" and selection restrictions. The other researchers who dealt with collocation as part of the meaning of the lexical items include Katz and Postal (1964), Weinreich (1972), Fillmore (1968), McCawley (1968). However, there is no consensus among these linguists concerning this matter. Although this is not the place to go into the detail of this controversy, we will refer to these differences during the course of the discussion that follows. It should be emphasized that we intend to give no more than a theoretical background sketch to the concepts which are used in this study.

Firth defined collocation as follows:

"Collocations of a given word are the statements of the habitual or customary places of that word in collocational order, but not in any other contextual order and emphatically not in a

grammatical order. The collocation of a word or "a piece" is not to be regarded as mere juxtaposition, it is an order of mutual expectancy."

(Firth, 1957:12).

A similar view was expressed by Richards in that knowledge of collocation, according to him, "means that on encountering" a word such as fruit "we can expect the words, ripe, green..." (Richards 1976:79). Halliday's (1966) approach like Richards, depends on statistical probability. This approach suffers from many theoretical as well as methodological drawbacks. Sinclair (1966) discussed these drawbacks and mentioned that one of the problems of collecting corpora, as suggested by Halliday, is the problem of selecting texts. This is collocation in the restricted sense (common expectancies).

However, Firth, unlike Richards, considers collocation as a level of meaning. One of the meanings of ass is its collocation with silly (when the latter immediately precedes the former) as in You silly ass. By enumerating and setting together words that can go together we establish "colligations", for which Halliday (1966:14) used the term "set" - groups of words, sentences, or similar categories.

Halliday extended Firth's notion of collocational level, but dealt with the whole phenomenon of collocation within grammar (in the Chomskyan sense). He defined collocation as "the syntactic association of lexical items" (Halliday

1966:275-76). He proposed that to study collocation, a large corpus on collocation and "set" should be collected.

To illustrate this type consider the erroneous collocation below:

4. Other *classes of books.
5. Soon we had to *do a new stop.

(From Acebedo 1984)

In contrast to common expectations there are also selection restrictions, as we mentioned above. Lyons (1977:421) noticed that in connection with the lexeme drink, if a native speaker of English came across the sentence he drank x, he or she would definitely (unless somebody is making a joke of a foreign learner of English!) suppose that this x must have the feature [+ liquid] because this is what the lexeme drink selects; not simply what it prefers.

McCawley (1968) gave an interesting, similar discussion of some Japanese synonyms which occur in different grammatical patterns. His main thesis is that co-occurrence can be predicted from meaning. Starting from this premise he analysed the words that are represented in (6a - c).

- 6.a. Kaburu = put on (said of a hat).
- b. Kameru = put on (said of gloves).
- c. Naku = put on (said of footwear).

According to McCawley, stating that these words have the same meaning but are different in their selection

restrictions, is wrong; i.e. selection restrictions are part of meaning. In other words, these are not synonyms because the verbs in fact, refer to the actions which are involved in putting on the article of clothing involved, as is demonstrated by putting on an article of clothing in an unnatural manner (e.g. put on a pair of socks on the head). In other words, while the three words above share the basic conceptual components of [+ dressing], they differ in their selectional meaning.

Having given a brief review of what linguists mean by the term "collocations" and "selectional restrictions" I will now turn to the question of difficulty in learning TL collocations. Selectional restrictions seems an unlikely candidate in this connection (Wilkins, 1972: 129). The basic knowledge of the conceptual meaning allows one to make acceptable collocations (in the loose sense) as far as selectional restrictions go. Drawing from the general results and findings of some studies, and my own experience, very few errors can occur with this type of lexical syntagmatic relations. For example, in Acebedo's study, 19 errors in collocation were identified, none of which flouts the "general maxims" of semantic compatibility, i.e. errors in selection restrictions of words. However, there are some cases which may cause problems. For instance, Arabs "drink" cigarettes whereas British people "smoke" them and Chinese "eat" them. The number of such cases is so small that the possibility of collocation in its broad meaning causing some

problems to SSA is negligible.

As to collocation in its "common expectancies" sense (restricted sense), the bulk of errors in TL vocabulary research presented is of this type. This is not surprising since the collocability of some words with others is not a matter of semantic compatibility; but a matter of being habitually associated, often for cultural, pragmatic reasons. It is this type which is likely to cause problems to TL learners because the collocations are idiosyncratic. Apart from these intralingual complexities, (idiosyncratic distribution of lexical items in the TL), interlingual differences may add to the problem. For example, the words tall and long translate into one word in SSA, and this word occurs in all the environments that the English tall and long can occur. The test on collocation used for this study includes both intralingual and interlingual complexities. Both the passive and active knowledge were tested.

2. 2. 2. 3 MORPHEMIC CONSTITUENCY (DERIVATION AND GRAMMATICAL CLASS)

Dictionaries in general describe words in terms of, inter alia, their form class, i.e. whether the word is verb, noun, etc. Derivations and form class are fundamental features of a word for the TL learner to learn. On the theoretical basis, different criteria have been proposed to define the basic grammatical categories such as morphological and syntactic criteria. The syntactic criterion seems to be generally

agreed upon as the most suitable one. It says that a noun is defined by where it occurs in sentence structure relative to other categories such as articles, adjectives, verbs etc. The morphological criterion only secondarily defines grammatical categories. For example, the form-class Noun is defined as "having plural and possessive endings" (Lyons 1977:426). Although this definition applies to the majority of nouns in English, there are many exceptions, e.g. mass nouns, words such sheep, as a plural, is normally regarded as having a platmanteau (a zero plural allomorph), which does not show itself by an "ending". Another possibility, also with many problems, is the derivational affixes they have, e.g. -ility generally occurs with nouns; -ible or -able occurs with adjectives. But the picture is not that simple since there are many words that are not morphologically marked for form class, as it is the case with the majority of adjectives. The other problem is that there are many words which can function in more than one grammatical class, e.g. cook: verb/noun, run: verb/noun.

Apart from such problems which face TL learners of English, they also have to learn many rules for the formation of words, which are by no means highly productive. Word-formation falls within the area of lexical morphology. We will only be concerned with this part of morphology. The native speaker of a language possesses knowledge about the composition and the morphemic structure of the lexis of that language. Part of this knowledge is word-formation. In English, these processes are basically of three types;

compounding, conversion, and derivation. Compound lexemes were not included in this study because some of the subjects, those at the intermediate schools, judging by the textbooks they used, had been exposed to fewer compound words than would have been needed for testing to collect data for this study. We will now try to explain briefly the processes of affixation and conversion.

A simple example to illustrate the process of word-formation by affixation is the derivation of the word friendly from the noun friend by adding the suffix -ly. Conversion, on the other hand, involves assigning the base (a lexical item) to a different word class without changing its morphological form (see Quirk, Greenbaum, Leech and Svartvik 1985).

Some writers, working within the framework of generative grammar, propose that just as the simplest goal of syntax is the "enumeration of the class of possible sentences," the simplest task of morphology, is "the enumeration of the class of possible words of a language" (Aronoff 1976:2)

However, as pointed out by many scholars the process of word formation is of limited productivity in the sense that not all the words that result from the application of a rule are acceptable and hence, there is a distinction between the class of "possible" and "potential" words, on the one hand, and "actual" words on the other (Aronoff [loc. cit]; Quirk et al 1985, Lyons 1977). For example, the adjectives in English

whose stems end with the suffix -able or -ible seem to follow a pattern. Many of these though, can be accounted for by a synchronically productive process of verbal adjectivalization.

Vtr + able -> A
Vtr = transitive verb
A = adjective

readable, drinkable, fetchable, gettable,
TL learners' productions also give many examples of overgeneralization of some rules of word-formation.

e.g. *amosity, *cooker (for the person who cooks),

Morphological productivity seems to be, at least, quantitatively different from the syntactic productivity, (Bauer 1983:74). A very influential article which claims that these types of productivity are different is Chomsky's (1970) account of nominalization. The claim is that nominalization cannot be treated transformationally, i.e. cannot be treated as being generated productively by fixed rules. This lexicalist approach contrasts with the transformationalist position taken by Lakoff (1970). The lexicalist approach says that nominals are listed independently in the lexicon, i.e. fully lexicalized or simple lexemes. The transformationalist approach claimed that nominals are listed in the lexicon, but all can be generated by transformational rules (see Bauer 1983: 75 ff, for a brief summary of the two approaches) There are a number of suggested restrictions concerning the productivity

of word-formation. Bauer (1983) and Radford (1981) gave a summary of these restrictions. Some of these restrictions will be outlined below as an illustration of the problem.

1.blocking: the non-occurrence of a complex form because of the existence of another. For example, Bolinger (1975) noticed that irrespective of the productivity of the suffix -er in English, the word *stealer does not exist because of the prior existence of the word thief.

2.restrictions on the bases that can undergo word-formation procedures: some bases, because of their structure, do not give a suitable input for a rule. These restrictions can be phonological, morphological, lexical or semantic. It seems clumsy, as Bauer (1983:89) pointed out, to add the adverbial suffix -ly to adjectives which end in -ly, i.e. *elderlily, *miserlily, *sisterlily. However, there are some cases where this can happen as Bauer pointed out that the (big) Oxford dictionary lists friendlily, sillily. Aronoff (1976: 51 ff) noticed that there are some suffixes which can only be added to bases which are [+ linate], e.g. -ity, and some others that can go with only [- linate] ones, e.g. -hood

The greatest difference between the productivity of sentences and the productivity of complex lexemes shows up when the probability of occurrence of a specific lexical item is considered (see Bauer 1983). This is evidenced by

the many frequency counts of lexical items of a language. On the other hand, any attempt to list all the sentences of a natural language is ridiculous.

This list is only a representative of the kind of restrictions word-formation in English have. Consequently, a lot of rote learning is involved as far as TL learners are concerned.

Apart from these problems of limited productivity, there is the problem that the form of a word does not necessarily indicate its form class, e.g. converted words which can function as both adjectives and adverbs, like fast, hard etc.

The implications of these complexities are quite clear as far as TL learning is concerned. The learner does not only have to learn these rules of word-formation, but they have to know that he/she cannot endeavour to make words as freely as he/she can make sentences, and, specifically, he/she has to know which specific "possible" words actually exist.

As to conversion, according to Quirk et al (1985), it includes the following types:

1. Full conversion where the newly-converted word has the full grammatical functions of the form-class to which it belongs. This is irregular and lexical.
2. Partial conversion where the newly-converted word does not have all the grammatical functions of the word to which it belongs, e.g. the rich, the poor. This is

more regular (applies freely to large class of adjectives) and it is more syntactic than (1) above. This was not included in the tests.

In contrast to the process of converting a lexeme without making any change in its form, there are some cases where conversion affects the form. Quirk et al mentioned what they called "approximate conversion", e.g. voicing of the final consonant of some nouns to derive verbs, as in,

<u>Noun</u>	<u>Verb</u>
house [s]	house [z]
belief [f]	believe [v]

It is so common among Arabic speakers learners of English that they pronounce house (both as a noun and a verb) as [haws].

Another example is the case of the shift of stress as in the following,

<u>Noun</u>	<u>Verb</u>
conduct	conduct
record	record

The type of knowledge in the areas just discussed that the tests used in this study seek to investigate is concerned with which positions the categories V, N, Adj, and adv. can assume, and knowledge of the morphological form of words.

7. *The man drives careful.

For a learner to recognize that the word "careful" is

incorrect in (6), he/she has to know, at least, that the adverb of this word has a different form. Then the learner will have to produce the right form of the word. One objection to this procedure that some people may stage is that not all words are morphologically marked for a particular form class, and that even with fairly general rules of word-formation there are exceptions, as we discussed above. The answer to this problem is that it is exactly this knowledge of idiosyncrasies, that some words are morphologically marked for the form class they belong to, whereas some are not, that we seek to tap. However, it is the class of words that involves some word-formation rules that pose a problem because the rules, as we mentioned above, are not highly productive. The tests investigated both the productive and as well the passive knowledge of these phenomena.

2. 2. 1. 4. GRAMMATICAL IDIOSYNCRASIES

Apart from the aspects of collocations and word class, a lexical item also has some other lexical-grammatical properties, grammatical idiosyncrasies, or syntactic frame, to use Scholfield's terms.

We have to mention that it is often reported that some of the grammatical idiosyncrasies are confused with pure grammatical rules.

8. *That house was the first house which I lived in it.

Scholfield (1983) noticed that the sentence represented in (7) above is anomalous because of the use of the pronominal anaphora in the relative clause whose head NP is the object of the verb in the same clause (not the verb of the dominating sentence). This error is purely syntactic in that the correct version of such sentences can be generated by a general syntactic rule. The phenomenon which concerns us here is the type that cannot be generated by a general syntactic rule but it is idiosyncratic to lexical rules.

In the framework of X-bar syntax the lexicon includes, inter alia, subcategorizations for each lexical entry (the syntactic frame in which a lexical item can occur). Subcategorization applies to verbs, nouns, and adjectives. Items are subcategorized with respect to the complements which are immediately dominated by the same node as the word in question, or, to use a "human terminology", with respect to the range of "sister -complements" (Radford 1981:128). The subcategorization takes place at the deep structure (Radford, *ibid*). To illustrate this let us consider one of Radford's examples. The verb "put" can be subcategorized as follows

put : V, + [-NP -PP]
 [+ Loc]

This says that "put" can only be inserted into a VP where it is immediately followed by both an NP and PP" (Radford, *ibid.*:150) This might seem to mean that in the

sentence which car will your father X in the garage, the X cannot be filled by put because X is followed by only a PP, whereas put should be followed by both an NP and a PP. However, at the deep structure level this sentence has the structure: Your father will put which car in the garage where put fits nicely according to the lexical specification above. For the generation of the wh-question the transformational rule of wh-movement moves which car to the initial position (see Radford 1981:149-157). What this example tells us, is that subcategorizations take place at the deep structure and that without the existence of such a level of representation and some transformational rules, subcategorization of some words will be problematic. It is not our concern here to go into the complexities of the deep structure level.

More sophisticated learner dictionaries, such as LDOCE, give full information about the syntactic frame in which a word can occur. Case grammar, proposed by Fillmore (1968), contributes a lot to this notion of syntactic frame. For example, the verb break takes the cases (Objective), (Instrumental), (Agentive), as in x (Agent) broke the glass (Object) with a hammer (Instrumental). All these cases are optional, including the agentive case because it is acceptable to say the glass broke where the word glass is in the objective case.

Scholfield (1981) identified three types of the phenomenon of syntactic frame of which we have discussed

only one. He discussed them in the context of what could go wrong in connection with the syntactic use of words, in TL learners' production. First, faulty complementation: not every word can accept any complement in its environment, as we have been discussing. For instance, reach in a sentence such as *when we reached, *the house was empty requires an object because it is a transitive verb (Scholfield 1981:37-38). In dealing with synonyms, we also have to pay attention to the different environments each word can occur in. Stenson (1974) mentioned that concede can have "that clause" as a complement, while yield does not, e.g. He conceded that I was right, *He yielded that I was right. Secondly, the use of modifying function words with reference to nouns. For example, uncountable nouns usually do not accept the indefinite article as in they had never seen such a weather in all their lives" (op. cit.). It is a common mistake that the Sudanese learners of English use the definite article with nouns such as water and life when used in generic sense as in *The life is hard. This type also includes the use of words such as more/most, and the affixes er/est with comparison of adjectives, e.g. more beautiful, *beatifuller, most intelligent, *intelligentest. The third sub-type involves the positional restrictions on some lexical items. For example, the use of adjectives (attributive and predicative) and the use of vocatives: some nouns can be used as vocatives, whereas some others cannot, e.g. can I....., Doctor? Can I....., *Engineer?

In TL learning these complexities pose a real problem.

To quote some examples, in addition to Scholfield's examples above, Acebedo (1984) listed a number of anomalous sentences from her Spanish subjects

- 9 . *They were laughing about me.
- 10 . *They smiled ~~to~~ us.
- 11 . *He is the intelligentest.....
- 12 . *There are no informations.....
- 13 . *Many milk.....

(9 -10) are anomalous because of the faulty verb complements used; The verb laugh is followed by a PP, but the preposition usually used by native speakers is at. 11 -13 are wrong because of their lexical-grammatical structure; the superlative form of the adjective intelligent is most intelligent. As to (12-13), the mass nouns information and milk are uncountable and hence, they do not take a plural morpheme nor the word many.

As to the positional restrictions on words, particularly adjectives (the third type mentioned by Scholfield (1981), as discussed above) there seem to be few occasional errors as far as my experience can tell. This is not surprising given the fact that most adjectives in SSA are always predicative, and those that are not follow their head nouns. This could be a reason why in the production of Sudanese learners of English there is so much use of adjectives predicatively. This is why this subtype of grammatical idiosyncrasies was not included in the tests of this study.

Hence it is only the first two types of lexical-grammatical information that were tested. It is also

important to mention that each of these two phenomena covers a wide range of information which may be equal to the amount of information required for each of the other aspects. I thought it would be a gross oversimplification to test these two types using one test (of the same number of questions as that of other aspects). Thus, two tests were used to tap the knowledge of lexical-grammatical information : one for complementation, and the other for the use of modifying function words, and the use of comparative and superlative adjectives. The tests, like the ones on collocation and form class, tap both the recognition and production abilities separately (see the description of the methodology of this study).

2. 3. SUMMARY

The theoretical framework of this study includes a definition of the terms LS and vocabulary competence. As to the former there is a plethora of definitions in the relevant research. The working definition adopted in this study is that LS are the devices used by the learner, consciously or unconsciously, to help him/her advance competence in TL. TL learners apply LS when they face a learning problem and, in this context, the whole enterprise of TL can be said to be a problem. For research purposes, a distinction is also made between macro-strategies (e.g. memorization) and micro-strategies (e.g. use of auditory link between the target word and another word in the TL as an aid to memory). The

framework of research includes using the former (atomistic approach) for analysis. It has also been suggested that norm- rather than criterion-referenced basis should be considered in defining the term "good" learner. A "good" learner is defined in this study as the one who achieves higher in TL relative to his/her peers, the time factor being constant.

Concerning vocabulary competence, the distinction between linguistic knowledge and cognitive control is discussed and adopted. Only certain aspects of the lexical item are of concern in this study: meaning, in its conceptual and collocative sense, derivation and form class, and syntactic frame of words.

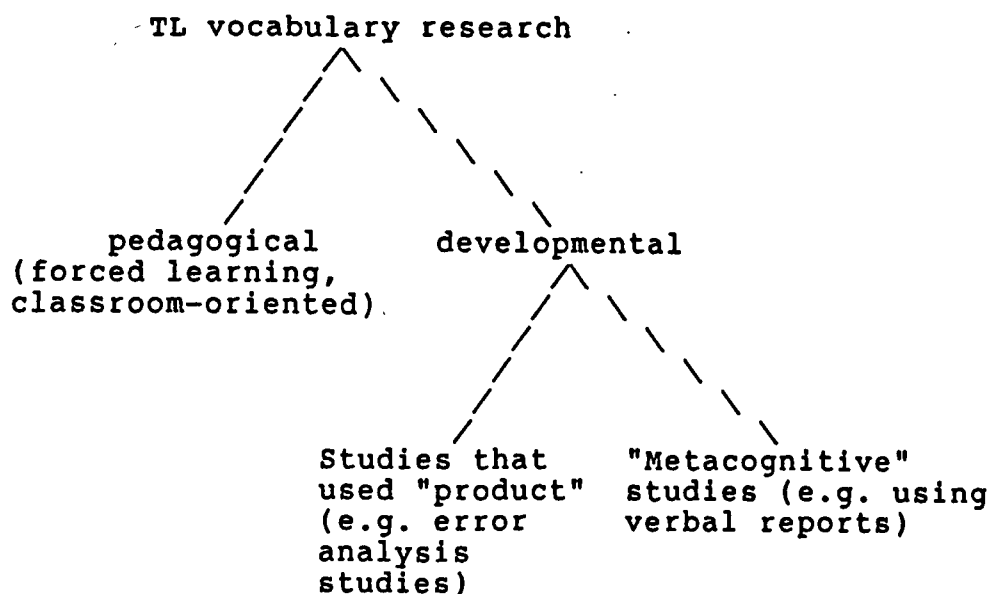
CHAPTER (3)

REVIEW OF THE RELEVANT RESEARCH

The previous chapters dealt with the statement of the problem, and the scope of the investigation in this study by defining the some basic notions. In this chapter the relevant empirical research will be reviewed further. I will endeavour to do this not only by discussing or showing "the state of the art", but by also putting the basic assumptions of this study in the right perspective. Research on TL vocabulary learning, and indeed TL learning in general, can be divided into two basic types: "pedagogical" research, which mainly investigates classroom questions directly; and "developmental" research, which mainly aims at investigating interlanguage, LS and the learning process, and normally gives some "implications" for classroom activity. Pedagogical research includes classroom research (e.g. getting the teacher to maximize questions in class that have real communicative content) and the psychological experimental work on "forced" learning, e.g. investigating the effectiveness of a particular learning technique, like the keyword, by asking one group of learners to use it and ask another group to use a different one, such as rote learning (see Fig. 3.1). This type of research does not concern us here because our emphasis is on natural learning. For more information, the reader is referred to Setzler and Clark (1976), Singer (1977), Webber (1978), Pressley et al (1980). For a summary of this research the reader is

referred to Setzler, Hubert and Clark (1976), and Nation (1982) and Meara (1980) for a review and criticism of the relevance of the pedagogical research to our understanding of the interlanguage lexicon.

Fig. 3.1: Types of TL vocabulary research



With regard to "developmental" research, a distinction has been made earlier in this thesis between (a) the research that used the learners' product in TL to infer LS and (b) the research that used the learners as informants on their own LS - metacognitive research (see chapter (2)). Concerning the former, two subdivisions can be made: error analysis projects, and the research that used all the elicited data (both the errors and the correct forms) on the assumption that there is more to learning than what errors can reveal (see Fig. 3.1). The latter subdivision is the familiar mental lexicon studies. The two approaches (a and b

above) are complementary rather than contradictory in that the former illuminates the areas of difficulty in TL vocabulary and provides some evidence of the learning process, whereas the latter investigates the LS that make this process easy. (See Faerch and Kasper 1987b, for a short review of each of these two methodologies.) I will endeavour to review this research by following a procedure similar to the conventional way of reporting studies. That is, first, the methodologies will be described, then the results will be dealt with, then the research will be evaluated on both its methodology and findings relative to the present inquiry.

As to the methodology, error analysis studies begin by collecting samples of naturalistic speech, or by using elicitation techniques such as asking the subjects to write a composition on a particular topic. The studies on lexical organization, unlike error analysis studies, used psycholinguistic data collection techniques such as recalling words learnt in an experimental situation within a fixed time, and the techniques of word associations. In other words, the data collection techniques range from highly free to highly controlled. In contradistinction to CA studies, the studies in the 1970's demonstrated a high degree of sophistication in data collectioⁿ, statistical treatment and language analysis.

The standard procedure of error analysis, as applied in L1 acquisition by scholars like Clark, Ervin-Tripp, and as applied in TL research, comprises four basic stages:

collection of errors (using any of the types of data collection techniques mentioned above), analysis, categorization, and explanation of errors (Richards 1971, 1974; Jain 1974). The categorization of errors gives us a description of interlanguage, synchronic/developmental, depending on whether the research design involves a cross-sectional or a longitudinal survey. The reader is referred to Scholfield (1987a) for more details on the problems involved in the categorization of lexical errors. The explanation of error, the most important stage, is concerned with inferring the learning process (Corder 1967). Such studies do not only give tabulations of errors, but they also attempt to account for their occurrence. The other type of interlanguage lexical studies, such as that of Davies (1967) and Cook (1977), and Meara (1978), per contra, does not involve analysis of error. It deals with all the output elicited.

As to metacognitive research, the data collection techniques were verbal self-report and observation. This marks a radical shift in TL learning research methodology in that the learners' "verbatim" reports and observation of the learners' behaviour in a learning situation give the data for analysis. Verbal reports can be divided into two main types on the basis of whether the information was elicited from the short-term memory or from the long term memory. The former involves the information "directly stored in memory and that is generated and produced" while or immediately

after having done something (Simon and Ericsson, 1980:35). Verbal reports from the short-term memory are of two types: (1) concurrent (= stream of conscious disclosure of thought processes while the subject is performing a particular learning task, (Cohen 1984:102), and (2) retrospective (= reporting on the learning process immediately after having performed a particular learning task.

Concurrent reports are normally in an unanalysed form. All the other verbal reports can either be in an analyzed or unanalyzed form depending on what the investigator requires from his/her subjects (loc. cit). For example, the LS gathered by asking informants fixed questions are normally in an analyzed form. The analyzed form is characterized by generalized statements about learning behaviour (e.g. when I have a word I want to learn, I write it many times, I don't ask anybody to help). Such statements are based on beliefs, and they are not related to any event.

As to the information in the long-term memory, it comprises (i) factual information and (ii) generated information. Factual information consists of the information about experiences and perceived events and behaviour in past situations, and the latter (generated information) consists of the data and reactions in hypothetical situations. The elicitation format for probing such information take the form of the familiar technique of the questionnaire.

I will now turn to the issues raised and the findings in

TL learning research which used such methodologies.

3.1 THE MAJOR FINDINGS OF THE STUDIES WHICH USED THE LEARNERS' "PRODUCT" (= PERFORMANCE IN INTERLANGUAGE)

As discussed above, the studies that used the learners' product... either concentrated on erroneous product (error analysis) or the whole output generated in an experimental situation (mental lexicon studies). The findings of error analysis studies which will be dealt with can be summarized in two main categories; (1) the findings concerning the descriptions of TL vocabulary and revealing things such as what has been learnt and the areas of difficulty, and (2) suggestions on the causes of error, i.e. the learning processes. As to studies on mental lexicon, we will also outline the main findings concerning differences between TL learners and native speakers. As we stated earlier, the findings of such research concerning LS, unlike error analysis projects, involve the question of individual differences between learners. These findings will be discussed in more detail in relation to the findings of the studies with metacognitive data. In the discussion that follows I will elaborate on these two categories. An attempt to criticize the general approach will be made under a separate head immediately after this section.

Error analysis studies have shown that knowing a particular aspect of a lexical item does not necessarily entail knowing the other aspects of the same lexical item (Politzer and Ramirez 1973, Terence and Natalicio 1982,

Duskova 1969, Acebedo (1984), Martin (1984). For example, Terence and Natalicio (1982) investigated the knowledge of form-class of some lexical items whose conceptual meaning was familiar to the subjects employed. They used two groups of Spanish university students in the United States, representing two levels of proficiency; high level and intermediate, and a third (control) group of native speakers of English. They used the t-test to test the significance of the difference between these groups. The unmodified use of the t-test seems to be dubious in this case, as one-way analysis of variance is usually used with such a design. The difference between the two TL learners groups was significant at the 0.01 level. The other major finding is that it appears from their data that the less ambiguous the word as to which form-class it functions in, e.g. only a noun, as opposed to the words which can have more than one grammatical function, the easier the form-class class of that word is to learn.

Martin (1984) studied the errors made by French Learners of English such as follows:

- | | |
|---------------------|--|
| (syntactic error) | 1. The author *purports that tobacco is harmful. |
| (collocation error) | 2. I used to be a *large smoker. |

She found out that vocabulary errors often manifest one or more kinds of dissonance between the word and its contexts, as the two examples above illustrate.

In addition to the finding that vocabulary errors can be of different types, corresponding to the lexical aspect being violated, the studies also demonstrate that learners face difficulty with particular words. Abberton (1968) found out that ^{Serbo-Croatian} ↑ learners of English confused TL words that share some grounds in their conceptual meaning, e.g. clever/sensible, boring/annoying/nuisance. Duskova (1969) also noticed the same phenomenon with Czech native learners of English. For those learners, part of the difficulty of learning English words lies in the incongruence of the semantic boundaries of some words in L1 and their corresponding equivalents in English, e.g. Czech words which have two or more English equivalents, and English words which have two or more Czech equivalents. Other words which proved to be difficult for such learners include polysemic abstract words like provide, appear, matter (Duskova 1969:27).

Some of the studies discussed above such as that of Terence and Natalicio (1982) are merely descriptive. They only reveal the areas of difficulty and show what has and what has not been learnt. The rest of the studies are also descriptive, but they attempt to speculate as to the possible causes of error.

Different explanations have been proposed in the literature to account for error, and hence, reveal the learning process. It should be reiterated that such studies were concerned with universal learning processes and no claim

that the processes are characteristic of one type of learner rather than the other has been made. This is characteristic of all EA-based projects (see the theoretical discussion of this issue in chapter 2).

Some studies have suggested that the most significant process in vocabulary learning is that of semantic "over-extension". The term "over-extension" has its origin in L1 acquisition research. The word was used on the basis of the semantic-field theory which is based on the paradigmatic relations between lexical items in a language. Clark's (1973) Semantic Feature Hypothesis in L1 is the most elaborate form which utilizes feature components. This hypothesis states that the child, when it first begins to use a word, "has partial entries for them in his lexicon, such that these partial entries correspond in some way to some of the features or components of meaning that would be present in the entries for the same words in the adult's lexicon" (Clark, 1973:72). Thus the child begins identifying the meaning of a word with only one or two features of that word. In other words, children will overextend (by adult's standards) many words in such a way that their categories will be delimited differently from the adult's" (ibid:75). For example, Clark in a different place (1971) showed that in the acquisition of the words before and after the children first ascribed the feature [+ time] only and they used them indiscriminately. Then they began to add the appropriate features until they used them correctly.

Thus far, in interlanguage studies, overextension refers to the phenomenon where a word is used to cover a larger part of a certain semantic field than what is normal in target language. Some studies support this notion (Perdue 1984; Meisel 1977), while others contradict it (Yoshida 1978). Meisel (1977), reporting on the Heidelberger Forchungs Project, claimed that the TL learner uses a single word in cases where the native speaker has access to different synonyms or expressions. For instance, the word kaputt is used in immigrant German to describe any kind of "deficiency", or the fact that something does not correspond to a certain norm, whereas in German it refers to a particular type of deficiency. He calls this phenomenon "semantic weakening", which is the same idea as semantic over-extension.

Perdue (1984) reporting the pilot study of the European Scientific Foundation project, claimed that a similar phenomenon exists. This project deals with spontaneous TL acquisition of foreign workers and their communication with the speakers of the language of the country where they work. Workers from different linguistic backgrounds, e.g. Arabic, Turkish, and in different European countries such as France and Germany were included in the study. One of the aims was to investigate "the structure of the acquisition process itself" (Perdue 1984:5). The results of the pilot study suggested that the acquisition of vocabulary continues through a process of "filling". The semantic-field is "filled" whereby "one specific signifié of the field was

assigned a specific signifiant, then another signifié, another signifiant, and so on (P. 118). As the acquisition develops the terms tend to be "differentiated", that is, "progressively less general terms are acquired" (P.25). This process of "differentiation" is similar to the process of "narrowing-down" of categories described by Clark (1973). However, Perdue did not describe how this process takes place. Before the terms get fully "differentiated" they tend to be used both appropriately and, by extension, inappropriately. For example, the German word Kuh was correctly used as denoting cow but also incorrectly used, by extension, to denote all farm animals. At this stage, the term can be said to be undifferentiated (P.25). A corollary term to "over-extension" is "overgeneralization".

Perdue noticed that word-formation rules were also often overgeneralized to generate words which do not exist in German. For example, German has a partially productive process for designating the rooms of a house; function + zimmer, generalizing it creates existing Schlafzimmer (bedroom), but not *Kuchenzimmer (*cookroom). This is a type of over-extension which is related to the lexical-grammatical properties of words.

As it appears from the examples above, the writer of the pilot study of the European Scientific Foundation Project deals with an old phenomenon, but he used new terms. It is interesting that he described what he claimed to be the learning process in "communication" terms; i.e. the learning

of a new word was viewed as "filling" a gap, in the performance.

However, the theory that over-extension is the only factor at work was challenged both in L1 acquisition research as well as in TL learning research. This is not surprising given the fact that Clark (1971) based her principle on only a small number of cases. In L1 acquisition research the counter-theory to over-extension is under-extension, where the meanings, initially, are too specific, and based on too many features, e.g. using the word "dog" for a particular dog (see Dale 1972, for more examples, especially chapter (1)). In TL learning, Yoshida (1978) claimed that he had counter evidence. He collected naturalistic speech data on a longitudinal basis from a Japanese child, aged 3 :5 learning English in a natural environment. He also elicited data, from the same child, using the Peabody Picture Vocabulary test (PPVT). He claimed that this child seemed to have been learning words more specifically than the first language learner in the one- or two-word stage. He claimed that his subject learnt some words which are of interest to him (the child) fully. For example, he has never called a cow a dog or anything else (Yoshida 1978:97). However, the data Yoshida presented seems to contradict his claim against over-extension.

Some of the child's answers to the PPVT:

e.g. 1. Specific item in picture for whole.
e.g. eggs, to refer to "nest"

boys, to refer to "children" (2 boys a girl
in the picture)

2. No distinction
e.g. rat for mouse
lamp for light
3. incorrect answers for verb
(action)

e.g. climbing for jump

These cases, which Yoshida categorized under different headings, such as "incorrect answers", clearly represent cases where the child has fewer features for and, hence, he applied them in a too general way. For example, it seems that the child has only the features [+ young] and [+ human beings] for the word boy, i.e he does not assign the feature [+ male] to it, and, consequently, used it to refer to both boys and girls. This also seems to apply to the pairs climbing/jumping, and lamp/light.

However, one of the important findings of Yoshida's study is that his subject showed an elaborate taxonomy of the classes of words he was interested in. In other words he mastered more subordinate lexical items in connection with the superordinates he was interested than with those he was not interested in. For example, he revealed "his interest in vehicles", such as a hovercraft, a submarine, and ambulance, etc. (Yoshida 1978:97).

We will now proceed to another interesting development in TL learning research to endeavour to account for the learning

process and mechanism. The studies we have dealt with so far are concerned with cognitive and linguistic processes (system-internal factors, as referred to by McLaughlin 1987) of vocabulary learning. There is another body of research which falls within the same category, but it sought to incorporate the recent cognitive research into the contrastive analysis hypothesis (CAH) instead of abandoning it altogether. This model has used the Prague School's notion of "markedness" and the work of Greenberg (1966) on language universals to form it into a theory of TL learning. Most of the work was done on learning of grammar (Gass 1979; Hyltenstam 1983; and Echman 1984) and only a few studies have been done on vocabulary. Before we discuss these studies we need to explain what this theory says.

At least two types of markedness can be identified in the literature : (1) typological markedness which is based on the linguistic similarities between L1 and TL, and TL and language universals; and (2) "psycholinguistic" markedness, which is based on the claim that "transferring" from L1 involves a cognitive choice as to what is perceived as transferable (See Ahmed 1985).

The theory of "psycholinguistic" markedness says that learning a TL is determined by (a) the distance perceived, by the learner, between L1 and the TL, and (b) the learner's perception of what is specific or unique to his/her L1 and what is language-neutral (Kellerman 1978:37-38, 1977). Sjöholm (1979) claimed that some data from Finns and Swedes

supports this theory. He used Swedish-speaking and Finnish speaking learners of English in Finland and a test with multiple-choice items. The study was meant to investigate the degree of "strategicness", i.e. the errors that result from the use of a transfer LS. One of the assumptions of the study was that the Swedish language is typologically closer to English than Finnish. Thus, he hypothesized that Swedes would choose the distractors, from the multiple-choice items given, that are similar to Swedish language, and the Finnish-speaking learners of English, being familiar with Swedish, would also choose Swedish-based distractors more than the Finnish-based ones. He claimed that the results substantiated these assumptions.

Although Sjöholm's study is interesting both in its controlled methodology of collecting data and its findings, it seems contradictory in that there is confusion of the two basic types of markedness mentioned above. Sjöholm assumed that TL learning involves "the learner's ability to form hypotheses about L2 "on the basis of prior knowledge" and hence, "the Finnish learner of English, who also knows Swedish, forms the hypothesis that the rules of Swedish are usually also applicable in English" (Sjöholm 1979:93). In contrast to this assumption he claimed, in his discussion of the results, that although there is an "inclination among the Finns to choose Swedish-based distractors, one should be wary of jumping to the conclusion that contact with Swedish is the reason for the choice. As a matter of fact it is very

probable that even Finns who have never been in contact with Swedish would show a similar tendency..." (ibid:106). However, his study does not give evidence for this tendency since his subjects did not include Finns who had no contact with Swedish. This evidence is required and it is crucial in that the use of Finns who had contact with Swedish may simply indicate that the presence of the process of transferring Swedish rules to English may have been based on real typological similarities between these two languages, which the learner has discovered through experience. For one thing, for a Finn to choose Swedish-based distractors because they are Swedish he/she must, of course, know that they are Swedish in the first place.

Another important study in this connection is Kellerman's (1978). He viewed the strategy of transfer as an active learner strategy. He used 17 sentences in which the Dutch verb breken (= break) was used in its "core" meanings and also in its figurative ones. The distinction between these two types of meaning was established in Kellerman's study by using multidimensional scaling (using the computer SPSS program called ALSCAL) of the Dutch native speakers' intuitions about the verb breken. The subjects (a different set of people) were asked to indicate which of the 17 brekens would be translated by the English break. The results showed that polysemous words such as break will have a field of meaning in which the "core" meaning may be more likely to be translated than figurative meanings. For example, 81% thought that break and breken can replace each other in the

expression the cup broke, whereas only 22% thought so in connection with expressions like the underground resistance was broken.

Such studies seem to mark a turn in the tide in favour of L1 influence on TL learning. Some other recent studies also seem to give a "kiss of life" to the CAH. The difference between the traditional CAH and the most recent developments is that the recent developments are influenced by the theories of cognitive psychology rather than by the earlier behaviourist ones. Learning TL vocabulary is viewed as involving psychological and linguistic processes which are based on L1. In other words, the learner is actively involved in manipulating his L1 to form hypotheses about TL vocabulary instead of the traditional orthodox CA view that L1 influence is the result of persistent "old habits", (Ijaz 1986; Giacobbe and Cammarota 1986). However, Giacobbe and Cammarota (ibid) presented two parallel cases, one supports this claim, whereas the other gives counter-evidence. They collected data on a longitudinal basis from two Spanish speakers learning French in a natural environment. One of the subjects, Cacho, seemed to use a general vocabulary reconstruction hypothesis. The hypothesis says: "If the last syllable of polysyllabic Spanish lexeme I take away either the final vowel and consonant or the final vowel, I will obtain a French word" (ibid:327), as the examples below show. This hypothesis is a phonological one.

e.g. <u>Cachos'</u>	<u>French IL</u>	<u>Spanish</u>	<u>French</u>
[distinct]		distinto	different

[problem]

problema

probleme

The data from the other subject did not show any general hypothesis. The learner seems to have used a rote learning strategy. That just shows that not every one uses identical learning process/strategies.

THE STUDIES ON MENTAL LEXICON

Meara can be credited with the establishment of the rigorous framework of studying TL learners' mental lexicons which he hopes will give the answers for the intriguing questions of how lexicons expand and grow. The fact that this problem has largely remained a puzzle, according to Meara (1984), shows that the data and the theoretical model of interlanguage need to be revised. It also stresses "how limited interlanguage is when it is faced with data that does not fit exactly into traditional mould" (Meara 1984:228). Therefore he suggests, the original idea behind interlanguage, "that it might be possible to explain the way learners behaved in their L2 as a result of faulty and incomplete representation of their L2" (Meara 1984: 231) could be retained. What has to be changed is the focus and methodology of research. The focus he says, should be on the mental lexicon. He started his research using the psycholinguistic techniques of word association. The interest according to this approach is that it shows the differences "between the learners' internalized descriptions of his L2 and the internalized description the native

speakers have" (loc. cit).

Such research has concentrated on two major areas: lexical organization, and lexical entries. Apart from the major difference of adopting a wider definition of interlanguage, this research differs from error analysis studies in that it presents LS as capable of distinguishing between learners of different levels of education. It is this last point that concerns us here. The major findings concerning the other areas above will be briefly outlined. As to the findings concerning the individual differences in LS choice, we will refer to some studies in detail later in section 3.2.3.

Studies with children learning their L1 and adult native speakers of some languages demonstrate that children below the age of, generally speaking, eight, produce more syntagmatic responses and as they grow up more and more paradigmatic responses are produced (Entwhistle 1966; Entwhistle, Forsyth and Muss 1964, Davies and Wertheimer 1967). The projects conducted by Meara and his students at Birkbeck College at London with TL learners showed that the responses of such learners were largely "semantically unmotivated and more varied and unpredictable than the responses made by native speakers" (Meara, 1984:232). For example, data from English speakers learners of French (Meara 1978) demonstrates that a word like "mémoire" prompted less syntagmatic responses than with French nativespeakers. Meara concluded that "If we assume that word associations do

provide some insight into the semantic organization of the lexicon, then it seems that a learner's lexicon looks quite different from that of the native speakers" (P.234). Similar results were found by Henning (1973) and Cook (1977). Further reference will be made to these studies below.

The other major area of concern in such studies is the lexical entries. The research has concentrated on the phonological part of entries (Meara 1984, for a summary of this research). The studies in this area seem to concentrate on the LS for recognizing words of native speakers of different languages' learning a TL as opposed to the native speakers of that language. Different languages behave differently. In tone languages such as Chinese, for example, tone plays a major role in the recognition of words. Chinese learners of English "pay more attention to the ends of words than native speakers of English do" (Meara, *ibid*:234). Generally speaking, the study of phonological entries has been shown to be an interesting area in that TL learners seem to adopt LS, affected by their L1, which are different from those used by native speakers.

3.1.1 SUMMARY AND EVALUATION

It is time to pause, take stock and evaluate before we proceed. Interlanguage studies and particularly EA-based projects, give two types of information about vocabulary learning: (a) how the learner's IL looks at any point in time (synchronic state), and/or the change of the learner's vocabulary over time (developmental progression), and, hence, they show the areas of difficulty; and (b) the possible learning processes and strategies that can be inferred. Both of these two types of information are based upon a comparison of IL utterances with corresponding L1 and TL utterances.

The studies that were conducted within the framework of error analysis, unlike the studies on the mental lexicon, did not view the use of what they called LS as characteristic of a particular level of proficiency, i.e. beginners as opposed to advanced learners. As we discussed in the theoretical framework of this study (see chapter 2), such research "was in large part a reaction to the then prevalent views of second-language learning: neo-behaviourist learning theory and contrastive analysis" (McLaughlin 1987:65). McLaughlin (loc. cit) used strong terms to refer to the early researchers, such as "iconoclasts, their findings heretical".

Generally speaking, some of these studies used naturalistic speech as data, or elicitation techniques which allow some degree of freedom in production, such as asking

learners to write a composition on one of three or four topics provided (Abberton 1968; Giacobbe and Commatora; 1986; Acebedo 1984). This procedure suffers from at least two drawbacks (Ahmed 1987). First, prima facie, the learner's output is the product of, inter alia, his/her competence, LS and CS. Hence, a particular error--produced in such situations can be attributed to to the structure of the competence itself, LS as well as CS. The questions that cannot be answered from such data are whether we can ever know, for many errors, that they were due to faulty learning, or an on-the-spot CS (which the learner probably realized might yield an error); if the error is clearly not a result of CS; whether the error was not the result of the learning process or strategy. For example, Blum and Levenston (1978) studied the same phenomena referred to in other studies as LS, such as "approximation" and "overgeneralization", and they referred to the same examples used in some other studies as LS and replaced the term LS by CS. For example, Abberton (1968) found that his Dutch subjects used the words sensible and clever as synonyms. He listed this as an example of the LS (process, in our terms) of "overgeneralization". Blum and Levenston quoted the same example and referred to it as an example of the CS of using "superordinate terms" (p.405). Further reference to Blum and Levenston's work will be made below. The point to be stressed here, is that reconstructing a phenomenon such as LS, which is partly unobservable from "product", always, as Faerch and Kasper assert, and I agree, "entails situations where the ambiguity between product and

process cannot be solved," (Faerch and Kasper 1987b:8).

The problem of the possibility of accounting for errors by contemplating both LS and CS is well recognized. Selinker (1972) in his influential article on IL cited some examples from Coulter (1968), such as It was 0 nice, and 0 big one, which Selinker attributed to LS, whereas Coulter, as Selinker himself said, attributed them to CS (Selinker 1972:220).

The second problem, akin to the first one, is the fact that many errors are multi-interpretable (Jordens 1980; Selinker 1972; Scholfield 1987a). Scholfield claimed that "indeed it is probably nearer the truth to suppose that any error can be brought about by any cause in the long run!" (Scholfield 1987a:48). Duskova noticed that "although the difficulty in mastering the uses of the article is ultimately due to the absence of this grammatical category in Czech, once the learner starts internalizing their system, interference from the other terms of the article system begins to operate as an additional factor" (Duskova 1969). It has never been made clear how best to analyse such performance data. For example, causal and descriptive classifications often get confused, as Scholfield (1987a) noticed. As the most conspicuous manifestation of learner-knowledge and processing in performance is overt errors, "much of what purportedly is a description of (some aspects of) learners' performance turns out to be no more than error analysis" (Faerch and Kasper 1987b:8).

These two problems raise serious scepticism about the

validity of naturalistic speech and product in TL language as data for investigating the learning strategies and processes. Therefore, more direct elicitation techniques seem to be advantageous and provide data with a higher validity as far as measuring and investigating the learning process is concerned. We need to get at the process more directly than simply relying on "product". The next section is concerned with some studies that are supposed to deal with process more directly.

3.2 // THE MAJOR FINDINGS OF THE STUDIES WHICH USED LEARNER SELF-REPORTS AND OBSERVATION OF LEARNING

In recent developments research has moved to answer vocabulary questions and examine pedagogical implications directly. This recent development is marked by a significant shift in data collection techniques. The research under consideration used observation of the learners' behaviour either in or outside the classroom, and the learners' reports of their own LS. The reader is referred to chapter (2) for the discussion of the theoretical assumptions of such research and how they differ from the studies which used the learners' performance. The basic point to be reiterated here is the assumption in this body of research that such LS be identified, and they are supposed to help advance competence in vocabulary TL learning (O'Malley et al 1985: 557-58) (see also Stern 1975; Rubin 1975 1981; and Naiman et al 1978).

3.2.1// LS AND HYPOTHESIS-TESTING

One of the important points to be made is that this research has revealed some LS, such as "memorization", and "practice", which are of a different type from the learning processes (shown by investigating "product"), such as overgeneralization and simplification, which were identified by using the learners' output. The learning processes involve discovering the TL vocabulary systems or, in the case of transfer, modelling them on L1 vocabulary, whereas LS do not necessarily do this. Cohen and Apeh (1981) conducted a longitudinal study using English speakers learners of Hebrew to answer the questions: how do students learn new TL vocabulary? Do they make associations? If so, what kind, and how successful are these associations? They found out that most of the students simply tried to memorize words they did not know. Rote-learning (a word and its L1 translation), of course, does not involve discovering the system. 13 students reported that they used associations. Some associations are like rote learning in that they do not involve making use of the TL vocabulary system. For example, associating between a Hebrew word and an English word on the basis of similarity of pronunciation may not involve the discovery of TL vocabulary system. In other words, the L1 word is only used as a hook on which the target word hangs to facilitate retrieval. On the other hand, there are some associations which involve the use of the TL vocabulary system as a reference (aid to memory) to help retain and retrieve the lexical items within this system, e.g. pairing TL words with their synonyms. The

use of such mnemonics presumes discovering the TL vocabulary system, in the first place.

The studies which investigated the form of coding of vocabulary in memory revealed some of these associations and demonstrate that not all LS involve a process of discovering the TL system. Henning (1973), Cook (1977). Henning (1973) found out that TL learners used associations on basis of the acoustic and/or semantic affinities between words in the TL. He drew a parallel between the kinds of mnemonics that learners at the beginning stage of learning use and those employed by learners at an advanced level. He found out that the former group used acoustic mnemonics, and as they developed, more and more semantic ones were used. Cook's (1977) study seems to contradict this parallelism only partially. He investigated semantic associations only. He used stimuli of words (subordinate terms) representing 4 categories (superordinate terms); i.e. "parts of the body", "clothing". He used the familiar psycholinguistic technique of recalling items after being presented for a while. He studied the degree of clustering the learners made. The amount of clustering was calculated, in Cook's study, by counting every word that was written down, by the subject while recalling, adjacent to a word from the same semantic category. The clustering ratio (the amount of clustering) for the correct words recalled by beginners was 0.246, whereas it was 0.302 for advanced learners. This result suggest that TL learners make use of the TL vocabulary

system to help them learn the system itself.

Another example of the use of LS to discover the TL vocabulary system or the use of the system as a reference point to help retain and retrieve the system itself can be found in O'Malley et al's study (1985). One of the strategies on their list is what they refer to as "grouping" which they defined as "recording or reclassifying and perhaps labelling the materials to be based on common attributes" (O'Malley et al 1985:34).

In general, the recent developments in the study of TL vocabulary learning revealed strategies which do not necessarily involve making hypotheses about the TL vocabulary system. This further justifies the dichotomy between LS and the learning process, in that the latter mainly illuminates the hypotheses the learner makes to develop his/her TL, whereas the former does not necessarily do so. However, some LS are directly related to process in that they both involve manipulating the system itself to advance learning, e.g. searching for regularities in the vocabulary system and using themes as an aid to memory.

3. 2. 2. TAXONOMIES OF VOCABULARY LS

It is unfortunate that the studies on LS either concentrated on one particular set of vocabulary LS, such as Cohen and Aphek's (1980, 1981) studies on the use of associations as an aid to memory, or they investigated the LS of a number of activities, including vocabulary learning,

collectively. In fact, there is one taxonomy by Blum and Levenston (1978) which lists what I refer to in this thesis as being potentially the learning processes. I wish to emphasize the word "potentially" because, as we mentioned earlier in this thesis, errors can be the result of a number of factors.

The question of taxonomies is related to three important issues,

1. What vocabulary macro- and micro-strategies have been identified in research.
2. The problems involved in classifying these strategies into macro-strategies.
3. On which set of strategies, i.e. micro- and/or macro-strategies, "good" and "poor" learners have been differentiated in relevant research.

This section is concerned with the first issue only, whereas the last two issues will be discussed in sections 3.2.2.2. and 3.2.3 below. It suffices to state at this stage that the confusion in defining the term strategy (see chapter 2) has resulted in the confusion of classifying the results in empirical research. This bears on the results and their interpretation by researchers. Different taxonomies have been proposed.

3.2.2.1 VOCABULARY LEARNING MACRO AND MACRO-STRATEGIES

For our purpose in this study, there are three major taxonomies of LS in general drawn by Naiman et al (1978),

Rubin (1981), and O'Malley et al (1985), following Wenden (1983). I will consider each one separately and try to extract the LS that are likely to help in vocabulary learning.

Rubin's taxonomy is the largest of all. As shown below, it contains two categories: (1) processes that contribute directly to learning, which in their turn, consist of six processes (macro-strategies), and each process comprises a number of strategies (micro-strategies); (2) processes which may contribute indirectly to learning, which contain two macro-strategies under each of which a number of micro-strategies are listed.

PROCESSES WHICH CONTRIBUTE DIRECTLY TO LEARNING

1. Clarification/verification: asking for (1) examples of how to use a word, (2) correct form, (3) translation from L1, (4) repetition of a word, (5) meaning, (6) difference between two words, (7) to be corrected; (8) learner repeats word to confirm understanding; (9) repeats part of a word and ask for the rest; (10) contextualization; (11) looks up in dictionary.

2. Monitoring: (1) corrects error in own other's vocabulary; (2) notes source of one's own error.

3. Memorization: (1) note-taking; (2) pronounces outloud; (3) imagery, elaboration and keyword to help retain lexical items, (4) mechanical devices such as writing several times.

4. Guessing/inductive; (i) inferencing: (a) guess meaning by using clues such other items in the sentence, (2) keywords in a sentence, (3) pictures, etc.; (b) correlates word with action; (c) Ignore difficult words.

6. Deductive reasoning: (1) compares L1 and L2 to identify similarity; (2) Groups words

according to similarity of ending; (3) infers vocabulary by analogy; (4) when using dictionary, recognizes limitations in providing equivalents; (9) hypothesis testing; (10) finds meaning of a word by breaking it down into its parts.

7. Practice: (1) drills self on words in different forms; (2) makes use of new words when speaking; (3) when corrected practises correct form and extends it to other contexts; (4) listens carefully to what is said and how it is said, accent, tone and stress, intonation, register; and imitates them.

PROCESSES WHICH MAY CONTRIBUTE INDIRECTLY TO LEARNING

1. Creating opportunity for practice: the learner creates situation with native speakers.

2. Production tricks: circumlocution, paraphrase, etc.

Rubin's taxonomy, as it appears in the adapted version above, includes almost all the micro-strategies in the recent research (cf. Naiman et al 1978, and O'Malley et al 1985). This because Rubin's list was meant to be used as an "observational schedule" and it has been considerably modified through Rubin's own "classroom and tutorial observations and through student self-reports and diaries" (Rubin 1981:118). It has been modified by including the specific strategies identified by Fillmore (1976), Naiman et al (1978), Cohen and Apehek (1980,1981), as Rubin (loc. cit) herself stated.

One of the interesting features of Rubin's taxonomy is the inclusion of some "production tricks", such as paraphrase, and circumlocution, as strategies that may help

learning indirectly. These phenomena were first hypothesized to be related to learning by Blum and Levenston (1978) and Tarone (1980). However, it has never been shown how they can help in learning. Tarone herself asserts, and I agree, that the question of how precisely communication strategies, in the sense of being used with the desire to communicate, promote or inhibit learning is a question to be resolved by empirical work; "it is not a question whose answer can be assumed" (Tarone 1980:421).

O'Malley et al (1985), following Brown (1982), differentiate between metacognitive LS and cognitive ones. The former are generally applicable to a variety of tasks including, of course, vocabulary learning, whereas the latter are often specific to distinct learning activities. Rubin's classification involves cognitive strategies, that is, the LS she identified tend to deal with direct manipulations of the learning materials, rather than reflections on the process of learning strategy applications which were dealt with by O'Malley et al (1985), Wenden (1983), and Brown (1982) under the heading metacognitive strategies. O'Malley et al's typology (see Appendix A) is concerned with vocabulary only partially. However, as far as vocabulary is concerned, the metacognitive LS include (1) knowledge about . . . cognition, i.e. "making general but comprehensive preview of the organizing concept . . . in an anticipated learning activity" (O'Malley et al 1985:33), and (2) regulation of the cognitive processes, i.e. "planning for rehearsing linguistic

components necessary to carry out an upcoming language task"(loc. cit). As to cognitive strategies which are likely to promote learning, O'Malley et al (ibid) did not draw a line between these LS and others that are related to other activities such "oral drills".

Their study included nine activities, including vocabulary learning. They found out that "strategy combinations occurred with all nine types of English activities[and]...the most frequent choice of combination strategies for particular tasks parallel the choices for single strategy use" (O'Malley et al, 1985:41). However, their list includes one specific strategy which seems to be only used for vocabulary learning. This strategy is the "keyword" (See Appendix A).

Considering their finding that most of the strategies can be used for a number of activities, coupled with the result that "by far most strategies were reported for vocabulary learning, virtually twice as many as for other activities" (ibid:40), I take that all the strategies mentioned in their list can be used for vocabulary learning.

3. 2. 3. SOME PROBLEMS INVOLVED IN THE TAXONOMIES

These different taxonomies highlight the problems of classifying LS. The problems involved are related to (1) the degree of abstraction that a researcher should apply to establish macro-strategies from the exemplars (micro-strategies) identified, and (2) the problems involved in

Table (3.1): Examples illustrating the difficulties involved in classifying LS data.

Stern + Naiman et al (1975) (1978)	Label	O'Malley et al (1985)	Label	Rubin (1981)	Label
PLANNING	Strategy	.Direct attention .Self-management .Advanced organizers	meta-cognitive L " "		
MONITORING	Strategy		meta-cognitive LS		a process that contri- butes directly to learning
PRACTICE	Strategy				
1.Repetition.	Technique		cognitive str.		an instance of the process of memorization
2.Imagery.	"		"		"
3.Contextualization.	"		"		an instance of the process of practice.
4.Note-taking.	"		"		an instance of the process of practice.
5. Identifying Preferred learning situations.					5-7 instances of the process of creating opportunity for practice, a process which contributes indirectly to learning
6.Attend movies.					
7.Spend extra time in the lab.					

deciding which specific strategy belongs to which class of strategies. Table (3.1) gives examples to illustrate these problems. The table is organized in such a way that there are two columns for each scheme of classification of the three schemes mentioned above: one column is headed by the name of the person who proposed the scheme, whereas the other gives the label given by this person to the strategy on the same row in the table. All the strategies listed on the table were claimed to be "good" learner's LS.

The first problem the table highlights is the difference among researchers in the degree of abstraction they use to categorize exemplars. For example, Stern (1975) listed "planning" (= organizing and evaluating learning to help improve it) as a "good" learner's strategy, whereas O'Malley et al (1985) listed a number of planning strategies, e.g. directed attention. Couched in our terms, O'Malley et al's classification is more "atomistic". Stern's classification implies that "underachievers", generally speaking, do not plan their learning, but no such implication can be made as far as O'Malley et al's classification is concerned. On the contrary, it may be taken to imply that "underachievers" may plan their learning, but in a different way, i.e. by using strategies other than those in the list. In other words, the class of the strategy of planning does not distinguish between "good" learners and "poor" ones, but the strategies within this category do.

Secondly, a large number of strategies are problematic in that there is no consensus among researchers as to what class of strategies they belong to. Table (3.1) shows that the strategies of repetition and note-taking are classified as "practice" strategies by Naiman et al (1978), whereas Rubin (1983) considered them as belonging to "memorization". It should be mentioned here that the schemes of classifications proposed in relevant research are guided by theory only partially. For example, Brown (1982), as discussed above, distinguished between metacognitive and cognitive LS. The categories of strategies fall in either one, but the categorization of LS within each type has largely been subjective and in some cases arbitrary. O'Malley et al (1985) noticed that using Rubin's classification scheme for categorizing their data had failed to produce mutually exclusive categories, e. g. repetition could be a practice or a production trick (P.32). This led them to choose a more "atomistic" approach which resulted in them considering phenomena such as repetition and note-taking as full strategies and not mere exemplars of a category of strategies, as they were considered in Rubin's and Naiman et al's schemes of classification. A rather different scheme of classification was used in this study (see chapter 4).

The "holistic" approach may lead to conflicting results as far as differentiating between "good" learners and "poor" ones. This point will be discussed in the next section.

3. 2. 4. THE "GOOD" LEARNER'S LS

The recent developments put the major emphasis on the "good" learner. In addition to that, the term "good" learner seems to be too vague a term (see chapter 2). The studies demonstrate that "good" learners are by no means a homogeneous group displaying typical traits. This section is meant to deal with these issues in more detail.

3.2.4.1. THE CONCENTRATION ON THE "GOOD" LEARNER

The concentration on the "good" language learner presumes that the "good" learners' LS enhance and improve learning, and hence it would be a good idea for them to be taught to less proficient learners to help them. Most of the major projects (Naiman et al 1978), O'Malley et al (1985), Rubin (1981), Stern's (1975) , seem to be based on this assumption. In most of the projects the assumption above seems to be taken for granted. The assumption is a gross oversimplification not only because there are differences among the "good" learners themselves, but also because the contrast between the "good" and "poor" learners needs to be established in a more systematic way. In this section the problem of concentrating the effort on the "good" will be discussed, and in the next section we will deal with the differences among the "good" learners themselves.

Porte's study (1986), the only study that is concerned with "underachievers" as mentioned above, deals with vocabulary only partially in that it also deals with skills

such as reading. He concluded that "poor" learners "identified some learner techniques which were similar to those found in the studies of the "good language learner" (Porte 1986:84). One interesting point about this study is the use of "atomistic" approach. For example, he identified the strategies "learns synonyms with each TL words", "used items in context", "compares L1 vocabulary to TL to help identify similarities", and "groups words according similarity of endings" as different strategies (he used Stern's label "technique" to refer to them). All these strategies appear as exemplars of classes of strategies in the more "holistic" approaches, e.g. memorization (Rubin's 1983 typology), "practice" (Naiman et al 1978).

However, Porte's generalization above, seems to be too general given the frequency of occurrence of each strategy across the whole sample. The study suffers from an inadequate number of occurrences. For example, he identified strategies for vocabulary learning, eight of which occurred only once; 1 occurred only twice, 2 occurred only three times, for the whole sample. For a cross-sectional study, such as Porte's, a higher frequency is needed to make any generalization. This confirms our suggestion that rigorous research to investigate the differences between "good" and "poor" learners is needed.

3. 2. 5. SOME OF THE FACTORS THAT MAY AFFECT THE CHOICE OF LS

Under this heading I will discuss learner factors which

affect LS choice. One general theme which pervades the discussion below is that despite the fact that general trends can certainly be identified, LS in many cases are learner-specific. The other theme, akin to the first one, is that successful learners, along the continuum of success, differ in the LS they use. Two types of factors have been proposed in the relevant research: (1) learner's predisposition, which includes factors such as personality, motivation, age and intelligence, and (2) the degree of proficiency within the range of successful learning.

As to the learner's predisposition or orientation, at the extreme is the highly-individualistic approach which asserts that "it does not seem appropriate to pass on a list of strategies to be imitated....[because the learners' orientations]... differ considerably with regard to both personality and motivation, an illustration of the fact that there may not be a single ideal predisposition for high achievement in a second language" (Gillette, 1987:270). Gillette's conclusions seem contradictory. In contrast to her statement quoted above, Gillette claimed that "the success both learners enjoy is more likely to be rooted in what they have in common - cultural sensitivity, alertness in class, as well as using errors constructively rather than to avoid them" (loc. cit). Phenomena such as "alertness in class", and "using errors constructively", to my mind, are LS in that they involve the realization that an active approach (rather than dreading the embarrassment of committing errors) leads

to the discovery of TL rules. The "active approach" and the "realization of TL as a system" are, in fact, two of the macro-strategies identified by both Naiman et al (1978) and Stern (1975). Therefore, I take Gillette's (1987) study as indicating that successful learners seem to share common macro-strategies, but they differ in their micro-strategies. For example, both of the two learners investigated used a "risk-taking" strategy, but one of them "views error as an aid to memory" whereas the other does not (Gillette, 1987:277). In this context, Seliger (1983) distinguished between strategies, in Stern's (1975) sense, such as "willingness to practice", which he claimed to be "universal, age- and context-independent", and "tactics", Stern's technique, which he claimed to be "an infinite set of behaviours of learning activities dependent on factors such as environment, age, personality and first language" (Seliger 1983:38). Couched in simple terms, strategies such as willingness to practise, monitoring, and inferencing may be universally used by "good" learners, but the specific strategies for carrying out these activities are not universal. Naiman et al's (1978) results support this proposition. They found out that the strategy of hand-raising, a technique in their terms, has a positive, 0.465, and significant correlation ($P < .01$) with motivation; self-correction (monitoring) has also a positive, 0.318, and significant correlation ($P < .05$) with the factor of the student's attitude towards correcting others (Naiman et al. 1978:58). These are only some examples. Although these

correlations do not seem to be substantially high, the latter case, in particular, in terms of their deviations from zero, but they are statistically significant, a fact which makes it more appropriate to consider factors such as attitude and other personality factors in identifying LS. Wesche (1979) came to similar conclusions. She observed that the "types of learning procedures," macro-strategies in our terms, seemed to be common to "good" TL and that applies from the most to least successful learners of the subjects of her study. She also observed that the micro-strategies, techniques in her terms, also seem to be applicable to all the learners but with varying degree of sophistication.

With regard to the differences between learners at different levels of education and proficiency, the studies demonstrate that learners of different levels of proficiency differ in the use of some strategies. O'Malley et al (1985) found out that beginners use more cognitive strategies (72.6%) than intermediate level students (65.1%). This result contrasts with the findings of Chesterfield and Chesterfield (1985). They studied the developmental aspects of LS using data collected by observation on a longitudinal basis. They concluded that learners with "greater English proficiency were found to employ a wider range of strategies than their less proficient peers" (Chesterfield and Chesterfield, 1985:56). For example, during the initial observation, only two strategies: memorization and repetition, occurred, and they were used by only two of the less proficient subjects, whereas the more proficient ones

were using, in addition to memorization and repetition, a wider range of strategies (ibid:51).

O'Malley et al (op. cit) also found out that intermediate level students used proportionately more metacognitive strategies (34.9%) than beginners (17.4%)(P.37). The implication of this finding is that, with more experience in learning, TL learners tend to plan and evaluate their learning more than beginners, who obviously, have no experience with learning TL. Another interesting finding by O'Malley et al is that "contextualization" occurred with a higher percentage for intermediate students (7.4%) than for beginners (2.4%) (ibid:39). Cohen and Aphek (1980) found similar results. They discovered that beginners did better in a recall test of lists of words, having obtained 84% correct answers, on average, than intermediate level students, who got 70% correct answers, on average. On the other hand, the intermediate level students scored higher (77%, on average) than beginners (69%, on average) on correctly recalling words presented in context. In other words the use of context requires a degree of sophistication.

In addition to these findings the reader is also referred to Henning (1973) whose study was discussed above. He found out that more advanced learners tend to code vocabulary in memory more on a semantic basis than beginners, who tend to code vocabulary on an acoustic basis. In contradistinction to these results, Cook (1977) did not find a significant difference between beginners and advanced learners (Kruskal-

Wallis, <.01)(see the average scores of Cook's study, quoted in section 3.2.1 above).

3. 2. 6. SUMMARY AND EVALUATION.

The studies, whether they used observational and verbal data or interlanguage data in the way the studies on mental lexicon did, give useful insights into the LS and the learning mechanism. These studies concentrated on identifying the "good" learner's LS, apart from Porte's (1986) study which was devoted to identifying "poor" learner's LS. The majority of the studies, which employed "good" learners as subjects/demonstrate that learners of different levels of proficiency differ in the strategies they use. The results of these studies, viewed from the point of view of the dichotomy made by the writer of this study between the "atomistic" and "holistic" approach, showed that the atomistic approach is more appropriate and adequate.

However, this research has left a lot to be desired. First, we need to establish systematically the differences between "good" and "poor". The bulk of the research done has been on the "good" learner. This is not surprising given the fact that this research was prompted in the first place by a plea by Rubin (1975) to study the "good" learner's LS. Secondly, the concept of "good learner" seems too vague in that successful learners themselves differ in the LS they choose. Thirdly, the approach of using introspection about LS and observation of cognitive activity seems to be useful, but

we must be careful in handling the elicitation of data. The first two issues have already been dealt with in detail in this and the previous chapter. Our main concern now in this section is the third issue.

The techniques of self-reporting and observation of LS suffer from some drawbacks. Observation of classroom activities "can record the physical movements of students— nods of the head, smiles, eye movements, what they say - but cannot capture what they are thinking about, how they are thinking..."(Cohen, 1982:102). In addition to that, such a technique seems to be limited to students of outgoing personality. Reiss (1985) in a recent study investigated the LS of "good" learners, and personality variables such as extroversion/introversion of "good" learners. He found out that "good" TL learners are not necessarily uninhibited. Hence, investigating LS by only observing the behaviour of learners in classroom is tenuous, albeit useful. Not of course to mention that learners learn a lot of vocabulary out of class.

The other interesting drawback of observation of learning (used by Naiman et al 1978, and Rubin 181) is that it bears resemblance to the methodology of using the learners' "product" in that LS can only be inferred from such data, i.e. the information obtained is not itself the LS. Some of the problems of inferring LS from the learners' output, discussed above, also apply to observation of LS, i.e. the confusion of CS and LS. The so-called LS obtained from this

type of data are, as Chesterfield and Chesterfield (1985) observed, "a mixture of different units of speech performance" (P.48), e.g. answer in unison, and repetition. The data itself does not give evidence that the learner is learning and he/she is using these tricks to promote and help learning, nor does not say that the learner is learning and not doing something else, i.e. communicating or doing what is required from him/her such as answering in unison, which usually happens because the teacher has asked the learners to do so.

Interviews suffer from the drawback that some processes and strategies may not be available for report due to the effect of forgetting. The think-aloud technique, on the other hand, taps information which is present in the short-term memory and, hence, the effect of forgetting may be negligible. However, some of the processes, especially those that involve motor activity may not leave a trace in the short-term memory and, hence, they may not be available for report. Klinger (1974) asked his subjects to solve a puzzle involving physical manipulation. The subjects, in some cases, instead of verbalizing the LS and processes, verbalized evaluations of un verbalized attempts, i.e. "Yep", "Damnit", "where I was", "Let us see". Therefore, it is also necessary to record what the learner does as well as what he/she says.

3. 4. SUMMARY AND SUGGESTIONS FOR DATA COLLECTION TECHNIQUES.

To conclude this chapter, we will give a synopsis of the basic issues that are present in the relevant research reviewed. The studies which used learners' interlanguage have given us a description of TL learners' vocabulary competence as well as the general processes of building up this competence on the part of the learner. However, the processes which error analysis studies revealed are claimed to be universal and the question of individual differences between learners in terms of attainment was not involved in the discussion. The studies that adopted a wider framework of analysis, on the other hand, revealed some differences between beginners and advanced learners as far as organization of the mental lexicon is concerned.

On the debit side of the balance, in the methodology of these studies there are at least two potential drawbacks: (1) the study of the process by investigating "product" is rather tenuous, and (2) the validity of the data they dealt with. The latter point is particularly true of the studies that used free production as data. The studies that used controlled elicitation techniques, on the other hand, seem to have a higher content validity, and less controversy could arise concerning the inference of LS.

As to the studies which used direct observation and report of LS (as opposed to using product), they differ from the interlanguage studies in that they consider LS as one of

the factors that can be used to account for the differences between "good" and "poor" learners. These "metacognitive" studies also carry the implication that once the "good" learners' strategies are identified they can be taught to less proficient ones to help them, i.e. the strategies used by "good" learners do help learning. However, the data techniques used in such studies suffer from some weaknesses, in that each seems to be suitable for a particular set of LS. Observation can only record overt behaviour. Using interviews, asking the learners to report from the long term memory on their own LS, runs the risk that the information the learners are asked to report may not be available due to the effect of forgetting. Reporting from the short-term memory, on the other hand, may not be complete because some LS do not leave traces, i.e. become automated. The potential danger in using the techniques of reporting information from the short-term memory (e.g. concurrent verbalization) is that too much intervention from the experimenter may affect reporting on the part of the informant. "Too much intervention" could be anything more than asking the subject to speak-aloud by only saying "keep talking" whenever the informant is silent for a moment.

One could say, as appears from the foregoing, that report from the short-term memory seems to be more reasonable. However, we should also provide for what may potentially not appear in concurrent verbalization. From a data collection point of view, LS can therefore be

divided into three types: (i) those can be potentially reportable in concurrent verbalizations, (ii) those that may not be verbalizable in concurrent verbalization, and (iii) those that may not appear in one or two sessions of concurrent verbalization. To be able to cater for these strategies, I suggest that concurrent verbalization should be supplemented by direct observation of the learner in a learning situation, and using interview or questionnaire. Observation can make up for the unavailable information, when reporting from the short-term memory, in the case of automated LS. Interviews can be used to probe the strategies which are normally used, but may not appear in the verbalizations in a one or two hour session of concurrent report. In the next chapter the details of the methodology will be dealt with.

CHAPTER (4)

THE METHODOLOGY OF THE STUDY

4.0 Having described the topic of concern in this study, the findings and the problems of previous investigations, we will turn now to the objectives assumptions and the methodology employed for collecting and analysing the data in the present work.

4. 1. THE OBJECTIVES AND THE ASSUMPTIONS OF THE STUDY

This study was conducted to achieve the following objectives:

(a) to identify the range and "commoners" of use of the vocabulary learning micro-strategies used by TL learners of English at all levels of education in the Sudan.

(b) to describe qualitatively the nature of the vocabulary achievement of these learners.

(c) to investigate whether the factors of the level of education, overall achievement in English, and the use of English as a medium of instruction for other school or University subjects are related to strategy choice and use.

(d) to see whether level of achievement in vocabulary is related to LS choice and use.

This study, as appears from the first two objectives,

gives a general survey of the vocabulary learning strategies used by Sudanese learners of English. The study also, as appears in the second two objectives, addresses specific questions in vocabulary learning research in general.

Our predictions and hypotheses concerning the results of this study, based on my experience, theoretical considerations, and the pilot runs of this study (done in the Sudan using 15 subjects and the same procedure applied in this study), are as follows:

(1) The learners at different levels of achievement can be differentiated on the basis of the vocabulary LS they employ.

(2) We expect that the micro- rather than the macro-strategies will play a major role in the distinction between different types of learners. This prediction seems plausible from a theoretical point of view, as we argued in chapter (3). It is also based on the findings of the pilot run that all the learners chosen (representing different levels of achievement and education) used the class of the strategy of note-taking; but they differed in the specific strategies they used.

(3) Learning strategies assume an important role in success or failure in vocabulary learning, especially in the Sudan where the business of vocabulary learning

is left to the learners. Therefore, it is quite legitimate to assume that successful learners may have developed some effective LS to master this important aspect. We expect that there will be some interaction between vocabulary LS, on the one hand, and vocabulary knowledge, on the other.

4. 2. METHODOLOGY

4. 2. 1. THE SUBJECTS

The subjects of this study are three hundred Sudanese learners of English. They are all from an urban area: Khartoum. This is meant to eliminate at least one factor (i.e. urban v rural) which is not of concern here and may affect the results of the study. The subjects can be divided into four categories, in terms of their level of education and type of school: 80 first year university students (studied English for seven years), 80 Government secondary school pupils (studied English for five years), 80 Government Intermediate school pupils, (learnt English for three years) 60 private secondary school pupils (studied English for five years). The private (or public school, as generally known in Britain) pupils were included to compare them with their government secondary school pupils counterparts as well as comparing them with University students with whom they share the characteristic that they both study other subjects (i.e. History, Geography) in English. Each of the first three groups, each consisting of 80 subjects, can be divided into two groups, in terms of

level of achievement; 40 subjects in each. The levels of achievement chosen are "good" and "underachieving". "Moderate" students and pupils were not chosen because they might have blurred the picture between the two major groups, and the differences between these two groups may, consequently, become difficult to determine. The 300 subjects are mainly boys.

To ensure the randomness of the selection, certain procedures were followed. First, a random selection of the schools was made; 8 secondary schools and 8 Intermediate schools, two private schools, and three faculties of the ones in the University of Khartoum, in which English is taught: Faculty of Art, Faculty of Education, and the Faculty of Science. Secondly, the subjects were chosen randomly from the "best" and the "worst" in these institutions. This was done by first, preparing a list of all the learners in the two groups in all the institutions chosen, and secondly, drawing a tick against the names by just letting the hand move randomly from one page to another.

The decision on who is "good" and who is "underachieving" concerning school pupils was made by the officials at schools on the basis of the record of the pupil's performance in the examinations and tests throughout their period of study in their respective schools. These tests and examinations typically measure reading, writing, and knowledge of syntax. This judgement of the level of achievement was made on the basis of their overall language level, i.e. it was not based

on achievement on a particular aspect of language. The tests and examinations are effectively norm-referenced, i.e. they are designed mainly to separate those with greater from those with lesser achievement.

As to the first year University students, due to the lack of report about them throughout a number of years, the officials at the University of Khartoum made the decision on who is "good" and who is "underachieving" on three bases: (1) the grade each student got in the English examination for entering the University of Khartoum, (2) the placement-test which the students did before starting their University studies, and (3) the teachers' reports on the performance of students in homework and classroom participation.

Table 4.1: The types and number of learners used for the study.

educational level	No. of good subjects	No. of under-achievers	No. of years learning Eng.
University	40	40	7
Secondary gov. school	40	40	5
Intermediate gov. school	40	40	3
Private secondary school	60		12
total	180	120	

On the basis of the tests, examinations, homework and classroom participation criteria discussed the school and university authorities gave some description and evaluation to each subgroup. The next part gives a summary of these descriptions. We will first deal with "underachieving" students and pupils and then the "good" ones.

4. 2. 1. 1. "UNDER-ACHIEVING" LEARNERS.

(1) University Level: "underachieving" learners of English at this level suffer from a severe lack of the writing skill. Judging by their performance in simple grammatical problems (e.g. putting the correct form of a verb in the context given) they seem to have some grasp of the basic grammatical rules. They can understand the written texts given only with the constant help of a bilingual dictionary. This group had received instruction in English for nearly seven years. Moreover, they had been studying other University subjects in English for 6 months when this study was conducted.

(2) Secondary School level: The "under-achieving" learners at this level lack knowledge of basic English structures. They can understand only a very small portion of the written texts given to them, in that they can understand sentences here and there without having an overall understanding of the theme of a particular text. They can hardly write a small paragraph of (say) 30 words without

making at least than 15 errors of all types (i.e. lexical, grammatical). The group chosen for this study had been learning English for 5 years at the time when this study was conducted.

(3) Intermediate school level: The under-achieving pupils, as far as English language is concerned, at this level are only just above "illiterates" in English. The group which was chosen for this study had been studying English for 3 years at the time when this study was conducted.

4. 2. 1. 2. "GOOD" LANGUAGE LEARNERS

(1) University level: The "good" English language learners at this level can communicate through speech or writing "fairly well". Their grasp of written texts (supposed to be of the standard of learners at this level) ranges from "fair" to "very good". Overall, they do seem not to have difficulty in reading comprehension.

(2) Secondary School level: The pupils in this group, although lacking proficiency in oral communication, can produce "very well" written compositions. They seem to have few problems with reading comprehension.

(3) Intermediate School level: They have a competence of the basic grammatical structures which ranges from "fair" to "very good". They, satisfactorily, understand the written texts given in class. They have problems in producing a

coherent English text. They make few grammatical errors in their written compositions but, overall, their texts are disjointed, fragmentary and far from being well organized as far as texture is concerned (i.e. erroneous use of anaphoric and cataphoric reference).

Government School pupils share the characteristic that they study other school subjects in Arabic. English is only one of the components of the curriculum. All the University students chosen for this study did their schooling in Government Schools, and they had studied other University subjects in English for six months - the duration between their first registration in the University and the time at which they started giving information for this study.

(4) Private school pupils: First, one question that needs clarifying is why we have not chosen "under-achievers" as well as "good" learners for this type of school. There are two reasons for this. First, according to the aims of this study we seek to investigate whether high-input affects the degree of achievement, and the choice of vocabulary learning strategies. The degree of exposure to TL varies between secondary school pupils, on the one hand, and private secondary school ones, on the other. This is simply because the latter start learning English language on the very day they start their schooling. In addition, private school pupils start studying other school subjects in English from the beginning of their schooling; whereas the government school pupils, as we mentioned earlier, study English only as

one of the school subjects and they start learning English at the intermediate levels, i.e. after six years in the primary schools. The group under consideration had been studying English for twelve years when this study was conducted.

Secondly, according to the official reports of the private schools, the weakest pupil can be described, overall, as having a "fair" competence in English (criterion-referenced). No direct comparison could be made between this group and government school pupils because they do not have the same examinations and tests. However, considering the criterion-referenced judgements of each group (such as "fair" as in the above) we could safely say that the weak private school pupils attain more or less a similar level of achievement as that of "good" university students. This of course, is to be tested only partially in this study because we are going to investigate, in addition to their vocabulary learning strategies, their lexical achievement.

4. 2. 2. INSTRUMENTS AND PROCEDURE.

Three tools were used to gather learning strategy data for this study: think-aloud, observation, and interview. As to vocabulary knowledge data, two methods were used: a modified version of the discourse-completion technique, and equivalence formation test. In the discussion that follows the procedure of applying these techniques to collect the data for this study will be discussed.

The data on both vocabulary knowledge and

vocabulary learning strategies was collected over a period of 9 weeks (seven days a week).

4. 2. 2. 1. LEARNING STRATEGIES

4.2.2.1.1. THINK-ALOUD: This method involves the disclosure of thought by the learner as he/she is performing a learning task. This technique typically involves giving the subjects a learning task and ask him/her to verbalize whatever that passes through their minds. The subjects will, of course, be constrained to a large extent by the learning task itself.

Materials: A group of fourteen words was given for the learning task. The words vary from one learner to another because to be as realistic as possible the major criterion for the choice of words was unfamiliarity to the learner, i.e. the words given for the actual task of learning were those that the learner said he/she did not know. All the words that a learner said he knew were replaced by some unfamiliar ones. The criterion for judging whether a learner knows a word was his own judgement. Some of the words that were used include: tilt, anarchy, strategy, desecrate, monarchy, demonstrate, task, conductor, and rapid.

The elicitation format used was that the subjects were given the difficult words and they were asked to verbalize in English, Arabic or both what crossed their mind while learning the words.

PROCEDURE: The elicitation was done with each subject at a time in classroom. Each session took approximately 2 hours. Each session started by thoroughly training each subject in thinking-aloud while performing a particular learning task. The aim was to make sure that the subjects knew what was required and how to go about doing it. To ensure this, not less than three short learning tasks were given to the subjects in the training session. All the instructions were given in Arabic. They could be translated as follows,

"I am going to give you some words to learn now. You will have some tests on them as soon as you finish learning them. But I am particularly interested in "how" you learn them. To make me know this I want you to talk out aloud when you are learning. Say anything that passes your mind. Pretend I am not here at all. If you are silent for a moment I will tell you to talk. I will simply say, "keep talking". The more you talk the more I will know what is in your mind, of course. I will give something, first, to make you familiar with talking out aloud when you are doing something or solving a particular problem. Before we go into anything else, do you have any questions?"

"Good!"

"Now I want you to talk aloud as you are solving the following arithmetic problem."

The problem is : $13 \times 45 \times 25$

"Remember! talk out aloud"

"Good!"

This process of training continued with each learner

until he/she understood the task. Other problems given in the training session included solving jumbled letters which form particular words (e.g. obok = book) and the subjects had to work these words out.

The real task (learning words) followed immediately after the training session. The learners were encouraged not to take notice of the investigator and to carry on talking. Each subject was given the list of the words. No explanation of the words was given, but two dictionaries were available (English-English dictionary and English-Arabic dictionary) for the learner. That was meant, first, to make the situation as natural as possible. Secondly, the sources of information as well as the information sought are of interest in this study. They were told to feel free and at home. To increase rapport, they were allowed to sit in the room where convenient for them. They were told to say anything they actually do to help them learn, i.e. use whatever dictionary they normally use, or even ask the investigator if that what they actually do, write the word, etc.

To try to avoid bias and the possibility of the "observer's paradox", the only instruction given while the subjects were doing the task was "keep talking". There was no time limit. The subjects were told that there will be a test on the words, but no indication of what type of test will be used was given. This was to avoid the potential effect of the type of test on the learning task, i.e. they might concentrate on the aspects that will be tested only.

Telling the learners that there would be a test was meant to be a kind of goal which might force the learner to use his actual vocabulary LS rather than adopt artificial ones just to please the investigator. However, most of the subtle practice LS, such as using a word in real situations (identified in relevant research), are not likely to emerge in such a situation. Therefore the task in question is limited in terms of the number and type of LS that can emerge.

The verbalizations of some informants were tape-recorded. Our pilot study showed us that intermediate school pupils and some other pupils seemed to have been distracted by the presence of a tape-recorder. So, care was taken in placing the tape-recorder in a place where the learner could not see it; but it was close enough to ensure good quality of recording. However, it was not possible to do that in many situations, so the responses had to be written down by the investigator. Following and writing everything that a subject said proved to be an extremely difficult task. Therefore some information was missed. In contrast to the inflation of information in some cases, some subjects had to be trained for some additional time because they hardly said anything on the first try after the initial training.

25 of the "underachieving" subjects, mostly at the intermediate and secondary school level, thought that the task was totally unnatural for them because they normally study in groups. For this reason further sessions for

groupwork were held. It was arranged for each of these subjects to work with the same group he/she usually works with. It happened that many of the members of these groups were not in our original sample of subjects. The same task (learning a group of some difficult words) was given. It is obvious that in a situation of group work, where people have to converse with each other, thinking-aloud in the standard sense is not possible. Therefore, no instruction to think aloud was given. The only instruction given was that they should work as they normally do. Hence, the LS gathered from these subjects were confined to what was observed during this session and what they said they used. It was only our intended subjects that were observed; the rest were only used to create a natural situation.

4.2. 2.1.2. OBSERVATION: This technique was used concurrently with (1), for the same task as a supplement for think-aloud to cater for the strategies which were not verbalized, but had a motor activity counterpart. For instance, a learner, while trying to learn a word, might resort to a dictionary to get information about that word. We expected that he/she would just reach for the dictionary. Depending mainly on what the learner verbalizes, we might miss such strategies from recording. Another instance of such strategies is writing a word down for memorization. The subjects are less likely to verbalize such activities. These expectations are based on the findings in relevant research (see chapter 3). However, there is also the possibility that such activities might be

verbalized. Hence, observation was used as a contingency measure to fill the gaps in concurrent verbalizations.

Observation covered two categories of strategies: potentially unverbalizable strategies: strategies that basically involve motor activity, i.e. the micro-strategy of writing a word repeatedly to help retain it may be conspicuous by the action of writing by a learner; and strategies which require a higher level of organization of memory such as using a particular dictionary as opposed to the others, e.g. a monolingual dictionary as opposed to a bilingual one. Verbalizing such a strategy requires from the learner to analyse his learning behaviour because to say something like "I will use an "English-English" dictionary" presupposes that the learner is analysing his/her behaviour and he/she is comparing different dictionaries. This, however, was not required. (See the distinction between analysed reports and unanalysed ones in chapter 3).

PROCEDURE: As we mentioned above the technique of observation, as used here, was a contingency procedure for the investigator to record down all that the learners did while they were verbalizing as required from them in the manner described above. The only job which the researcher did, in addition to listening carefully to the verbalizations, which were being tape-recorded or written (by the investigator) at the time, was to watch what the learner was actually doing. The exact actions done by the subjects were written down.

Some of the problems that were encountered in writing down the verbalizations, discussed above, also apply here. Some learners started doing something then they suddenly changed their mind and began to do something else. In some cases, the learner started doing at least three things and abandoned them to do something else. Given the whole data this can easily be explained in many cases. For example, one learner started writing the word demonstrate in what appeared to be the intention to write it repeatedly because he wrote it once and continued writing it for the second successive time, but he changed his mind in the middle (demon....) to look it up in the dictionary. The apparent reason, as appears in his verbalizations (at the same time he was writing the word he was saying, "demonstrate means....it means...)"^{was} that he was also trying to remember what the word means. Then, he resorted to a dictionary, and during the course of looking up in the dictionary he remembered the meaning before he could cite the word in the dictionary. He put the dictionary aside immediately after this and started saying both the word and its meaning repeatedly. This example shows that recording everything the learner does or say in a learning situation is a difficult task. Video, of course, gives an ideal recording method, but it was not possible for the writer of this study to use for financial reasons.

An observational schedule was prepared to help the researcher conduct an accurate observation. This schedule was based on the findings in relevant research. This

schedule was as follows:

1.Dictionary use, includes LS such as which dictionary the learner uses, which information is sought.

2.Strategies related to memorization, e.g. writing a word down as an aide memoire.

4. 2.2.1.3. INTERVIEW: The questionnaire-guide (see Appendix) was divided into 4 parts. Each part is concerned with a different class of strategies. All of them are habitual strategies. They were mainly drawn from the verbalizations gathered using the previous two methods and from relevant research. The investigator was quite aware, as stated in many places in this chapter, of the limited number of vocabulary LS that can be gathered by setting a learning task and getting the subjects to verbalize in the manner described above. The interview was meant to cater for such strategies.

Part one is mainly concerned with the class of strategies which may be termed "sources of information about difficult words." The questions range from asking the learner about the sources he/she uses to get information about difficult words to the information they seek about words. This part includes particular sources of information which were collected from previous research and from the remarks the subjects had made while doing the think-aloud task for this study. These sources include "asking classmates", "asking teacher" and "using written sources". These were only used

as prompts.

e.g. If you come across a new word how do you get further information about it?

prompts: Ask teacher? ask classmates? spelling? etc.

Part two is concerned with dictionary use. Two issues form the basis for the questions: the type of dictionary they use (e.g. monolingual), and the information they look for when they look up in a dictionary. Therefore this part consists of two major questions and some prompts to help the learner.

e.g. If you use a dictionary, which type do you use?

monolingual? bilingual? both?

A sub-question of this question is the one that enquires about the reason for using the type of dictionary the learner has said he uses. It was meant as one way to probe learners' needs.

The third part deals with the use of note-taking and what strategies are used within this class of strategies. The first question has to do with whether the learner uses this class of strategy at all. The second question is concerned with whether the learner makes notes in the margin of his/her textbooks or he/she uses a separate book. Our expectation is that there is more scope for writing more information in a

separate book than in the margins of textbooks. The other expectation is that using a separate book is a way of practising words and hence, it is more likely that "good" learners will use this study more than the "underachievers". The third question in this part is concerned with how the learners organize the words in the note-books (for those who use a separate book, of course). Some prompts are given: alphabetically? In the order one encounters words? The fourth question in this part deals with the information a learner can keep about a word. The prompts given in this connection are the aspects of a lexical item, i.e. spelling, lexical-grammatical aspects (see chapter 2).

The fourth part of the interview guide is concerned with practice and memorization. There is only one question which is related to what the learners do to enhance learning. Some prompts were given. These prompts were mainly drawn from relevant research and the pilot run of this study

e.g. experiment with the newly-learned words in contexts?

Ask to be tested?

Check written sources to confirm knowledge?

✓ **PROCEDURE:** The same 300 subjects who had been used for the think-aloud task were also used afterwards (in a separate session) as interviewees. The average length of each session was 20 minutes. Each subject was interviewed individually in Arabic. The answers were written down by the

interviewer. The interviews were carried out in the schools nearest to each subject's residence. Permission to use the school had to be secured first. The parents of the pupils were asked to allow their children to participate in the interview. Because of the personal approach of the writer of this thesis towards the parents, they offered to pay the transport expenses for their children in case the learner had to take a means of transport.

Two major problems arose in administering the interview. First, the wording of the questions was not as easy as the investigator expected, especially with intermediate school pupils. It happened in many cases that some subjects responded with what they thought to be the ideal way of (say) practice. This is quite apparent in responses like "I ought to use it many times in compositions". When they were asked whether that was what they actually do, some of them answered yes, whereas some others answered no. In other words, some learners do exactly how they think language should be learnt, whereas others do not. This means that we had to be more subtle in the questions and make it clear that what was required from them was to answer according to the vocabulary LS they actually employ and not what they should ideally use.

The other major problem is that not every subject seemed to be clear about their LS. Even with what might seem to be simple questions like which source of information they prefer and use most, some of the subjects were not clear.

Some of the questions were redundant for some subjects, particularly, the part on dictionary use. At the time the interview was held we already knew, on the basis of think-aloud data, that some subjects do not use^a dictionary at all. The interviewer had a summary of the relevant information concerning each student) or pupil interviewed (i.e. background information such as level of achievement; and whether he/she used a dictionary).

4. 2. 2. 2. VOCABULARY COMPETENCE

4.2.2.2.1. INSTRUMENT (1): "Error identification and correction" tests were used to probe the subjects' knowledge of the grammatical aspect and the syntagmatic aspect of meaning (collocation) of lexical items. The tests were based on a similar idea as the discourse-completion technique (see Blum and Levenston 1978). The aspects tested are as follows:

1. Syntagmatic aspect of meaning: collocations.

2. Lexical-grammatical aspects of lexical items:

i Grammatical idiosyncrasies (syntactic frame of words) e.g. the complementation of the verb want, and some basic qualities of nouns such as their use with much and many.

ii Derivations and grammatical class. e.g. lazy/laziness

Both recognition ability and production ability were tested. For this reason a wrong lexical item (e.g. collocation, wrong form as far as grammatical class is concerned) was supplied in the sentence. Each test consists of short paragraphs with a word being used wrongly or an important word missing.

Three tests were prepared to test 1, 2.i, and 2.ii, mentioned above. Short sentences and simple structures were used in the discourse units of each test to avoid unwanted structural complexity. The words chosen for the discourse units were also simple and supposed to be within the grasp of all the subjects. They were chosen from the textbooks they had or had been following at the time when the study was conducted. To ensure high content validity, in addition to the measures above, other measures were taken. The tests were tried on five native speakers of English. The instructions given to these people were that they should mark anything they think is wrong in each discourse unit. The aim was to reduce any possibility that any word other than the intended one was wrong, that the intended word may be correct, and to raise the probability that the intended word is wrong for the reason the designer of test intended it to be. In short, measures were taken to make sure that the tests measured what they are supposed to measure. Some modifications were made due to these measures, i.e. adding more contextual constraints (see appendix for the tests).

There were 15 items in the test of collocation, 35 for

derivation and grammatical class, and 40 in the test on grammatical idiosyncrasies.

PROCEDURE: Each of the three tests was administered at one time to the subjects in three different schools. The subjects were divided into 15 groups; 20 subjects in each. The rationale behind that was that strict invigilation to prevent consultations among students is more likely to be effective with a small number of subjects. The students and pupils were told that these tests had no bearing on their school marks. For each test, the subjects were instructed to mark the incorrect word in each discourse unit. They were told whether there was one or more incorrect or missing words. As we mentioned above, in each discourse unit of the collocations test and grammatical idiosyncrasies there was one incorrect word, whereas there was more than one in the discourse units of the test on derivations and grammatical class of words. The test on grammatical idiosyncrasies contains some missing words, whereas the others do not. When each subject had finished marking the incorrect words, they were instructed to provide the correct word for each word they had marked as incorrect, or where they had thought a word was missing.

Each test yielded 2 scores for each person: (a) number of errors correctly spotted; and (b) the number of errors correctly corrected. This gives 6 variables for the three aspects.

No time limit was set. Each session took approximately

an hour.

4.2.2.2.1. INSTRUMENT (2): A semi-equivalence formation test was devised to test conceptual meaning. The test, simply, tests the ability of the subjects to recognize similarities and differences among words. To do that a strict division of semantic features is required. The stimuli chosen were meant to involve two different phenomena: intra-lingual and inter-lingual complexity, and assess their bearing on learning conceptual meaning in TL.

MATERIALS: The stimuli were chosen to represent the following categories:

1. TL synonyms whose collective semantic area is covered by one L1 (Arabic) equivalent word. These will be referred to in the analysis as synonyms (a)
2. TL words each group of which has one equivalent in the subjects' L1, e. g. clock/watch translate in one word in SSA - referred to in the analysis as "pseudosynonyms" (b).
3. TL polysemous words: These represent real English polysemous words, e.g. bank - referred to in the analysis as "polysemous" words (a).
4. TL words each one of which has two equivalents in L1 (Arabic) corresponding to a single TL meaning: e.g. cousin, uncle, aunt - referred to in the analysis as "pseudopolysemous" TL words

These categories form the basis for the choice of the test materials. The reader is also referred to chapter 2.

In the original version of the technique the stimuli are chosen in categories (i.e. fruits, animals). In other words, the words in each subset are related by being hyponyms of a particular superordinate. The aim of this is to investigate how the subjects being studied perceive the relationships among the subordinates of a particular superordinate and how they categorize these relationships, with the assumption that these relationships are related to cognitive development, which develops with age. But our aim here is purely semantic. We have established 4 subsets of words. The relation among the words in each subset is not a matter of belonging to a particular superordinate. In each group there are the words under investigation and other words used as primes to differentiate between the features of the words under investigation. Let us discuss each subset in detail and hope this point will become clear during the course of the discussion. The subsets of words represent and follow the numbering of the 4 categories outlined above. Each subset consists of pairs of words.

- Set (1): (a) look/intentionally, see/intentionally,
watch/attentively, see/attentively.
- (b) gaze/anger or wonder,
gaze/admiration, stare/anger or wonder,
glance/anger or wonder, stare/admiration
glance/admiration

(c) cold/pleasant, cool/uncomfortable
cold/unpleasant, cool/pleasant.

The words under investigation are: look, see, watch, gaze, stare, glance, cold, and cool. The words in each subset are real English synonyms. The other words (not underlined) are primes. They all gave 14 pairs. The aim here was to investigate whether the students were able to compare and contrast between the synonymous words in each subset. The words in each subset have one equivalent in Sudanese Arabic.

Set (2): (a) bank/river, bank/sea, beach/sea, beach/river
(b) clock/wrist, clock/wall, watch/wall,
watch/wrist.
(c) trip/picnic.
(d) cross/knife, cross/road, cut/knife, cut/road
cut/cross.

The basic words in this set are underlined: bank, beach, clock, trip, picnic, cross, cut. In all pairs there is at least one underlined (intended) word, and another word such as river and wrist, which are meant to be primes to help the subject detect the intended meaning. The primes were given as signals of the sense intended concerning the basic words. In short, can the students, given a word and a prime distinguish between the subtle meanings of synonyms (say) beach and bank?

Set (3): book/read, book/ticket.
light/dark, light/heavy

right/left, right/correct

bank/money, bank/river

The main words in this list are book, light, bank and right. These words are real English polysemes. The other words are primes. They all gave 8 pairs. Each pair is concerned with a particular sense of the four words. The conviction is that, for example, if the student knows that the word "bank" has at least two senses and he knows these two senses he will respond by giving some sort of relationship between bank and river on the one hand, and bank and money, on the other.

Set (4): (a) uncle/father, uncle/mother, cousin/father,
cousin/mother, aunt/mother, aunt/father

(b) book/print, book/write

(c) car/lorry, car/truck, car/taxi.

The main words here (underlined) are uncle, cousin, aunt, book, and car, and the others are primes. 11 pairs were given; each pair represents a relationship for which there is an SSA word. The main words are false polysemes because each one has more than one equivalent in SSA. The primes (say) father and mother are used as primes to indicate the features that the words cousin, uncle, and aunt are all father's and mother's relatives.

Each of the four categories was treated as a separate

variable in the analysis.

PROCEDURE: The test was given in the same venue in which the the previous vocabulary tests had been administered. The same groups were used. The test was administered at different times with the groups. The test was conducted in 15 sessions. Each session was with a different group. Each pair of the pairs discussed in the materials above was presented at a time. The following instructions were given:

"We would like you to tell us how members of each of the pairs of words I will be presenting to you are the same in meaning and, secondly, how they are different in meaning. Remember the criterion is meaning and nothing else."

The subjects were told that similarities/differences in form (spelling and pronunciation) are not acceptable. The instructions were given in Arabic. Each pair was written on the blackboard in the classroom. As to the response format, the subjects were asked to write down their answers in English and/or Arabic (see appendix for some samples of the subjects' responses. Each session took approximately 2 hours.

4. 3. DATA ANALYSIS

As is the case with all think-aloud and observational data, the data or learning strategies of this study seems at first partly disjointed and disorganized. The data is mainly a record of thought lacking analysis and abstraction. This of course, is not the case with data gathered using interviews with a set questionnaire. Our task is to make sense out of

this data. We will endeavour to do this by, first, classifying the data into categories according to a scheme of analysis so that later some statistical tools can be used. Cluster analysis was the statistical tool used. The classification of LS involves coding the data into categories using alphabetic labels, in the first place, and then coding them into binary variables for statistical analysis since ^{the} cluster analysis program available could not deal with categorizations other than binary ones. These two processes are discussed in more detail in the following two sections.

As to the data on vocabulary achievement, no such classification of the type mentioned above is involved, therefore the discussion of the classification of the data only involves learning strategy data. The responses for the vocabulary tests were coded into interval data by assigning one mark for each correct answer and a zero for an incorrect one yielding numerical scores for each test. They could then also be submitted to cluster analysis. The total score for each vocabulary test is as follows,

1. real TL synonyms (a): 14
2. TL pseudosynonyms (b): 14
3. real TL polysemous words: 8
4. TL pseudopolysemous words: 11
5. syntagmatic aspects of meaning: collocation:
recognition: 15
6. syntagmatic aspects of meaning: collocation:

production: 15

7. derivations and grammatical class: recognition: 35

8. derivations and grammatical class: production: 35

9. grammatical idiosyncrasies: recognition: 35

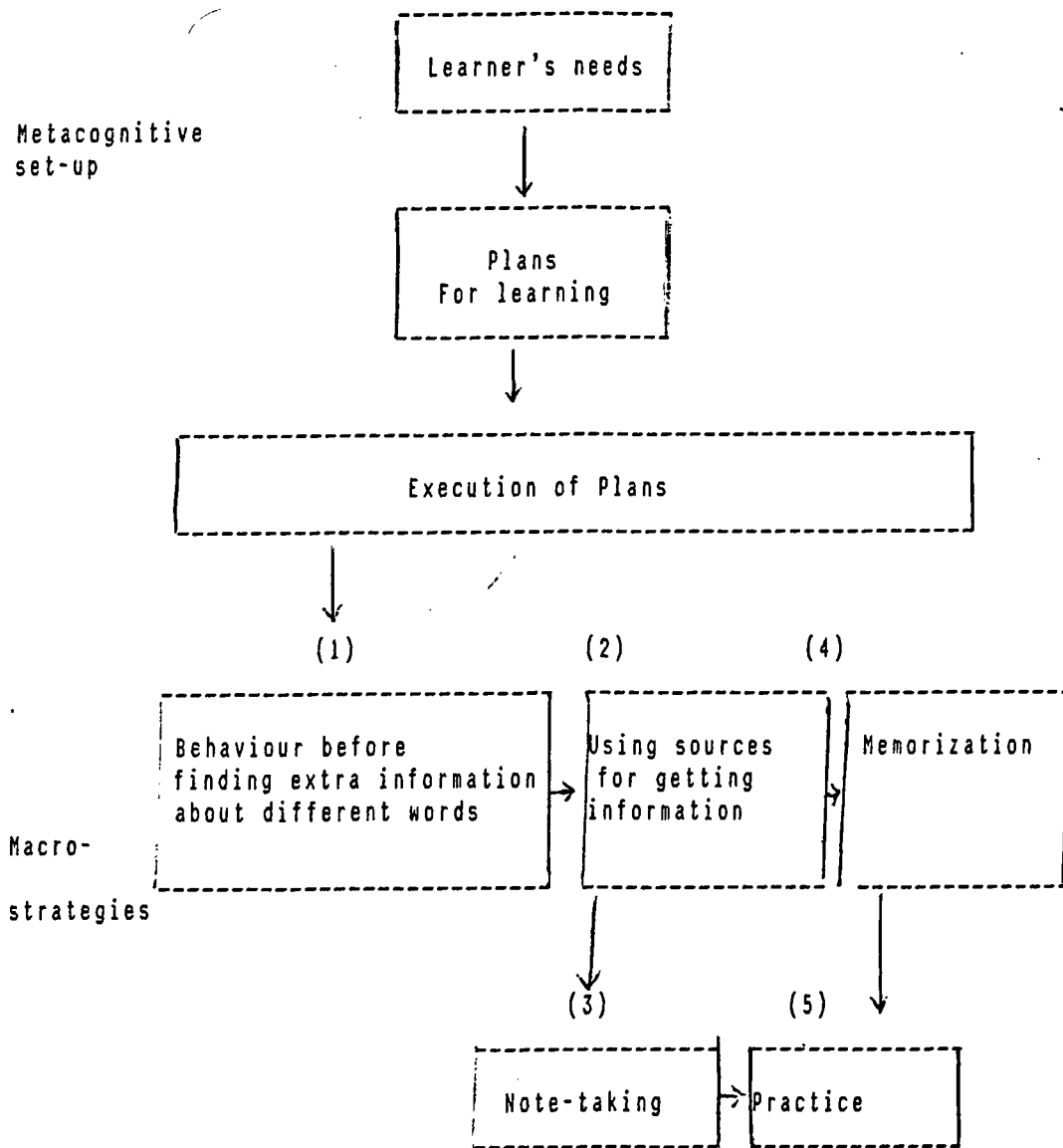
10. grammatical idiosyncrasies: production: 35

4. 3. 1. CLASSIFICATION OF THE LEARNING STRATEGY DATA

First, a word about the use of the word "classification" is in order. Classification is sometimes used as a synonym of clustering. In this thesis the word classification is reserved for referring to coding data by assigning them to categories, whereas the words "grouping" and "clustering" will be used with the cluster analysis report. The process of classifying data simply involves, first, giving descriptive labels to each strategy, and, second, using broad categories under each one of which a number of alternative specific strategies are listed. I hope this will become clear during the course of this section. A particular scheme was devised to serve the purpose of proper classification. We have already discussed the merits and demerits of the two main schemes of classification in the relevant literature (see chapter 3). On the basis of our criticism of these two proposals (lack of involving learner's needs, confusion of what the learner believes about how language should be learnt and what he/she actually does in learning a TL language, and the fact that these proposals are meant for classification of learning strategies in general and not particularly meant for vocabulary learning strategies) we feel there is a need for a

modified, if not a different, classification scheme. The scheme suggested faithfully represents vocabulary learning as it occurred in the task set and in the order in which strategies to advance learning were actually applied by the learner (see Fig. 4.1). It should be emphasized that this scheme was only meant to be descriptive and produce an accurate classification. One of the major difficulties of classification is producing mutually exclusive categories, i.e. a micro-strategy may belong to different macro-strategies, as discussed in chapter 3. Following what a learner does may help in solving this problem. The proposed scheme is based on this idea. When a learner encountered a difficult word, and he/she wanted to learn that word, he/she would decide on his/her "needs" to learn that word. These needs may be communication (e.g. understanding written texts), or they may be just to pass an examination of English. Then, he/she would have a "plan" for learning. A word about the "plan" is in order. This term is usually used with communication strategies and in relation to the production process generally in psycholinguistics, and it was also used by Miller, Gallanter and Pribram (1962) as a synonym for the word "process" referring to both communication strategies and learning strategies. In the proposed scheme, "plans" is used to refer just to the learning process. Learning plans to humans are what programs are to a computer, to borrow Sharwood Smith's analogy. These two processes form the metacognitive base. The "learning plans" may be seen as chosen according to the

Figure (4.1): A Scheme for classifying LS data.



needs which, in their turn, determine the choice of the macro- and micro-strategies. In other words, LS are chosen according to what the learner thinks is the best way that the learning should be carried out to achieve those needs. This part is only speculative. However, there is some evidence from the interview data which lends support to the proposal that needs are related to LS choice, as will be discussed in the results. When the metacognitive base is set up the learner chooses all or some of the main five strategies:

- (1) learning some aspects of the word in question, (i.e. spelling) before checking sources to get information (including meaning) about that word.
- (2) using sources to get extra information about the word
- (3) The second activity may be, if the learner chooses to do so, immediately followed by taking notes about the relevant features of the word (relevant to his/her needs, of course).
- (4) Memorizing the word for retention (i.e. retention of whatever information arose from 1 and 2 above.
- (5) Memorization may be followed, later, by practice to ensure retention.

The arrows in the figure indicate sequence. For instance, the arrow between strategy (2) and strategy (3), pointing towards strategy (3) indicates that note-taking follows using sources for getting information about difficult words.

4.3.2. CODING OF LEARNING STRATEGY DATA:

The actual process of coding the data using the scheme described above was carried out in a number of steps. First, a preliminary grid was designed for each individual subject. It contains the strategies reported used by a learner. The strategies are given simple descriptive labels (e.g. using a word in real situations, such as conversation to ensure retention) Secondly, a more detailed grid was devised for each learner on the basis of the preliminary grid and incorporating the information contained in the "Language Contact Profile" about each learner (see appendix for a sample of this grid and for the Language Contact Profile) and the vocabulary test results. Each grid finally contains 3 sets of information, all coded into variables,

- (1) Information from the language contact profile of the learner (i.e. educational level, type of learner (good, or under-achieving learner).
- (2) The scores got on the vocabulary tests (i.e. collocation, meaning, etc.) devised for this study.
- (3) The five activities described above in our scheme of analysis, under each one of which the strategies used by the learner are listed.

As to the actual process of including a strategy within one of the five classes of strategies, a strategy is listed only once under a particular activity as long as it occurred

within this activity. If the same strategy had been repeated in different activities, it was treated as a different strategy. For example, looking for information about the collocation of a word in a dictionary, and including this information in the entry for the word in the learner's vocabulary book are listed as two different strategies. The aim behind this is to give a detailed picture of what a learner does in carrying out the five basic activities.

However, the process of classification was not that simple, especially with think-aloud data. It was not easy in many cases to decide whether a learner was reading information from his/her notes or saying that information outloud. It also happened that some learners wrote a word a number of times and at the time they were saying it repeatedly. It was not easy to decide whether this is a strategy of both writing and saying or just writing. Deciding that it is only writing may be explained by saying that "saying" only occurred because the learner had to keep verbalizing. This problem could have been solved by careful observation had it been anticipated from the pilot study. In the absence of any clue, such strategies were considered one strategy of both writing and saying.

One of the other major problems is the classification of the think-aloud data concerning the information sought in dictionaries. Some learners, after citing the word in the dictionary, read all the entry. Could we take it that he/she is interested in all the information about the word in the

dictionary? This was a difficult question to answer. Resort was made to the information gathered by interview and by examining the notes the subjects made when they were doing the think-aloud task.

Reliability was checked by having two independent raters read and analyse some unanalysed transcripts, code the data, and compare results with the initial classification done by the writer of this thesis. Each of those raters was given fifteen transcripts. High agreement was revealed among all the raters including the writer.

4. 3. 3. STATISTICAL ANALYSIS OF THE DATA

4. 3. 3. 1. LEARNING STRATEGIES: Generally speaking, the results were reported in part by, first, classifying data, and second, comparing and contrasting the strategies used by "good" learners with those used by "under-achievers". This comparison and contrast, in most cases, did not go beyond stating whether a "mention" had been made by (a) member(s) of one group as opposed to the other i.e. no elaborate statistics have been used. When no mention of a strategy was made for one group, a difference is said to exist between the groups (see our discussion of Porte's study in chapter 2). We intend to go beyond this procedure which we think obscures a number of facts. First, to state an obvious research assumption, finding a strategy as being used by one or two members of a group of (say) 50 learners is by no means an indicator that the use of this strategy is a characteristic

of this group. Research is more concerned with, inter alia, general trends. Following this assumption we need a statistical technique to investigate general characteristics, in terms of classes of strategy and strategy use, of learners (see research questions), and decide how many instances of use of a strategy are enough to say it is a feature of a group.

The second important contrast with other work is that the main hypothesis of the study is that there will be a difference between "good" and "poor" learners in strategy choice, the null hypothesis is that the responses obtained from the subjects of the study would not differ markedly from group to group. Others looked only for strategies in the groups "good" v. "poor", i.e. the groups were presumed a priori. Consequently, no groups were discovered from the strategies. In contrast, this study was meant to discover groups on the basis of strategy use. It should be stressed that the study, as stated in section 4.1., was meant to be exploratory. The hypotheses, therefore are no more than expectations. They will not be tested in the strict statistical sense standardly used in inferential statistics. The statistical analysis applied will help us discover patterns, if any, and consequently the judgement will be made on the main assumptions. The statistical tool used was cluster analysis. The basic function of cluster analysis, as a technique, is to find "natural groupings" in a set of subjects given a dataset, such that the members within a group are similar to one another in their strategy

use, while individuals in different groups (clusters) are dissimilar. Therefore, the intention behind using it in this study is to discover the groups, made purely on the basis of strategy use, in the sample of the subjects used. The assumption of the study will be dealt with by comparing the obtained groups with the presupposed groups stated in the objectives of the study and with other grouping arrived at, e.g. vocabulary tests. For a readable literature on cluster analysis the reader is referred to Scholfield (forthcoming); Everitt 1974; Jones-Sargent 1983; and Youngman 1979.

Before submitting the LS data to cluster analysis, it had to be binarized, because of its qualitative nature, so that each strategy is represented by a binary variable. If a subject had used a strategy, the score given is 1, if he had not he was given a zero for it (see Fig. 4.3). Fig. 4.3 was made on the basis of the data in which each subject together with the list of his/her strategies are shown (see Fig. 4.2). This binarization seems natural given the design of the study, in particular, the use of strategies rather than classes of strategies as variables. The question of use and non-use is, obviously an either-or question. Using classes of strategies is not either-or, i.e. a learner may use a class of strategy (say) note-taking, but he/she will not necessarily use the same strategies of note-taking used by another learner. Binarization had to be done, because (1) the CLUSTAN program needed numerical or binary data only, and (2) the data did not contain any evidence apart from

occurrence/nonoccurrence of a micro-strategy for a particular learner. Fifty-two such strategies were classified from the data, giving a total of 52 binary variables. Four of them (from the interview) are redundant for this sample, in that the subjects in our sample all scored zero on them. Another set of 8 (1, 13, 14, 18, 19, 20, 40, 43, see table 5.1 in the next chapter for the definition of these strategies) strategies have a low percentage of use by the sample.

Fig. (4.2): A sample of the data before binarization

cases	strategies	code
1	i Sources to get information about word: asking groupwork dictionary	3 9 12
	ii memorization: writing a word and saying it repeatedly	21

Figure (4.3): Illustration of assigning binary values to the LS.

Cases	str 1	str 2	str 3	... 52
1	1	1	0	
2	0	0	1	
3	0	1	1	
4	1	0	0	

It is customary to eliminate such variables from analysis as they may lead to "similarity levels across the whole sample being artificially inflated" (Jones-Sargent 1983:140), and because they do not contribute to defining groups. The preliminary analysis, however, has shown that elimination of these variables produced no remarkable effect on the grouping, nor in the membership within a group.

The computer program used for this study is that of the Wishart's Clustan (See Wishart 1982). The Clustan options used for the analysis were:

- (1) Binary Euclidean distance for the distance coefficient.
- (2) Ward's method for the clustering algorithm.

The choice of a coefficient was necessary because the cluster technique used (Ward's method), like most clustering methods, does not work directly from the raw data of ones and zeros, but from coefficients of similarity and/or dissimilarity between each two cases of the sample. The choices were made on the basis of a number of runs on the whole data. The similarity ratio coefficient, in which zero matches are discounted, was tried as zero matches may create artificial similarity. The result of the analysis using this coefficient and Ward's method is represented in Figure (4.4). This figure shows the dendrogram produced by clustan programme Plink, showing the fusion process which results

from the application of the similarity ratio coefficient.

Before the decision on the two options mentioned above was made, a number of other options was tried. The following combinations of options were tried:

- (a) (1) Similarity Ratio + single linkage
(nearest neighbour linkage).
- (2) Similarity Ratio + complete linkage.
- (3) Similarity Ratio + Ward's method.
- (b) (1) Binary Euclidean Distance + single linkage.
- (2) Binary Euclidean Distance + complete linkage.
- (3) Binary Euclidean Distance + Ward's method.

The results of some of these preliminary "tries" are shown in Figs. (4.4 - 5). These figures show the fusion steps from one level of clustering to another. As is clear from the dendrograms, these solutions, apart from (b)(2), give us no idea about the groupings of our sample, as no meaningful clusters are discriminated. No further analysis can be obtained from such analysis as the dendrograms tell us nothing and no cluster diagnostics are given. This not unexpected in using cluster analysis. The combination of Similarity Ratio, or Binary Euclidean distance + Ward's method seems to be informative and

Fig. (4.4): Dendrogram based on similarity Ratio Coefficient and Ward's Method

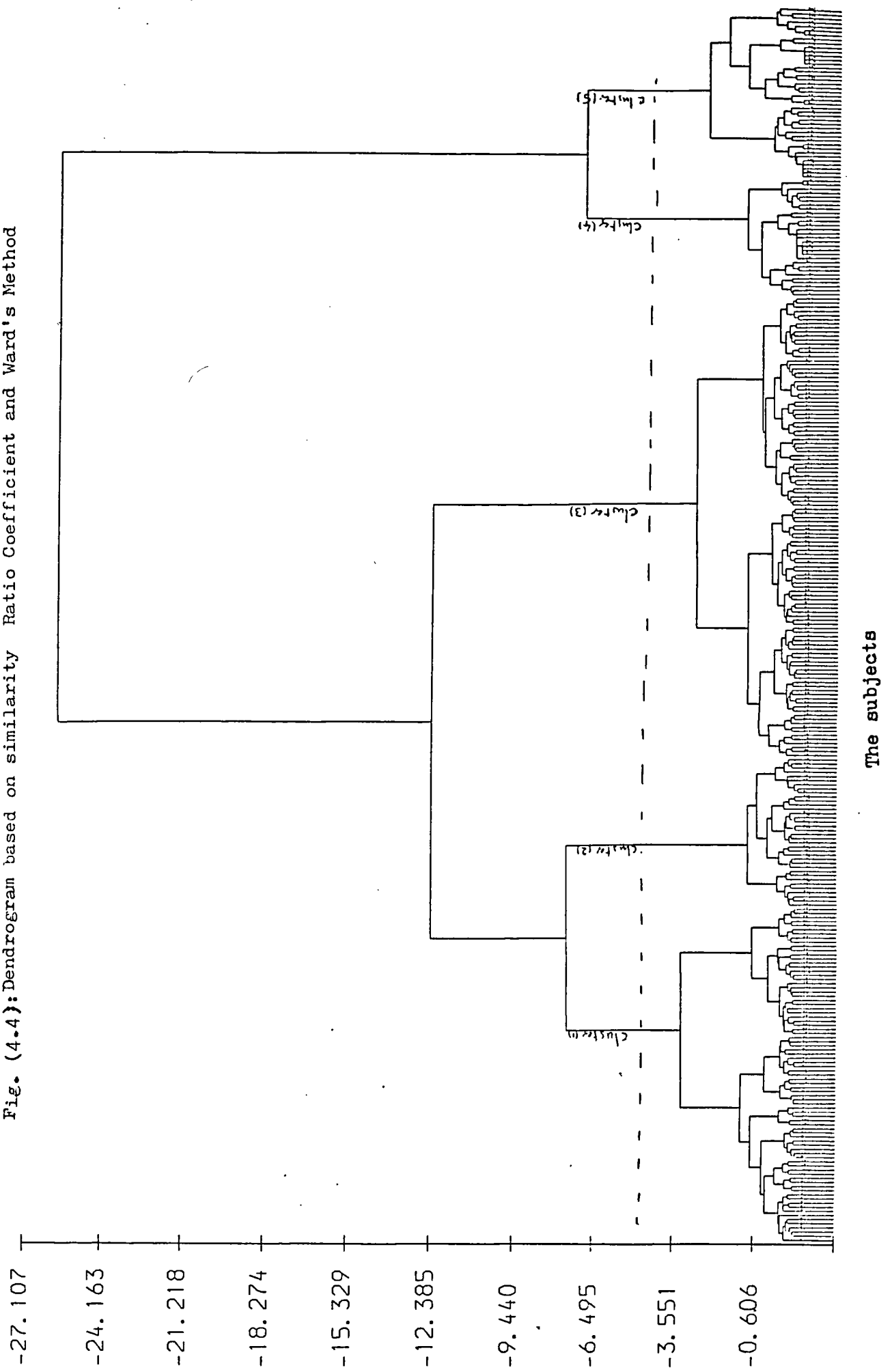
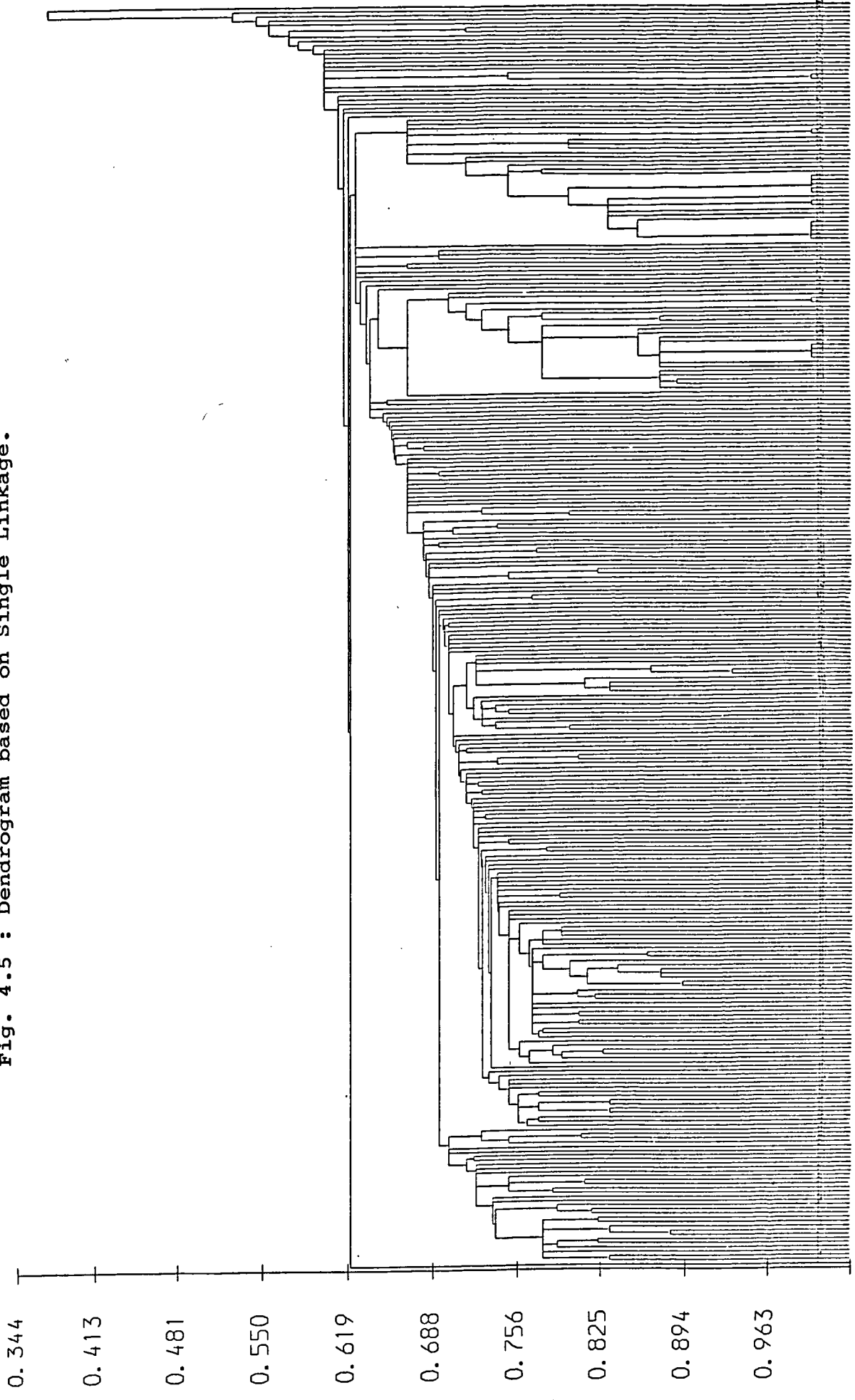


Fig. 4.5 : Dendrogram based on Single Linkage.



The subjects

illuminating as the fusion tree shows clear groupings (cf. Figs. 4.4 and 5.1 with 4.5).

Given these results in the pilot runs, it seems that the combinations of either Euclidean distance or Similarity Ratio and Ward's method offer the best opportunity for further analysing our sample in a meaningful way. Clusters generated by this combination of options are analysed in detail in connection with the basic research questions of this study in chapter 5.

4. 3. 3. 2. VOCABULARY DATA. The scoring criterion adopted was the traditional scheme of one correct answer - one mark. The items which are supposed to be wrong, but missed out (left unmarked) in the recognition tests were considered "wrong" (i.e. a zero was given for each). One of the other major problems was that in some cases there was a correction of some wrong items which had not been previously marked as wrong. Should one consider such items as wrong for recognition because they had not been marked at first? Or should one consider them correctly recognized for the simple reason that to correct something wrong, one will have to decide it is wrong in the first place. We opted for the latter because there was no time limit for the recognition test.

Assigning ones and zeros was done with respect to all the vocabulary achievement tests. This means that the raw vocabulary achievement data is interval data, as opposed to

binary.

The vocabulary aspects tested yielded 10 variables which were used to analyse the sample. As mentioned above, the statistical tool used was cluster analysis. Similar procedures to the procedure described above for the choice of clustering algorithm were carried out. However, due to the difference in type of data between the strategy data and vocabulary achievement data, one minor change was made. The following CLUSTAN options were chosen:

1. Euclidean distance, instead of binary Euclidean distance
2. Ward method (works for the two types of data)

The vocabulary tests did not consist of the same number of items, as discussed above. This may affect the result as different criteria would be used. The option of standardizing the score on the 10 variables was chosen to avoid the weighting effect. Standardizing roughly means giving the variables equal effect.

CHAPTER (5)

THE ANALYSIS OF STRATEGY DATA

Having stated the basic research questions and the methodology used in collecting and analysing data for this study, we will proceed to report the results obtained and discuss them in relation to our basic research questions. The first part of this chapter deals with the results of the categorization of the LS data. The second part is concerned with the results obtained using cluster analysis of the subjects on the basis of the LS identified. It is worth mentioning that the strategies which were not included in the statistical analysis, for the reasons discussed in the previous chapter, will be dealt with in the last part of this chapter, which deals with further discussion of the results.

The total number of instances of strategy use identified in the verbalizations was 4863 over the 70 sessions, making an average of 69.47 per each two-hour session. The 4863 instances were further classified into 51 learner micro-strategies, as will be discussed in the second section of this chapter.

5.1 THE RANGE OF THE MICRO- AND MACRO-STRATEGIES IDENTIFIED IN THE DATA

The classes of the strategies identified include a

similar range to that identified in the literature. But the specific strategies within each class of strategies included a wider range than that identified in the literature. For example, in most studies the class of the strategies of "note-taking" is listed without any further details. The data of this study have shown that the strategy of note-taking, ipso facto, encompasses a wide range of options (strategies) which a learner can choose from. This applies to all the classes of strategies identified in the verbatim reports of the subjects of this study.

The techniques of think-aloud, LS observation (in the ad hoc sense used in this study), and interview (in the manner in this study) proved to be prolific and they are, by and large, productive techniques for probing vocabulary learning strategies. This judgement was made on the basis of the sheer number of the strategies identified and the reliability judgement made in the previous chapter.

5.2 CLASSIFICATION OF THE DATA

The classifications are reported here by listing the macro-strategies as headings, and listing the micro-strategies for each strategy under those headings. Categories of strategies (macro-strategies) are only used in the interest of easy reference. It is the specific strategies that we are mainly interested in. They form the basis for further analysis, as we discussed above. Despite that, great care was taken in categorizing the specific strategies under

Table (5.1): The macro- and micro-strategies identified in the data, together with their percentage of occurrence for the whole sample

Type of Strategy	Code	Learner Technique	Freq.	Percc.
(1) Learning some aspects of words before knowing their meaning	1	Writing and saying words repeatedly to learn: (i) spelling (ii) word by heart	10 11	3.33 3.66
	(2) Sources used to get information about difficult words on first encounter	2 3 4 5 6 7 8 9 10	Ask classmates Guessing Ask teacher Overlook Ask about meaning by demanding English paraphrase or a synonym Ask for Arabic equivalent Ask for a sentence demonstrating word usage Group work Dictionary	229 215 170 103 81 79 59 100 192
(3) Dictionary use	11	Using monolingual dictionary	118	39.3
	12	Using bilingual dictionary	132	44.0
	13	Looking for information about spelling	2	0.6
	14	Looking for information about pronunciation	34	11.3
	15	Looking for meaning	190	63.3
	16	Looking for word derivations	107	35.7
	17	Looking for the grammatical class of a word	100	33.3
	18	Looking for information about the collocation of word	9	3.0
	19	Looking for stylistic-overtones of word/s	0	0.0
	20	Looking for grammatical idiosyncrasies	0	0.0
21	Seeking examples demonstrating word usage	50	16.7	
(4) Memorization of word	22	Writing + saying a word repeatedly	126	42.0
	23	Saying word repeatedly	144	48.0
	24	Saying + writing word + English synonym repeatedly	80	26.7
	25	Writing + saying English synonym repeatedly and then writing the word in question once, then repeating the process	92	30.7

Table (5.1) cont'd.

Type of Strategy	Code	Learner Technique	Freq.	Perc.
	26	Write + say word + Arabic equivalent repeatedly	100	33.3
	**	Pairing a word with some aide memoire (i.e. Arabic word with a similar pronunciation, another English word with the same ending, cognates, another English word in the same lexical field (i.e. vegetable with carrots)		
Practice	27	Making use of newly-learned words in real situations (writing a composition)	152	50.7
	28	Making use of newly-learned lexical items in imaginary situations (i.e. assuming that teacher has asked the class to write a composition on a particular topic)	48	16.0
	29	Asking somebody to test oneself about particular lexical items	97	32.3
	30	Asking other people to verify knowledge	161	53.6
	31	Checking written sources (e.g. dictionary) to confirm knowledge	121	40.3
	32	Testing oneself by going through list(s) of words	147	49.0
Preferred source of information	33	Asking somebody	132	44.0
	34	Group work	69	23.0
	35	Dictionary	100	33.3
Note-taking	36	Taking notes of words + some infor. about	254	84.6
	37	Taking notes about words in the margin	253	84.3
	38	Taking notes about difficult words in a separate book	142	47.3
	39	Organizing words in the vocabulary in the order one encounters them	83	27.6
	40	Organizing words alphabetically	0	0.0
	41	Organizing words in terms of their meaning	0	0.0

Table (5.1) cont'd.

Type of Strategy	Code	Learner Technique	Freq.	Perc.
Note-taking (cont'd)	42	Organizing words as encountered but continually linking words together (semantically)	58	19.3
	43	Keeping information about spelling	102	34.0
	44	Keeping information about pronunciation	4	1.3
	45	Listing words and their Arabic equivalent only	96	32.0
	46	Listing words and their English meaning	61	20.33
	47	Listing words, their Arabic equivalent and English meaning together	105	35.0
	48	Keeping word derivations in the entries	107	35.66
	49	Keeping information about the grammatical class of words in the entries	92	30.66
	50	Including sentences with words illustrating the usage of words	34	11.3

** Indicates that this strategy includes a number of other strategies (within it) as indicated in the definition (i.e. intralingual association of a target word with another word)

the classes of strategies where they most appropriately belong. The classes of strategies can be seen "activities" which involve particular actions (specific strategies). As we discussed above, each strategy is listed under the activity in which it actually occurred. Table (5.1) lists the classes of strategies and the micro -strategies classified, together with their frequency and percentage of use across the entire sample of learners.

5.2.1 BEHAVIOUR BEFORE FINDING INFORMATION ABOUT DIFFICULT WORDS

This activity took place in the short time after the word had been cited as difficult and immediately before any information about these words (i.e. meaning) was sought. The evidence for these strategies was taken from the verbalizations during the think-aloud task. We had the opportunity of spotting this activity and deciding its place in the learning process because of the task given to the subjects, which involved inter alia, careful observation. These strategies are listed in Table (5.1) as one strategy (strategy (1)) subdivided into two. The main feature which pervades these strategies is that they involve learning out of context (without even knowing the meaning of the words). Unfortunately, only a small number of these cases were spotted, and hence they were not included in the statistical analysis, but they will be discussed in relation to the results of the statistical analysis of other strategies.

5.2.2 THE SOURCES USED TO GET INFORMATION ABOUT DIFFICULT WORDS

Some learners in the sample did not use any source (i.e. overlooked some words = disregarded all information beyond what was supplied in the the elicitation situation) to get information about difficult words. The only information given was spelling. This strategy is coded in Table 5.1 as strategy (5). Other learners used some sources, and these represent the rest of the strategies listed in the table under the same heading as that of this subsection. These strategies give us the opportunity to investigate the sample not just simply to find an answer to whether the learners used sources or overlooked words, but also to investigate the nature and type of the sources used.

One of the significant strategies identified in relation to the strategy of "using sources" is the strategy of "groupwork". It is worth mentioning that this strategy had not been mentioned in relevant research. It involves a number of learners studying together in a group and when they find a difficult word one member of the group looks up in the dictionary and reads the meaning for the others. This strategy is listed as different from the strategy of "using dictionary", represented as (12) in the table, although it involves dictionary, because the normal procedure of using a dictionary involves one person. The importance of this strategy will be assessed in the statistical treatment of the data.

5.2.3 DICTIONARY USE

Strictly speaking, the strategy of using dictionary falls within the domain of the class of the strategies of "using sources" to get information about difficult words. It is listed here under the label "dictionary use" and given the status of a macro-^{strategy}rather a micro-strategy because it consists of a number of micro-strategies. These micro-strategies are in fact the information the learner looks up in the dictionary vis-a-vis the information sought. These strategies are represented in table 5.1 from 13 to 23.

The first two strategies listed in the table answer the question of what type of dictionary (monolingual/bilingual) the learners used. Many learners used both types. The rest of the strategies are what the learners looked at when they used dictionaries. Knowing that a learner used or did not use a dictionary does not tell us about what the learner is trying to learn, nor whether he is aware of the aspects of a lexical item, and the type of information dictionaries can contain. The class of the strategies of "dictionary use" is a complex and interesting one in that it gives us access to probe this kind of awareness.

These strategies were drawn from the data using the three techniques. The information on what aspects are learned was mainly drawn from the verbalizations during the think-aloud task because it proved to be difficult for some learners to answer the questions on this information in the

interview.

5.2.4 RETENTION OF WORDS (MEMORIZATION) ✓

Some learners used some strategies to memorize words (to learn the meaning and the word by heart). These strategies are listed in the table above from 24 to 28. They mainly involve the use of a mnemonic which takes the form of either a mechanical activity (e.g. writing), or some kind of association between the target word and any other information available to the learner, e.g. auditory link. For example, one of the subjects wrote the word tilt (the target word) together with the fraction $1/3$ (pronounced in arabic as [tilit]) as an aid to memory based on the auditory similarity. Parallel to this interlingual similarity, some of the subjects wrote and said out loud the same target word together with the English word title. The similarity again, is based solely on auditory relationship, but it is intralingual in the latter case. The other associations cited were cognates, e.g. the word strategy with the equivalent Arabic word strateegiya; mental picture, e.g. one subject said, "the word anarchy reminds of the state of the classroom I was in when I was at the secondary school. The paint on the wall was flaking off, the desks were scattered all over the place in a complete state of 'confusion'; topic association by exploiting hyponymy relations, e.g. "carrots is like potatoes,... it is a vegetable". The verbalizations stated above show the use of the mnemonics. Unfortunately, the number of cases of using each mnemonic device is small

across the sample. Consequently they were not included in the analysis. The fact that very few instances of using mnemonics occurred in the data suggests that the subjects relied on rote learning. This result is consistent with Cohen and Aphek's (1980) finding.

5.2.5 PRACTICE

The subjects adopted different strategies to further practise words already learnt. These techniques are listed in table (5.1) above from 27 to 32. A glance at these strategies shows how strategies overlap. Some researchers considered them as strategies for memorization (see Rubin 1983). Porte (1986:67) distinguished between such strategies on the basis that memorization is goal-directed, whereas practice is not necessarily so. This is obviously an unsatisfactory distinction as learners may well practise with a particular goal in their mind.

The distinction suggested here, is that practice is done by "exercising" on words already learnt, whereas memorization is concerned with initial learning. It is worth illustrating practice strategies by giving some examples from the verbatim reports. One of the subjects said, "Now I'll go through the whole list. WHAT DOES MONARCHY MEAN? Something to do with kings and Queens. Right, Anarchy? Something to do with confusion. No! is it? (checked dictionary). Excuse me (asking the researcher) is anarchy.....?. The political system

in..... is based on monarchy, but I believe anarchy is the way to rule because monarchy is corrupt".

5.2.6 NOTE-TAKING

The class of strategy of note-taking comprises a number of strategies indicating whether notes are taken in a notebook or in the margin of a textbook, and the type of information these notes consist of (see table 5.1, strategies coded from 42 to 50). These strategies illuminate the question of what sort of information the subjects of the study keep in their notes. The general practice in the field is to state whether a learner uses or does not use notes. This certainly is unsatisfactory as this activity consists of a number of more specific strategies which are worthy of investigation. As can be seen in table (5.1), 85% of our sample used the strategy of note-taking. It will be useful to know whether there are differences between different types of learners in terms of what they keep in their notes (using different strategies).

It is worth mentioning that the notes taken during the learner's session were compared to the actual notes the subjects had been keeping during the year. High agreement was found.

As can be seen in table (5.1), 142 of our subjects were classified as using the strategy of taking notes in a

separate book, whereas only 102 were classified as using the strategy of keeping information about spelling in vocabulary books. The question that poses itself is how it can be possible that one keeps information about a word in a book without writing it. The question does not arise with the strategy of keeping information about words in the margins of text-books as the word is already printed there. The answer to this question is that the responses given in the interview showed that not everybody who uses this strategy is aware that he/she can resort to his "vocabulary book" to check spelling. The figure 102, as users of the strategy, is in fact the number of those learners who showed that awareness. In fact some learners despite the fact that they use a separate book for vocabulary, said that they check other sources, usually their textbook, for information about spelling.

5.3 STATISTICAL ANALYSIS

In this section the results of cluster analysis using the LS data will be reported and discussed.

5.3.1. THE NUMBER OF CLUSTERS (GROUPS) TO BE ANALYSED

Figure (5.1) shows the tree output by Clustan, and summarizes the fusion process resulting from clustering the sample on the 40 vocabulary learning micro-strategies. Each vertical branch in the dendrogram indicates a cluster.

Fig. (5.I): Dendrogram based on LS data.

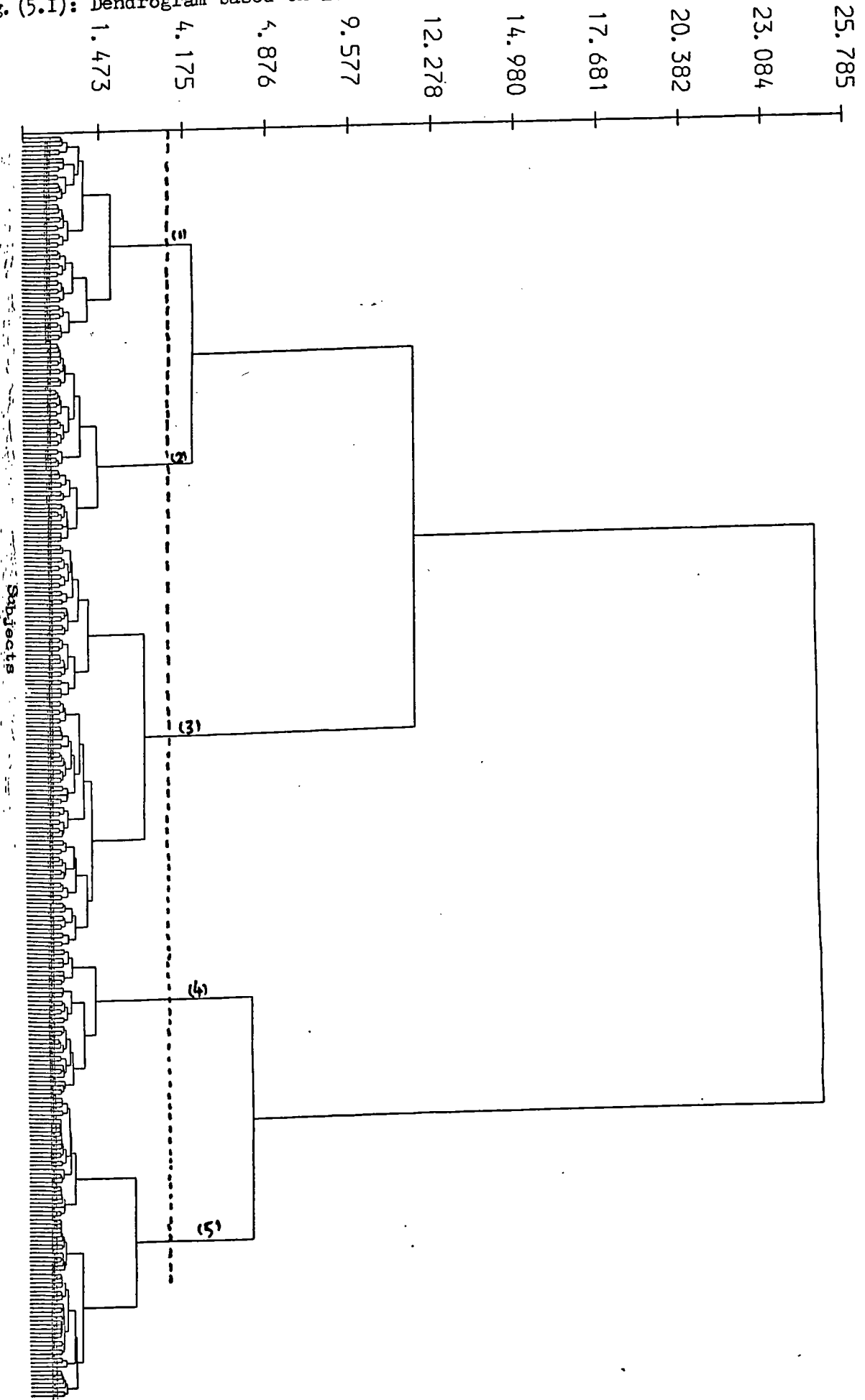
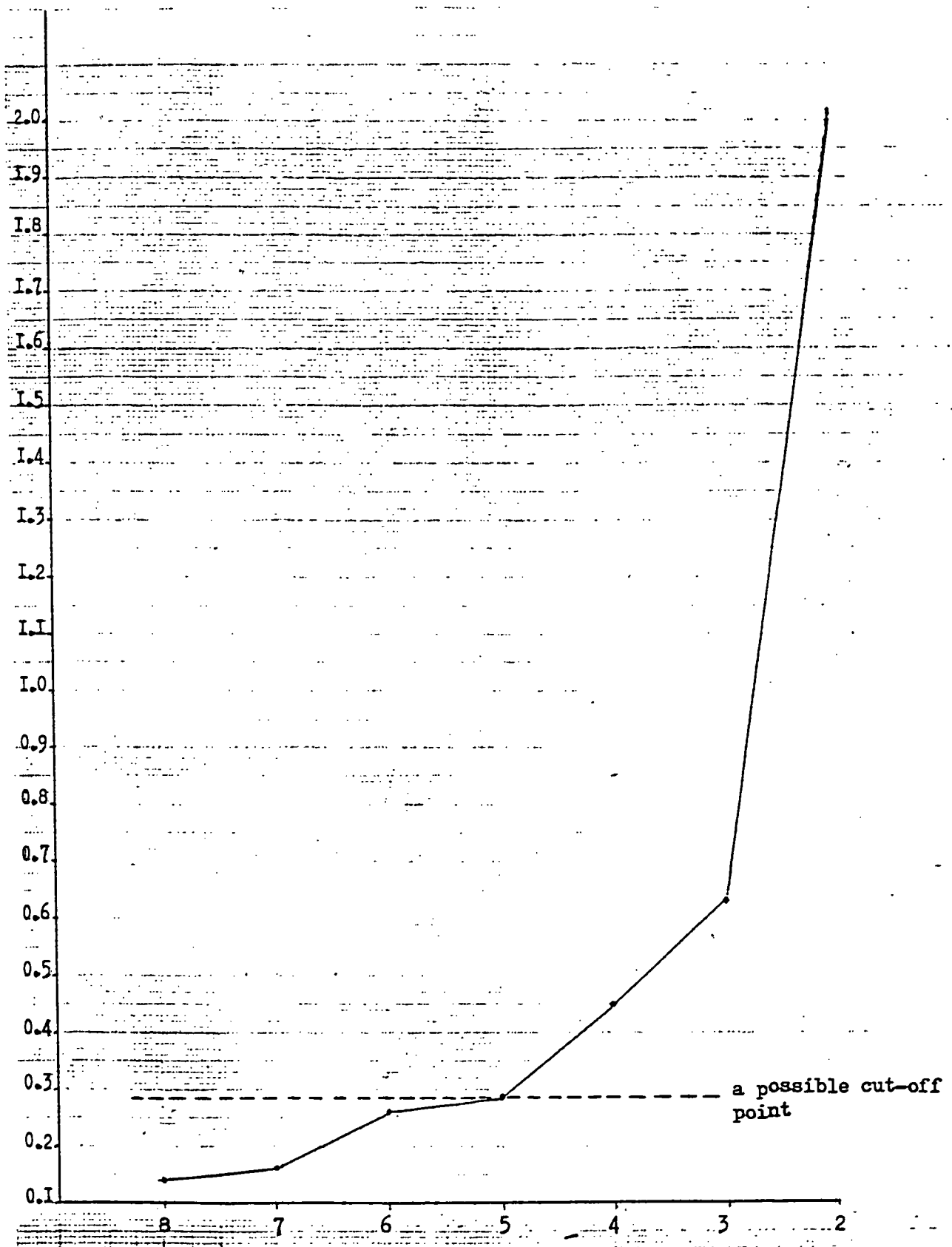


Fig. 5.2: The rising error of fusing the sample into 8 to 2 clusters.



The first decision to be taken (by researcher judgement) involves the number of clusters present. Put in a more mathematical sense, which point in the increasing value of the fusion coefficient should be taken to indicate the number of the significant clusters that are worthy of further analysis? Given the characteristics of each individual in the sample (the sample can be mainly divided into "good" and "underachieving" learners), we expect the sample to be split into two main groups (see the description of the subjects above). So the 2-cluster level may be a useful level at which to examine the constitution of clusters. But, given the fusion tree of our dataset, the 2-cluster level was made only after a large increase in the fusion coefficient. Resort was made to the algorithm of Ward's method itself to solve the problem of the number of clusters. Following this algorithm, the length of each vertical branch is proportional to the increase in the "error" (= roughly the size of distance between groups) associated with the subsequent fusion. The implication is that the fusion just before the first big increase (working upwards) is worthy of further investigation. The error associated with the fusions (fusion coefficient) from 8 clusters down to 1 was plotted (Figure 5.2) to enable us to spot the high increase. The optimum number of clusters does not change across a wide range (from the 8-cluster level to the 5-cluster one) of the increasing value of the fusion coefficient. The fusion coefficient between the lowest fusion (at 8-cluster level) and 5-cluster level seems to be similar to that between 5-cluster level and

the next fusion (at the 4-cluster level). In fact, the error associated with fusing the subjects from 8-cluster level to 5-cluster one (four levels of clustering) is 0.9, which is the same as that for fusing the 5-cluster level into four clusters (cluster 5). Figure (5.2) shows that there is a plateau extending from the 8-cluster level to the 5-cluster one after which there is a big jump. In other words, the same error is involved in fusing the sample at the 8th, 7th, and 6th levels into the 5th level as it does to fuse the 5th level into four clusters (4 -cluster level). This division of the sample into five groups must be considered as a potentially useful division because the five groups are the largest number of clearly distinct groups.

The 5 clusters are designated cluster (1) to cluster (5). There are 49, 48, 96, 35, and 72 subjects in the five clusters, respectively.

The question which poses itself is how valid and stable these clusters are, in terms of group membership, and what is the distribution of our sample over the clusters. This problem is dealt with in the next section.

5. 3. .1 .1 THE VALIDITY AND STABILITY OF GROUP MEMBERSHIP

Many intuitive methods have been suggested for evaluating the stability and usefulness of the solutions found by cluster analysis (see Everitt 1974:104 ff). Of these methods, two are applied here. First, the solution given by

using Ward's method is compared and contrasted with the clustering given by Quick Cluster available in the SPSS computer package. Quick cluster uses a rather different algorithm. The procedure followed is that a random starting point is used, and 5 clusters were specifically requested by using the subcommand which requires the specification of the number of clusters required. The program then attempts to find the most distinct 5 clusters it can. The results of these methods are shown in table 5.2, below. The rows represent the clusters given by Ward's method, whereas the columns represent the clusters given by Quick Cluster. The cases grouped in the same clusters by the two methods are in the boxes against the same cluster horizontally and vertically. For example, 91 cases were grouped in the same cluster (one cluster) cluster 3, in the table, for both Ward's clustering and Quick Cluster. The great difference between the two solutions is in clusters (1) and (2). None of the individuals in cluster (5) were similarly clustered, whereas 87.75% of the individuals in cluster (3), using Ward's method, were similarly grouped by Quick cluster. The individuals in the former cluster were grouped by Quick cluster in cluster (2). In other words, Quick cluster fails to distinguish between clusters (1) and (2) identified by Ward's method. These two clusters are visually the least distinct on the dendrogram in Fig. 5.1 (shorter stalks than 3, 4, 5). The percentage of the cases which were similarly grouped by the two methods is 73.3% of the total sample. This percentage gives us a clear idea that the grouping of

Translated into strategy use, the table above suggests that some strategies were used by a large number of our sample i.e. some strategies do not distinguish between any groups, a fact which results in having the boundaries between the clusters conceivably somewhat blurred. This is certainly supported by the percentage and frequency of strategy use across the sample (see Table (5.1)). For example strategy 36 was used by 84.7 % of our sample. However one could only expect a high degree of similarity in solutions using different clustering algorithms with artificial data that can be divided into discrete groups. This cannot be the case with data such as ours. The overlap between cases is an interesting feature which has meaning as far as the basic research problem and questions are concerned.

The feature of overlapping will pervade our discussion and interpretation of cluster diagnostics.

The second check applied was made by repeating the analysis using Ward's method; but only a randomly selected subset of the variables (strategies) was used in the analysis. This allows us to investigate whether the clusters are "real" and not mere artifacts of the particular technique used. The exclusion of a small number of strategies from the analysis should not alter greatly the clusters found.

The result of the analysis is summarized in Table (5.3), (see Appendix for classification arrays). This table is derived from the classification arrays using Ward's method

with all the variables, and with also only a subset of them.

The strategies masked from the analysis were as follows: 33, 43, 22, 17, 15, 4, 3, 2 (see table above for the definitions) The choice was made by using MINITAB Procedure to choose at random 8 variables. The result of crosstabulations is that 247 (82.3%) of the cases were grouped in the same clusters under the two conditions. This result suggests that the clustering given with all the strategies included in the analysis is a "real" one and not a mere artifact of the method.

Having decided on the number of clusters and discussed their validity and stability we will proceed now to answer part of our basic research question by examining these clusters. This will be done by elaborating on the members of each clusters, vis-a-vis strategy choice and use. In other words we will try to find who is in which cluster and what strategies are characteristic of which cluster.

The question of who is in what cluster will be dealt with by relating the clusters to the prior classifications of the subjects (the presupposed groups we have) according to the following characteristics:

- (1) The overall language level achievement ("good" v. "underachieving").
- (2) Level of education (length of time learning English) with relation to level of achievement

(3) Studying other school subjects in English as opposed to Arabic.

Table (5.3): Correspondences of cluster-membership of solutions with sub-set of the techniques and with all the techniques

CLUSTERING BY WARD'S METHOD: SUB-SET OF THE VARIABLE							Row Total
	1	2	3	4	5		
W	2	49					49
A							16.3%
R							
D							
'	5	6	41			1	48
S							16%
A							
L	3		50	46			96
L							32%
V							
A	1			35			35
R							11.7%
I							
A							
B	4					72	72
L							24%
E							
COLUMN	55	41	50	81	73		300
TOTAL							100%

The investigation and analysis that follows in the next sections deal with the relationship of the above three factors to the choice and use of strategies.

5.3.2 THE DISTRIBUTION OF "GOOD" AND "UNDERACHIEVING" LEARNERS ACROSS CLUSTERS : OVERALL

Figure (5.3) (derived from the information in Table (5.4)) shows the percentage frequency representation of the two types of learners distinguished on the basis of their level of achievement ("good" and "underachieving") in the five clusters.

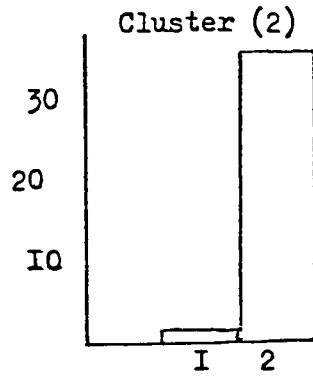
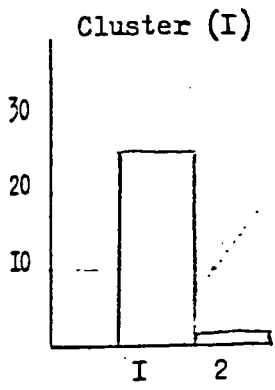
The clusters 1, 3, and 4 are dominated by "good" learners. They contain only 2.3%, in total (in three clusters) of the "underachievers". On the other hand, the clusters 2 and 4 are predominantly "underachieving" learners, forming 96.7% of the cases in these two clusters, whereas "good" learners form only 3.3% of the cases in these clusters.

This gives a clear picture that the level of achievement is related to strategy choice and use, and that it is capable of distinguishing between "good" and "underachieving" learners on the basis of the classes of strategies and the strategies included in the analysis. However, the results shown in table (5.4) and the derived figure (Figure (5.3)) suggest that there is a degree of overlap among our presupposed clusters. This is no surprise, as discussed in the section above. Although these results suggest that the level of achievement is related to LS - based on clustering, they also suggest that the level of achievement is not the only factor that is behind the structure of the clusters. This is evidenced by the finding that the analysis

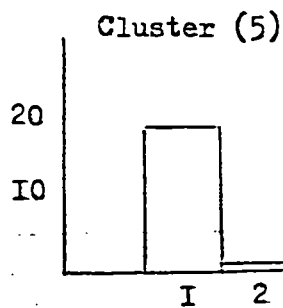
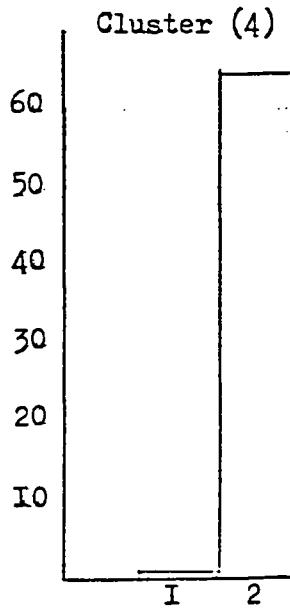
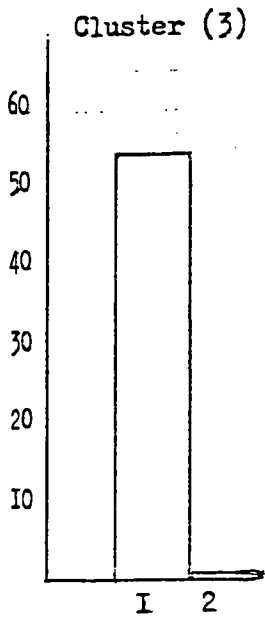
Table (5.4) : Number and Percentage of "good" and "underachieving" Learners across Clusters

Type of Learner	Cluster (1)		Cluster (2)		Cluster (3)		Cluster (4)		Cluster (5)	
	F	%	F	%	F	%	F	%	F	%
"Good" Learners	46	93.88	3	6.25	96	100.0	34	97.14	1	1.38
"Underachieving" Learners	3	6.12	45	93.75	0	0	1	2.85	71	98.61

Fig. (5.3): Percentage of 'good' and 'underachieving' learners in each cluster.



'Good' learners	I
'Poor' learners	2



distinguishes between sub-types of "good" as well as "underachieving" learners, i.e. "good" learners were grouped into three clusters. The fact that there are different types of "good" learners, using Ward's method, may well be used as explanation of the overlap as the plausible prediction is to find more in common among the three clusters dominated by "good" learners than between these three clusters taken together and the other two clusters dominated by "underachievers" taken together. This point is the theme of the next subsection.

Our job now is to explore the nature of these clusters. The results will be reported by, first, investigating the strategies that separate "good" learners and "underachieving" ones in general, irrespective of the level of education they have attained; and secondly, by considering the strategies which are characteristic of each cluster. The first part of the analysis gives us the strategies that are common among "good" learners irrespective of years of learning English and those that are common among "underachievers". We will endeavour to do this by considering the clusters dominated by each type as one group. In other words, no discussion of the differences between each two clusters of the five clusters will be attempted at this stage of reporting the results.

5. 3. 3. CLUSTER DIAGNOSTICS:OVERALL

We will now attempt to isolate the strategies that are diagnostic of (more commonly used by, or not commonly used by) each of the two types of learners. In other words, we

will try to find the strategies that are diagnostic of clusters 1, 3, and 4, taken together, and those that are diagnostic of 2 and 5, taken together.

The statistic which is used for this purpose is "binary percentage ratio" (= the percentage of occurrence in cluster \div percentage of occurrence in the whole learner sample) (Wishart 1982). A variable (= strategy) is considered a positive diagnostic if the ratio is more than 1, whereas if it is exactly 1, its representation in the cluster equals or is similar to its representation in the whole sample. If it is less than 1, that means its representation in the cluster is less than that for the whole sample, hence the strategy is a negative diagnostic of the cluster, in that it is not used at all or used but with a low frequency in the cluster (see Wishart *ibid*; and Jones-Sargent 1983).

However, the binary percentage ratio, taken alone, does not provide a satisfactory definition of cluster diagnostics. This poses a problem particularly when there is a strategy which occurs as a positive diagnostic for a cluster, but it occurs positively only for a small minority within that cluster, i.e. its occurrence is exceedingly low in the whole sample. In this case we cannot say this strategy typifies the group. It also poses a problem when the strategy occurs positively only for a minority within the whole sample, but not small enough to justify the exclusion of the strategy from the analysis. So, to avoid this kind of problem, binary percentage ratio should be considered

together with the within-cluster percentage of occurrence of a given strategy. By and large, frequency of occurrence plays a major role in deciding the diagnosticity of a strategy. It should also be mentioned that the highest obtainable diagnostic ratio for each cluster, if all and only those in the cluster use a specific strategy, is the figure obtained by dividing the number of the individuals in the sample by the number of the individuals in the cluster under consideration (Jones-Sargent 1983).

Tables (5.5 - 6) list the strategies that have a negative ratio for both clusters (2) and (5), (dominated by "underachieving" learners) and Table (5.7) lists the same strategies and techniques with their level of diagnosticity for the clusters (1), (3) and (4) (dominated by "good" learners).

The same strategies which are negative for the "underachieving" learners are positive for at least two of the three groups dominated by "good" ones, and some of these strategies are positive for the three clusters; e.g. strategy 27 (using words in real situations i.e. composition for practice), strategy 29 (learner asks somebody to test him/her, which occurs at binary ratio of 1.71, 1.60, and 2.30 for clusters (1), (3) and (4), respectively, whereas it occurs at a ratio of 0.43 and 0.23 for clusters (2) and (5) respectively, and strategy 30 (asking to confirm knowledge).

Of the significant strategies are strategy 6 (sources of

Table (5.5): The negative diagnostics for Cluster (2) which are also negative for Cluster (5)

Var. No. in Cluster	No. in Binary	DEFINITION	Cluster Sample Ratio		
1	39	13	83	0.99	Note-taking: organizing words in the order encountered
2	48	15	107	0.88	" : including derivations in entries
3	4	26	215	0.73	Sources of inform: guessing
4	47	12	105	0.71	Note-taking: including Arabic equivalent + English synonym with words
5	38	13	142	0.57	" : using a separate book (as opposed to writing in textbook margins)
6	22		126	0.55	Memorization: write + say words repeatedly
7					
8	43	8	102	0.49	Note-taking: keeping information about spelling
9	6	6	81	0.46	Sources of inform: asking about English synonym
10	30	11	161	0.43	Practice: asking to confirm knowledge about (a) word(s)
11	8	4	59	0.42	Source of inform: asking for a sentence demonstrating the use of the word
12	31	7	121	0.36	Practice: check written sources
13	49	5	92	0.34	Note-taking: including grammatical idiosyncracies about words in entries
14	11	5	118	0.26	Sources of inform: monolingual dictionaries
15	4	7	170	0.26	" : ask teacher
16	32	5	147	0.21	Practice: testing oneself by going through (a) list(s) of words
17	25	3	92	0.20	Memorization: write + say English synonym
18	28	1	48	0.13	Practice: imagine a situation in which a word can be used and use the word in it
19	21	1	50	0.13	Note-taking: including sentences as examples to demonstrate word use
20	27	2	152	0.08	Practice: use words in real situations
21	29	1	97	0.06	" : ask somebody to test oneself
22	24	0	80	0.00	Memorization: say a word + English meaning repeatedly
23	46	0	61	0.00	Note-taking: including English synonyms only explaining "headwords"
24					
25	42	0	58	0.00	Note-taking: organizing words as encountered but change organization according to the usage

Table (5.6): The negative diagnostics of Cluster (5) which are also negative for Cluster (2)

VAR. No. in Cluster	No. in Binary	No. in Sample	Ratio	DEFINITION
1	4	20	170	0.49
2	29	11	97	0.47
3	22	13	126	0.43
4	3	19	215	0.37
5	32	11	147	0.31
6	30	9	161	0.23
7	39	3	83	0.15
8	27	4	152	0.11
9	31	3	121	0.10
10	38	3	142	0.09
11	48	2	107	0.08
12	8	1	59	0.07
13	46	1	61	0.68
14	24	1	80	0.05
15	43	1	102	0.04
16	28	0	48	0.00
17	11	0	118	0.00
18	42	0	58	0.00
19	25	0	92	0.00
20	47	0	105	0.00
21	21	0	50	0.00
23	49	0	92	0.00
24	6	0	81	0.00

Sources of inform: asking teacher
 Practice: learner asks somebody to test him/her

Memorization: write + say word repeatedly
 Sources of inform: guessing
 Practice: testing oneself by going through lists of words

" : asking to confirm knowledge
 Note-taking: organizing words in order that they were encountered
 Practice: use words in real situations (e.g. conversation)

" : check written sources
 Note-taking: using a note-book (as opposed to writing in the margins of textbooks)

" : including words derivations in entries of words
 Sources of inform: asking for a sentence demonstrating word usage
 Note-taking: including English synonyms in entries

Memorization: saying word + English paraphrase and/or synonym repeatedly
 Note-taking: keeping inform. about spelling
 Practice: imagine a situation in which a word can be used and use the word in it
 Sources of inform: monolingual dictionary
 Note-taking: organizing words as encountered but link them semantically in revision

Memorization: writing + saying word + English synonym
 Note-taking: including Arabic equivalents + English paraphrases and/or synonyms

Note-taking: including sentences as examples of usage of word
 " : including grammatical idiosyncrasies
 Sources of inform: asking about English paraphrase and/or synonym

information: asking somebody about the English synonym of target word), strategy 11 (using monolingual dictionary), strategy 25 (memorizing a word by writing and saying it and its English synonym repeatedly), and strategy 46 (note-taking : including English synonyms in the entries of words). These strategies are only positive for cluster 3 (dominated by "good" learners).

The negative diagnostics of the "underachieving" learners present a stereotyped picture of those learners. The general profile includes the feature of less practice on the part of those learners, compared to "good" ones. The two clusters dominated by "underachievers" have all the six practice strategies identified in the data as negative diagnostics. Only 28 individuals of the 83 members of these two clusters were analysed as having used some sort of practice strategies. 13 individuals of the 28 used strategy 30 (asking to confirm knowledge). It is interesting to note that three of the practice strategies are positive diagnostics for the three clusters dominated by "good" learners; strategy 30 (asking to confirm knowledge), strategy 27 (use words in real situations, i.e. composition, for practice), and strategy 29 (a learner asks somebody to test him/her). However, cluster (4) shares with the clusters dominated by "underachieving" learners the characteristic that it has strategies 31 (checking written sources) and 32 (testing oneself by going through lists of words) as negative diagnostics.

The important point to be made here is that the distinction between "good" and "underachieving" learners we have been dealing with is made on the basis of the macro-strategy of practice. The other strategies also lend support to the parallelism between "good" and "poor" learners.

Although "underachieving" learners use the strategy of note-taking they seem, in contradiction to "good" ones, to rely on Arabic (their native language) more than on English, as far as the information they keep is concerned: 47 (including both the Arabic and an English synonym in the entries of words), 43 (keeping information about spelling), 49 (including grammatical idiosyncrasies), and 21 (including sentences as examples in the entries of words) are positive diagnostics for the "good" learners. These strategies are represented in clusters (2) and (5) ("poor" learners) collectively by 11.4%, 5%, 4% and 2.0% of the total number of the users of these strategies, respectively. This general trend of less use of information that is available about a lexical item and reliance on Arabic also applies to dictionary use and memorization (see strategies 6, 8, 3 and 24 on Tables 5.5-6). These results demonstrate that there is a difference between the kind and quality of the information "underachieving" learners used and that used by "good" ones. However, this is too general a picture as far as "good" learners are concerned. Of the four strategies just mentioned above as typifying the "underachievers", strategies 47, 43, 49, and 21, the strategies 49 and 21 are also

negative diagnostics for cluster (4) - dominated by "good" learners. Strategies 11 (note-taking: including word derivations in the entries), and 25 (memorization: writing and saying word and its English synonym repeatedly) are negative diagnostics for cluster (1) ("good" learners) as well as for the "underachievers" (clusters 2 and 5).

In general, the diagnostics in Tables (5.5 - 7) confirm the conclusion discussed in section 5.2, based solely on frequency of occurrence. This general trend which emerges from the diagnostics, as expected, is that the "good" learners and "underachieving" ones are fairly distinct on the basis of the use of the macro-strategy of practice and the strategies within this strategy. For the other classes of strategies and particular strategies the diagnostics show that the association with each type of learner is far from being straightforward. Some of the strategies which are negative diagnostics for both the clusters dominated by "underachieving" are also negative for one (but not more than one) of the three clusters dominated by "good" ones, as might be expected from the 1, 2, 3 versus 4, 5 grouping in the dendrogram. Hence the analysis given in the relevant research using the broad categories "good" and "underachieving" is far from being realistic. A more realistic account is given in section 5.3.3.

Before continuing it is necessary to pause and take stock, in particular, of the parallelism we have stressed between "good" and "underachieving" learners. The major

finding is that the strategies have fairly distinguished between these two types of learners; but each of these types is further divided into sub-groups. We must next inquire what factors are responsible for this sub-division. The other main factor which will be dealt with is the level of education (the number of years learning English), and during the course of the discussion other factors such as learners' needs will also be considered.

5. 3. 4. THE INTERACTION BETWEEN THE LEVEL OF EDUCATION AND THE LEVEL OF PROFICIENCY: THE DISTRIBUTION OF THE SUBJECTS

Table (5.8) lists the number and the percentage of the subjects in each cluster in terms of their level of education and achievement. As can be seen, the level of education seems to play some role in the distribution of the subjects across the clusters. 79.2% (38/48) of the individuals in cluster (2) are "underachieving" university students and most of the remainder are underachieving of the next educational level down (secondary school), 74.3% (26/35) of the individuals in cluster (4) are "good" intermediate school pupils, and 61.2% (30/49) of the individuals in cluster 1 are "good" secondary government school pupils. This gives a clear picture in which some "good" learners at each level of education seem to be in a separate group. However, 75% (30/40) of the "good" university students, and 96.7% (58/60) of secondary private schools pupils are all in one cluster

Table (5.8) : The distribution of the subjects in terms of their level of education and overall language achievement across the clusters.

Level of education + Level of proficiency groups	Cluster(1)		Cluster(2)		Cluster(3)		Cluster(4)		Cluster(5)	
	f	%	f	%	f	%	f	%	f	%
University ones	2	4.1	38	79.1	0	0	0	0	0	0
Underachieving ones	3	6.12	0	0	37	38.54	0	0	0	0
good	2	4.1	0	0	58	60.4	0	0	0	0
Private School (good ones)	30	61.2	1	2.1	1	1.04	8	22.85	0	0
Secondary School Pupils	1	2.04	7	14.5	0	0	1	2.8	31	43.0
Intermediate School Pupils	11	22.44	2	4.0	0	0	26	74.28	1	1.38
Learnners	0	0	0	0	0	0	0	0	40	55.55

(cluster 3) forming 91.6% of this cluster; 77.5% (31/40) of the "underachieving" secondary government schools pupils, and all the subjects in the "underachieving" intermediate schools pupils are all in one cluster (cluster 5).

These results, coupled with the results concerning the factor of the the level of achievement, suggest that there are other factors, in addition to the level of achievement and education, that seem to be related to strategy choice.

One could also argue that educational level is a continuum and the picture that emerged arises from the fact that only certain points of this continuum were sampled in this study. If we looked at every year of learning English we might simply, among "bad" learners, see mixtures of cluster 2 and 5 in every year with 5 steadily decreasing and 2 increasing at higher levels. Figs. 5.4 - 5 show this developmental progression. The picture that emerges is that after more years of learning English, (1) "poor" learners progress from the strategies of cluster 5 to those typical of 2 - some are already doing so at secondary level, and (2) "good" learners go from the strategies of 4 to 1 to 3. Further reference to the developmental aspects will be made in the final subsection of this chapter.

In general, the level of education of a learner (the number of years learning English) seems to interact with the level of achievement in clustering the subjects. This is supported by the cases in the clusters (1), (2) and (4). But

Fig. (5.4): Development of micro-strategy use: 'good' learners.
(cont'd)

'Good' progression:

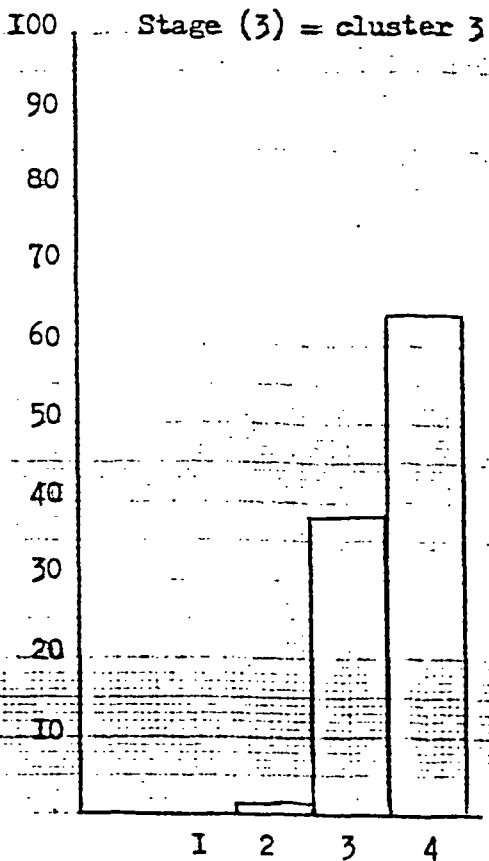
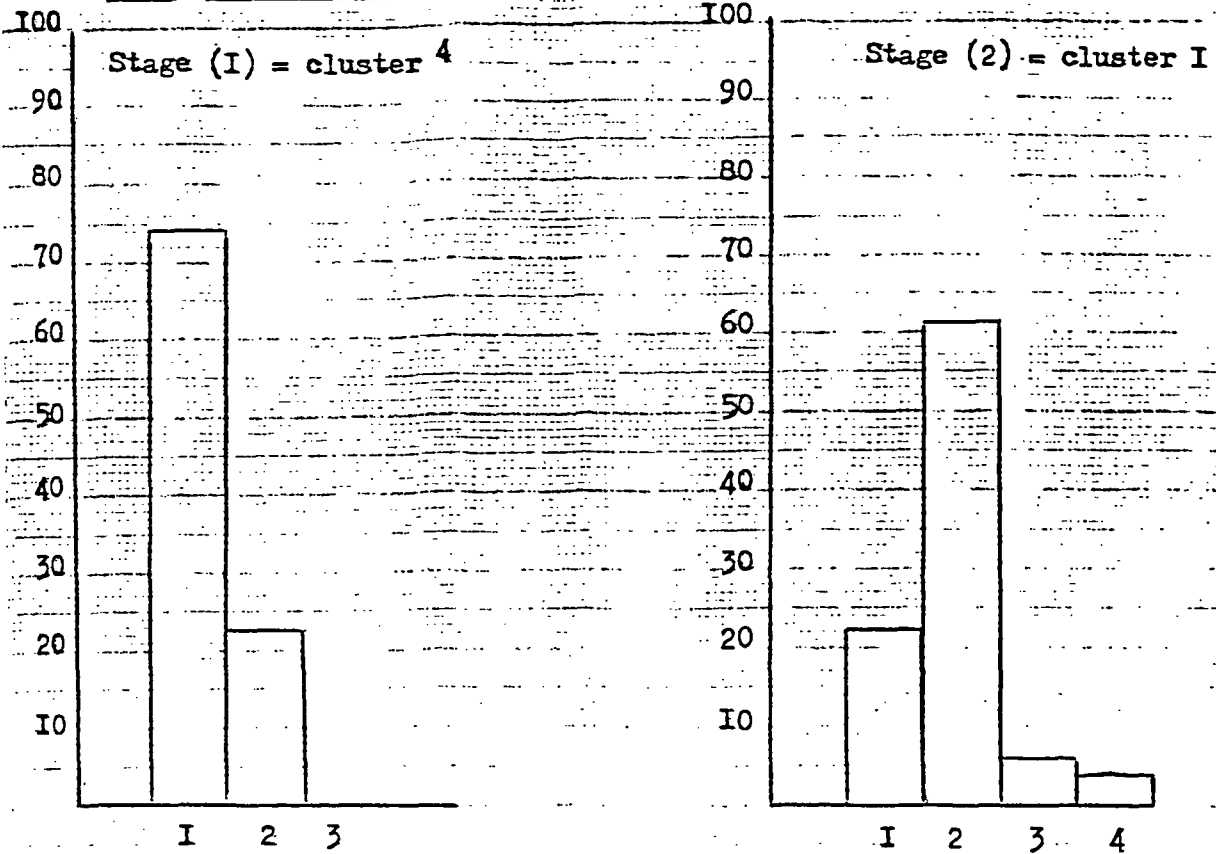
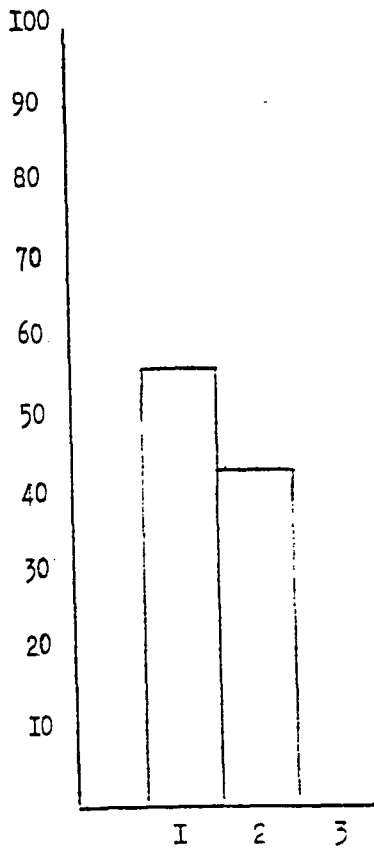


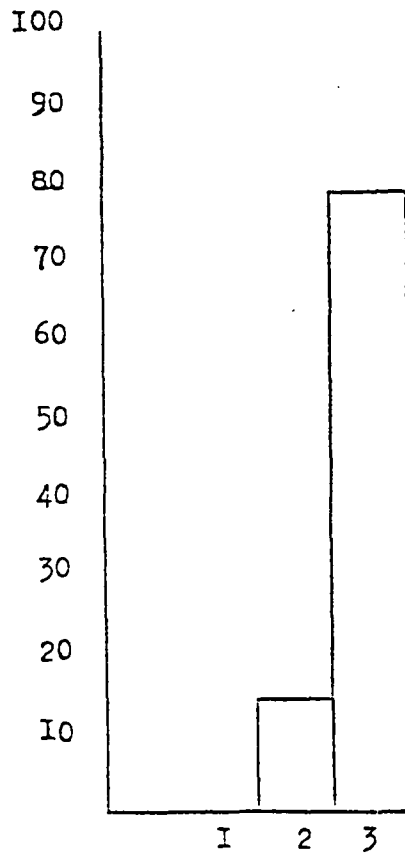
Fig. (5.4): Developmental stages of micro-strategy use: 'bad' learners.

'Bad' progression:

Stage (1) = cluster 5



Stage (2) = cluster 2



Intermediate school

I

Secondary School

2

University

3

Private secondary
school

4

the table above also indicates that there are other factors, in addition to level of education and level of achievement, which are responsible for the structure of the clusters under investigation. To explain some of this problematic clustering we will attempt to list the strategies, with this distribution of subjects (in terms of level of education and level of achievement) across cluster in mind, that are characteristic of each of these clusters. We will endeavour to do this by listing and discussing the negative and positive diagnostics of each cluster. This takes us to the second major part of the analysis. Thus far, we have dealt with the obtained groups in terms of which type of learner is in which group, and what the general characteristics, in terms of strategy use, of each of the major two groups (good/bad) are. In the next section we will deal with each of the obtained clusters in isolation.

The statistic used again is the "binary percentage ratio" (see Chapter (4) above). The first three clusters which will be dealt with are clusters (1), (3) and (4) (dominated by "good" learners), and the final two clusters are (2) and (5) (dominated by "underachieving" learners). The juxtaposition of the sub-types of learners within each type in the discussion will help us compare them more clearly than if they were split by the discussion of learners from a different type.

Table (5.9) : Cluster diagnostics for Cluster (4)
Positive diagnostics

Var.	No. in Cluster	No. in Sample	Binary Ratio	DEFINITION
29	26	97	2.30	Practice: asking somebody to test him/her
26	23	100	1.97	Memorization: writing and saying word and its arabic equivalent repeatedly
43	23	102	1.93	Note-taking: including spelling information
9	21	100	1.80	Sources of inform: group work
42	12	58	1.77	Note-taking: organizing words in note book in the order encountered by linking semantically repeatedly ones when visible
30	30	161	1.60	Practice: asking to confirm knowledge
27	28	152	1.58	" : using newly learned words in real situations (i.e composition for Practices)
45	17	96	1.52	Note-taking: listing words and their Arabic equivalents only
33	23	132	1.49	Preferred source of inform: asking somebody
47	18	105	1.49	Note-taking: including both Arabic equivalents and English synonyms and paraphrases
38	24	142	1.43	" : using a vocabulary book (as opposed to writing in the margins of textbooks)
3	35	215	1.40	Sources of inform: asking about Arabic equivalent
34	11	69	1.37	Preferred source of inform: group work
4	25	170	1.26	Sources of inform: asking teacher
39	2	83	1.24	Note-taking: organizing words in the order encountered
37	35	253	1.19	" : keeping notes in margins of textbooks
36	35	254	1.18	" : keeping notes (as opposed to not doing so)
22	17	126	1.16	Memorization: writing and saying word repeatedly
2	30	229.9	1.12	Sources of inform: asking classmates

Table (5.9): Cluster diagnostics for Cluster (4)
(cont'd) Negative diagnostic

Var. No. in Cluster	No. in Sample	Binary Ratio	DEFINITION
31	14	121	0.99
32	17	147	0.99
49	9	107	0.84
48	9	105	0.72
25	7	92	0.65
5	7	103	0.58
24	5	80	0.54
28	3	48	0.54
23	9	144	0.54
8	3	59	0.44
46	3	61	0.42
7	3	79	0.33
6	2	81	0.21
35	1	100	0.09
12	1	132	0.04
11	0	118	0.00
10	0	192	0.00
16	0	107	0.00
15	0	190	0.00
21	0	50	0.00

Practice: checking written sources to confirm knowledge
" : testing ones-self by going through lists of words

Note-taking: including grammatical class of words in entries

" : including derivations of words in entries
Memorization: writing word and its English synonym

Overlooking : (as opposed to using sources of inform) repeatedly
Memorization: saying and writing word and its synonym or English paraphrase repeatedly

Practice: using newly-learned words in situations imagined by the learner

Memorization: saying word alone repeatedly
Inform. sought about words: asking for a synonym/paraphrase

Note-taking: including synonyms and English phrases in entries of word

Sources of Inform: asking about Arabic equivalent
" : meaning in English

Preferred sources of Inform.: dictionary
Sources of Inform.: bilingual dictionary

" : monolingual dictionary
" : dictionary
Inform. sought about words: looking for word derivation in dictionary

" : meaning
" : looking for a sentence in dictionary

5. 3. 5. CLUSTER DIAGNOSTICS: SPECIFIC

5. 3. 5. 1. "GOOD" LEARNERS

5. 3. 5. 1. 1. Cluster diagnostics: Cluster (4)

Table (5.9) lists the positive diagnostics for cluster (4) to 1.12, and the negative diagnostics from 0.0 to 0.99. Of the individuals in this cluster 74.28% are "good" intermediate school pupils, and 22.85% "good" secondary government school pupils.

The maximum possible diagnostic level for this cluster is $300/35 = 8.57$. Like the above two clusters (clusters 1 and 3), this cluster has no strategy which has the highest diagnostic level.

A glance at the list of diagnostics shows that this cluster has fewer positive diagnostics than clusters (1) and (3) which are also dominated by "good" learners.

The highest ratio as far as sources to get information about words is concerned is for strategy 9 (groupwork).

This cluster displayed use of some practice strategies: Strategy 29 (practice: learner asks somebody to test him/her), and Strategy 30 (practice: asking to confirm knowledge). As it appears, the users of practice strategies in this cluster rely on "asking" more than the other strategies which involve a personal effort such as strategy 32 (testing oneself by going through lists of words) and strategy 31 (checking written sources). The latter type

appears in the negative diagnostics of this cluster (see Table 5.9). However, strategy 27 (using newly-learned words in real situations for practice) is used by 28 individuals of this group. This is the only exception for the use of imagination. This feature makes this group similar to clusters (1) and (3) in that they have some practice strategies in their positive diagnostics. However, cluster (4) seems to be distinct from clusters (1) and (3) on the basis of the type of activity involved in practising words, i.e. asking other people to help them practise rather than using personal effort. This implies that this group brings in less imagination to vocabulary learning than clusters (1) and (3).

The feature of using strategies which involve "asking" applies also to the sources of information used by this group. Strategy 2 (asking classmates, as a source of information) is used by 30 individuals in this cluster, and strategy 4 (ask teacher to get information about words) was used by 25/35. Strategy 33 (preferred sources of information: asking somebody) summarizes this trend in that 23 of the 35 individuals in this cluster mentioned that they used this strategy. 21 individuals in this cluster, like in cluster (1) and unlike cluster (3), used strategy 9 (group work, as a source of information). Those who do not prefer asking somebody to get information about difficult words (strategy 33) mentioned that they preferred group work (strategy 34) with the exception of only one person who mentioned that he preferred a dictionary (strategy 35), see

table (5.9). The use of the written sources of information (e.g. dictionary), as can be seen in the table, appears in the list of negative diagnostics. Only one person in this cluster mentioned that he preferred using a dictionary to other sources (strategy 35), as mentioned above.

The amount of involvement of the TL in vocabulary learning activities by this group, compared to clusters (1) and (3), is less; but nevertheless there is some. This is evident in the use of strategy 47, by 18/35 individuals, (note-taking: including both English and synonyms or paraphrases and Arabic equivalents), and strategy 27 (see above).

The highest diagnostics can be summarized as follows,

a. Positive diagnostics:

1. sources of information: groupwork
" : asking classmates
2. practice : asking somebody to test him/her
" : asking to confirm knowledge
3. memorization: writing and saying word and its
Arabic equivalent repeatedly
" : writing and saying word
repeatedly
4. note-taking: including spelling information
" : organizing words in the order
encountered, but keeps changing the
order during revision by linking them
semantically

b. Negative diagnostics:

1. sources of information: monolingual dictionary
" : bilingual dictionary
2. practice: using newly-learnt words in situations
imagined by the learner
" : testing oneself by going through lists
of words
3. memorization: saying and writing word and its
English synonym/paraphrase
repeatedly
" : writing word and its English
synonym/paraphrase repeatedly
4. note-taking: including synonyms/paraphrases in
the entries
" : including word derivations in the
entries

In general, the members of cluster (4) showed that they used some practice strategies, but they mostly involved "asking" (in contrast to using written sources). This also applies to the sources of information used by this group. This cluster is more similar to cluster (1) than cluster (3) in terms of the strategies chosen (more clearly in sources of information and practice).

5. 3. 5. 1. 2. Cluster diagnostics: Cluster (1)

Table (5.10) lists the positive diagnostic strategies and strategies for cluster (1) to the value of 1.10 of the binary

Table (5.10): Cluster diagnostics for Cluster (1)
Positive diagnostics

Var.	No. in Cluster	No. in Binary Sample	Ratio	DEFINITION
12	45	132	2.09	Source of inform: using bilingual dictionary
35	28	100	1.71	Preferred source of inform: dictionary
29	27	97	1.71	Practice: asking somebody to test oneself
26	27	100	1.65	Memorization: writing and saying word and Arabic equivalent to memorize words
47	28	105	1.63	Note-taking: including both Arabic equivalent and English paraphrase and synonyms in entries
27	40	152	1.61	Practice: using words in real situations for practice
17	41	160	1.57	Information sought about words: grammatical class of word
10	48	192	1.53	Sources of inform: dictionary
28	12	48	1.53	Practice: imagine situation in which a newly-learned word can be used and use the word in it
9	25	100	1.53	Sources of inform: group work
15	47	190	1.51	Information sought in dictionary: meaning
22	31	126	1.51	Memorization: writing and saying word alone repeatedly
32	36	147	1.50	Practice: learner testing him/herself by going through list of words
30	38	161	1.45	" : asking to confirm knowledge
39	19	83	1.40	Note-taking: organizing words as encountered
49	21	92	1.40	" : including grammatical class of words
3	49	215	1.40	Sources of inform: guessing
31	25	121	1.26	Practice: checking written sources to confirm knowledge
16	22	107	1.26	Inform looked at in dictionary: derivations
4	34	170	1.22	Sources of inform: asking teacher
23	27	144	1.19	Memorization: saying word only repeatedly
37	49	253	1.19	Note-taking: keeping notes as opposed to not doing so
36	49	254	1.18	" : keeping notes in the margins of textbooks, as opposed to using note-book
45	18	96	1.15	" : including Arabic equivalents only
8	11	59	1.14	Information sought about words: asking for a sentence
43	19	102	1.14	Note-taking: including information about spelling
21	9	50	1.10	Information sought about words: looking for sentences in a dictionary
2	41	229	1.10	Sources of inform: asking classmates

Table (5.10): Cluster diagnostics for Cluster (1)
(cont'd) Negative diagnostics

Var.	No. in Cluster	No. in Binary Sample	Ratio	DEFINITION
38	23	142	0.99	Note-taking: using a vocabulary book as opposed to writing in the margin of textbooks
25	14	92	0.93	Memorization: writing word and English synonym repeatedly
24	12	80	0.92	" : writing and saying English
11	17	118	0.88	Sources of inform: monolingual
48	13	107	0.74	Note-taking: including word derivations in entries
7	9	79	0.70	Sources of inform:
33	15	132	0.70	Preferred sources of inform: asking
34	7	69	0.62	" : group work
42	4	58	0.42	Note-taking: organizing words as encountered, but relate them semantically in revision
5	7	103	0.42	Overlooking: as opposed to using sources of information
46	4	61	0.40	Note-taking: including synonyms and English paraphrases in entries
6	5	81	0.38	Sources of inform: asking about English synonyms or paraphrases for the target word

percentage ratio, and the negative diagnostics from 0.39 to 0.99 level. (61.2% of the members of this group are "good" secondary school pupils, 22.4% are good intermediate government school pupils.)

The maximum possible diagnostic level for this cluster is $300/48 = 6.25$. None of the strategies used for the analysis has this value for this cluster. This suggests that no strategy is exclusively used by this group.

At the highest diagnostic level for this group (2.09) is strategy 12 (using bilingual dictionary as a source of information as opposed to using a monolingual one). 45 cases of the 48 individuals in this cluster, of 132 users of this strategy across the sample, were analysed as having used this strategy. However, only 28 individuals of this group mentioned that they used strategy 35 (preferring to use a dictionary as a source of information as opposed to other sources). In other words 20 individuals of those who use a dictionary do not use it as a preference. This implies that other sources are also positive diagnostics for this group. This is indeed, supported by the data in Table 5.10: strategy 3 (guessing), strategy 4 (asking teacher to get information about difficult words), and strategy 2 (asking class mates) were used by 49, 34 and 41 of the individuals in this group, respectively.

One of the other notable positive strategies for this cluster is strategy 29 (practice: learner asks somebody to test him/her). 27 individuals in this cluster were analysed

as having used this strategy.

The members of this group showed some degree of awareness of the aspects one can learn about a lexical item as well as what the dictionary can offer in this respect. This is evident in the use of strategy 16 (looking for word derivation in dictionary). 22 individuals used this strategy. This group also used a wide variety of practice strategies: strategy 27 (using words in real situations) was used by 40 individuals; and strategy 30 (asking to confirm knowledge) was used by 38 individuals.

Some of the significant negative diagnostics are strategy 11 (using a monolingual dictionary as a source of information); 17 subjects used it; and Strategy 5 (overlooking as opposed to using sources) is used by only 7 subjects.

By way of summary, the two highest positive and negative diagnostics for the macro-strategies used are as follows,

a. Positive diagnostics:

1. sources of information: bilingual dictionary
" : groupwork
2. practice : asking somebody test him/her
" : using words in real situations
3. memorization: writing and saying word and Arabic
equivalent
" : writing and saying word alone
repeatedly

4. note-taking: including both Arabic equivalent and English paraphrase/synonym in entries
" : organizing words as encountered

b. Negative diagnostics:

1. sources of information: overlooking
" : monolingual dictionary
2. memorization: writing word and English synonym repeatedly
3. note-taking: including synonyms and English paraphrases in entries

As can be noticed none of the practice micro-strategies appears in the negative diagnostics list for this cluster.

In general, this group is characterized by the use of a bilingual dictionary, and the use of some sources to get information about words (as opposed to overlooking). They also showed awareness, or preconception, of what is available for them to learn about a lexical item.

5. 3. 5. 1. 2. Cluster diagnostics: Cluster (3)

Table (5.11) lists the positive diagnostics for cluster (3) to the value 1.03 of the binary percentage ratio, and the negative diagnostics from 0.03 to 0.99 level. (95% ,38/40, of the "good" university level students, and 96.7%, 58/60, of the private school pupils form all the members in this cluster, see table 5.5).

Table (5.11): Cluster diagnostics of Cluster (3)
Positive diagnostics

Var.	No. in Cluster	No. in Sample	Binary Ratio	DEFINITION
46	53	61	2.72	Note-taking: including synonyms and English phrases in the entries of words
6	68	81	2.62	Inform. sought about words:
11	96	118	2.54	meaning in English
21	40	50	2.50	Sources of Inform: monolingual dictionary
24	62	80	2.42	Inform. sought about words: looking for sentences in dictionaries
25	68	92	2.31	Memorization: saying & writing word + English paraphrase or synonym repeatedly
42	42	58	2.26	Memorization: writing word and its English synonym repeatedly
8	40	59	2.12	Note-taking: organizing words as encountered but link semantically related words together in rev.
28	32	48	2.08	Inform. sought about words: ask for a sentence
48	68	107	1.99	Practice: using newly-learned words in self imagined situation
49	57	92	1.94	Note-taking: including derivations of words
16	64	107	1.87	" : including grammatical class of words
31	72	121	1.86	Inform. sought about words: looking for derivations of word in dictionary
38	79	142	1.74	Practice: checking written sources to confirm knowledge
35	54	100	1.69	Note-taking: a vocabulary book (as opposed to writing notes in the margin of textbooks)
17	85	160	1.66	Preferred source of Inform: dictionary
32	78	147	1.66	Inform. sought about words: grammatical class
27	78	152	1.00	Practice: testing oneself by going through lists of words " : using vocabulary items in real situations (i.e. composition) for practice
15	95	190	1.56	Inform. sought about words: meaning
43	50	102	1.56	Note-taking: including spelling Inform.
10	96	192	1.56	Sources of Inform: dictionary
4	84	170	1.54	" : asking teacher
30	73	161	1.42	Practice: asking to confirm knowledge
47	47	105	1.40	Note-taking: including both Arabic equivalents and English synonyms and phrases
39	36	83	1.36	" : organizing words in the order encountered
22	54	126	1.34	Memorization: writing + saying word repeatedly

Table (5.11): Cluster diagnostics for Cluster (3)
(cont'd) Positive diagnostics

7	32	79	1.27	Sources of inform: asking about Arabic equivalent
2	88	215	1.26	" : guessing
36	96	245	1.18	Note-taking: keeping notes (as opposed to not keeping notes)
37	95	253	1.17	" : keeping notes in the margins of textbook
29	32	97	1.03	Practice: asking somebody to test him/her

Table (5.11): Cluster diagnostics for Cluster (3)
(cont'd) Negative diagnostics

VAR.	No. in Cluster	No. in Sample	No. in Binary	DEFINITION
		Ratio		
12	42	132	0.99	Sources of inform: bilingual dictionary
34	19	69	0.86	Preferred source : group work
2	51	229	0.70	Sources of inform: asking classmates
33	23	132	0.54	Preferred source of inform: asking somebody
23	22	144	0.48	Memorization: saying word alone repeatedly
5	15	103	0.46	Overlooking: as opposed to using sources of inform
26	14	100	0.44	Memorization: writing + saying word and its Arabic equivalent
9	10	100	0.31	Sources of inform: group work
45	15	96	0.03	Note-taking: including Arabic equivalents only in the entries of words

The maximum theoretical diagnostic level for this cluster is $300/96 = 3.12$. None of the strategies has this ratio. The highest diagnostics on the list (2.71 - 2.08) show that cluster (3), in contrast to cluster (1), uses the TL more than their L1, i.e. strategy 46 (note-taking: including synonyms and English paraphrases in the entries of words) was used by 52/96 individuals, and strategy 6 (information sought about words: English synonyms and paraphrases) was used by 68/96 individuals. This applies to all the strategies used for the analysis. In other words, this group, generally speaking, involves English in all the activities they perform in connection with vocabulary learning. However, Arabic (their L1) is also used. But only two strategies of the ones that involve L1 appear in the positive diagnostics list. These strategies are 47 (note-taking: including both Arabic equivalents and English synonyms in entries of words) and strategy 7 (sources of information: asking about Arabic equivalent) with a frequency of occurrence of 47, and 32, respectively.

The list of the positive diagnostics also indicates that this group showed awareness of the information that can be available to learn about lexical items. This is evidenced by all the strategies discussed above, for this group. The other strategies which lend more support to this conclusion include strategy 18 (information sought about words: collocation), strategy 7 (grammatical class), and strategy 43 (note-taking: including spelling information).

All the practice strategies identified for the whole sample are positive diagnostics for this group (see Table (5.1) the strategies coded 27-32, and Table (5.11), e.g. strategy 28 (using newly-learned words in self-imagined situations) was used by 32/48 individuals of the group, strategy 31 (checking written sources) was used by 72/121 individuals. Although practice strategy 28 (see above) is positive for both this cluster and cluster (1) its representation is higher in the former than in the latter.

At the lowest level of the positive diagnostics for this group is strategy 29 (practice: learner asks somebody to test him/her). The ratio of this strategy is higher for cluster (1) (1.71) than for this cluster (1.03)

One of the important negative diagnostics for this cluster is strategy 12 (using bilingual dictionary), 42/132 used this strategy. This implies that although this group is characterized by the use of a monolingual dictionary; a bilingual dictionary is also used by some individuals.

Strategy 9 (using "groupwork" as a means for getting information about words) is only used by 10/96 individuals, which contrasts with 25/49 individuals in cluster (1).

The highest diagnostics are as follows:

a. Positive diagnostics:

1. sources of information: monolingual dictionary
" : dictionary (as opposed to other sources)
2. practice: using newly-learnt words in self-

imagined situations

" : checking written sources to confirm
knowledge

3. memorization: saying and writing word and
English paraphrase/synonym
repeatedly.

" : writing word and its English
synonym repeatedly

4. note-taking: including English
paraphrase/synonyms in the entries

b. Negative diagnostics:

1. sources of information: groupwork

" : overlooking

2. memorization: writing and saying word and its
Arabic equivalent repeatedly

" : saying word alone repeatedly

In general, the diagnostics show that this group involves the TL in vocabulary learning activities. They bring imagination and awareness to tackle the vocabulary learning problems. Like cluster (1), the members of this cluster showed high motivation which is evidenced by using various strategies for practice, and a desire to learn almost all the words they encounter (only 15 individuals in this group mentioned that they sometimes overlook words). None of the practice or note-taking micro-strategies included in the analysis appear in the negative diagnostics list of this cluster.

**Table (5.12): Cluster diagnostics for cluster (5)
Positive diagnostics**

Var.	No. in Cluster	No. in Binary Sample	Ratio	DEFINITION
5	54	103	2.18	
33	60	132	1.89	
23	52	144	1.50	As appearing in the tables above.
45	27	96	1.17	
2	70	229	1.11	

Table (5.12) : Cluster diagnostics for cluster (5)
Negative diagnostics

Var.	No. In Cluster	No. In Binary Sample	Ratio	DEFINITION
34	12	0	0.72	
9	15	0	0.63	
4	20	0	0.49	
37	34	0	0.48	
36	29	0	0.48	
29	11	0	0.47	
22	13	0	0.43	
3	19	0	0.37	
32	11	0	0.31	
26	6	0	0.25	
30	9	0	0.23	
39	3	0	0.15	
27	4	0	0.11	
31	3	0	0.10	
30	3	0	0.09	
48	2	0	0.08	
8	1	0	0.07	
46	1	0	0.11	
24	1	0	0.05	
43	1	0	0.04	
10	0	0	0.00	
28	0	0	0.00	
11	0	0	0.00	
42	0	0	0.00	
25	0	0	0.00	
47	0	0	0.00	
15	0	0	0.00	
21	0	0	0.00	
49	0	0	0.00	
35	0	0	0.00	
12	0	0	0.00	
16	0	0	0.00	
7	0	0	0.00	
17	0	0	0.00	
6	0	0	0.00	

As appearing in the tables above

5. 3. 5. 2. UNDERACHIEVING LEARNERS:

5. 3. 5. 2. 1. Cluster diagnostics: cluster 5.

71/72 individuals in this cluster are "underachieving" secondary and intermediate school pupils. Table (5.12) lists the positive diagnostics for cluster (5) to the value of 1.11 and the negative diagnostics from the value 0.00 to 0.72 level. The maximum possible diagnostic level for this cluster is $300/72 = 4.2$.

At the highest level of diagnosticity for this cluster (2.18) is variable 5 (overlooking, as opposed to using sources to get information about difficult words). 54/72 individuals in this cluster were analysed as having used this passive strategy.

The mere number of the list of the positive diagnostics of this cluster shows that this cluster contrasts sharply with the rest of the clusters, including cluster (2) which is also dominated by "underachievers".

At the next level of diagnosticity (1.89) is strategy 33 (preferred sources of information: asking somebody) 60/72 mentioned that they prefer this source to "dictionary" and "groupwork". This cluster represents one of the early stages of strategy use preceding the one represented by cluster 2.

27/72 individuals keep only Arabic equivalents as entries for words in their notes (strategy 45).

This group is characterized by a complete absence of dictionary use (strategy 10 was used by 0/72), and the non-use of TL in all the activities that are associated with vocabulary learning. The non-use of strategy 10 implies that all the strategies which are associated with dictionary use (from 11 to 21, see table 5.1) are also not used by this cluster (see table 5.12). The absence of using the TL in learning vocabulary manifests itself in note-taking (strategy 45): strategy 47 (including English synonyms or paraphrases in entries of words), 0/72, the memorization strategies 24 - 25, used by 1/72 and 0/72, and all the practice strategies as will be discussed below. By and large, all the techniques that involve using TL in connection with vocabulary learning appear in the negative diagnostics list (see table above).

All the practice strategies (27 - 32) included in the analysis appear in the negative diagnostics list for this group. No one of this group used strategy 28 (imagine a situation in which the target word can be used and use the word in it). Only 11/72 used strategy 29 (learner asks somebody to test him/her), 11/72 used strategy 32 (testing oneself by going through lists of words), 9/72 used strategy 30 (ask to verify knowledge), and 4/72 used 27 (making use of newly-learned words in real situations).

Of all the aspects of a lexical item, meaning seems to be the only aspect that is of interest to this group. This feature can clearly be demonstrated by the finding that no

one of this group was reported as a dictionary user, and by the information the members of this cluster keep about words in their notes: only 2/72 of this cluster keep information about the derivations of words (strategy 48); whereas no one of this group has been classified as a user of strategy 49 (keeping information about the grammatical class of words in the entries of words).

The developmental aspects will be discussed in the next section.

In general, although this cluster, like the rest of the clusters, employs most of the macro-strategies, (e.g. memorization, using some sources to get information about words) the micro-strategies used by its members seem to differ from those used by the other clusters.

Like cluster (2), the practice strategies appear in the negative diagnostics for this cluster. The sources of information seem to mark the sharp contrast between this cluster and cluster (2), also dominated by "underachieving" learners. In contrast to the members in this cluster, the members of cluster (2), as discussed above, dictionary use and groupwork are their basic and preferred sources of information. Further reference to this point will be made in the next section.

The highest diagnostics can be summarized as follows,

a. Positive diagnostics:

1. sources of information: overlooking
 - " : asking classmates
 2. memorization: saying word repeatedly
- b. Negative diagnostics:
1. sources of information: monolingual dictionary
 - " : bilingual dictionary
 2. practice: using newly-learnt words in self-imagined situations
 - " : asking to confirm knowledge
 3. memorization: writing word and its English synonym/paraphrase repeatedly
 - " saying and writing word and its English synonym/paraphrase repeatedly
 4. note-taking: including grammatical information in the entries
 - " : words, their Arabic equivalents and English synonym/paraphrase in the entries

5. 3. 5. 2. 2. Cluster diagnostics : Cluster 2

Table (5.13) lists the positive diagnostics for cluster (2) from the value of 2.77 to the value of 1.06, and the negative diagnostics from 0.98 to 0.0. This cluster represents a later stage of development in strategy use than the one represented by cluster . .

Table (5.13): Cluster diagnostics for Cluster (2)
Positive diagnostics

Var.	No. in Cluster	No. in Binary Sample	Ratio	DEFINITION
7	36	79	2.77	Sources of inform: asking about Arabic equivalent
45	33	96	2.15	Preferred sources: : bilingual dictionary
12	45	132	2.13	Sources of inform: bilingual dictionary
26	31	100	1.88	Memorization: writing and say word and its Arabic equivalent
9	30	100	1.81	Sources of inform: group work
34	20	69	1.81	Preferred sources of inform: group work
15	48	190	1.58	Inform sought about words: meaning (dictionary)
10	48	192	1.56	Sources of inform: dictionary
23	33	144	1.43	Memorization: saying word repeatedly
17	34	100	1.43	Inform. sought about words: gramm. class
2	47	229	1.26	Sources of inform: asking classmates
16	22	107	1.23	Inform sought about words: derivations (dictionary)
5	20	103	1.21	Overlooking: as opposed to using sources to get inform.
37	45	253	1.11	Note-taking: keeping notes in the margin of textbooks
36	45	254	1.11	" : keeping notes as opposed to not doing so
35	17	100	1.06	Preferred source of inform: dictionary

Table (5.13): Cluster diagnostics for Cluster (2)
(cont'd) Negative diagnostics.

Var.	No. in Cluster	No. in Binary Sample	Ratio	DEFINITION
39	13	83	0.98	Note-taking: organizing words in the order encountered
48	15	107	0.88	" : Including derivations of words in entries
3	26	215	0.73	Sources in Inform: asking about Arabic equivalent
47	12	103	0.71	Note-taking: words + their Arabic equivalents and English meaning together.
38	13	142	0.57	" : Using a separate book as opposed to writing in the margins.
22	73	126	0.55	Memorization: writing + saying word repeatedly
33	11	132	0.52	Preferred source of Inform: asking somebody
43	8	102	0.49	Note-taking: Including Inform. about spelling
6	6	81	0.46	Inform, sought about words: synonyms and English paraphrases
30	11	161	0.43	Practice: asking to confirm knowledge
8	4	59	0.42	Inform. sought about words: asking for a sentence
31	7	121	0.36	Practice: checking written sources
49	5	92	0.34	Note-taking: Including gramm. class of words in entries
11	5	118	0.26	Sources of Inform: monolingual dictionary
4	7	190	0.26	" : asking teacher
32	5	147	0.21	Practice: learner tests him/herself by going through lists of words
25	3	92	0.20	Memorization: writing word + synonym repeatedly
28	1	48	0.13	Practice: Imagine a situation in which the newly-learned word can be used, and use the word in it.
21	1	50	0.13	Inform. sought about words: sentence (in dictionary)
27	2	152	0.08	Practice: using newly-learned words in real situations
29	1	92	0.06	" : learner asks somebody to test him/her
24	0	80	0.00	Memorization: saying + writing word and its English paraphrase/synonym
46	0	61	0.00	Note-taking: Including synonyms and English paraphrases in entries
43	0	58	0.00	" : organizing words in the order encountered; but relate them semantically in revision

The maximum possible diagnostic level for this cluster is $300/48 = 6.25$. The highest diagnostics for this group (2.77, 2.15 and 2.13) are the sources of information and information used by this group. Strategy 7 (asking about Arabic equivalent) was used by 36/48 individuals. Strategy 35 (preferred sources of information: bilingual dictionary) was used by 33/48 individuals; and 45 individuals were analysed as users of a bilingual dictionary (strategy 12). These strategies make this cluster similar to cluster (1). This is shown quite clearly in the dendrogram (Fig. 5.1) where the two clusters are grouped together in the next higher fusion. However, unlike clusters (1), (3) and (4) (dominated by "good" learners), all the practice strategies identified for the sample appear on the negative diagnostics of this cluster.

Another notable strategy is strategy 38 (keeping notes in a separate book, as opposed to writing in the margins of textbooks). This strategy appears in the positive diagnostics for clusters (1), (3) and (4), but in the negative diagnostics for cluster (2). 45 individuals in this cluster keep notes (strategy 36), but in the margin of textbooks (strategy 37).

One of the other significant features of this group is the absence of the use of English synonyms or paraphrases and sentences in the vocabulary learning, i.e. in memorizing, practising, or in the information sought about words. Strategies 47, 43, 8, 25, 27, 46 were used by 12/48, 8/48,

4/48, 3/48, 2/48, 0/48 individuals, respectively (see table 5.13).

Strategy 5 (overlooking) also marks a sharp contrast between this group, on the one hand, and clusters (1), (3) and (4) on the other (See the tables of diagnostics). 20 individuals in this cluster mentioned that they usually "overlook" words.

A summary of the highest diagnostics for this cluster can be as follows,

a. Positive diagnostics:

1. sources of information: asking
" : bilingual dictionary
2. memorization: writing and saying word and its Arabic equivalent
" : saying word repeatedly
3. note-taking: keeping notes in the margin of text-books
" : keeping notes as opposed to not doing so

b. negative diagnostics:

1. sources of information: asking teacher
" : monolingual dictionary
2. practice: learner asks somebody to test him/her
" : using newly-learnt words in real situations

3. memorization: saying and writing word and its English synonym/paraphrase repeatedly
 " : writing word and its synonym repeatedly
4. note-taking: organize words in the order encountered but relate them semantically in revision
 " : including synonyms/paraphrases in the entries of words

5. 4. Further Discussion

Before we continue we must recapitulate the main results obtained. The analysis showed that there is a difference between the strategies used by "good" learners and those used by "underachieving" learners. However, the analysis also showed that neither of these two groups is homogeneous. Different sub-types were distinguished for both the "good" and the "underachieving" learners. The implication of this sub-division is that there are more factors that are related to strategy use than the simple dichotomy based on the level of achievement. In the discussion that follows I will try to explain these major findings.

The results confirm that dealing with the differences between "good" and "poor" learners by considering macro-strategies only, an approach referred to in this thesis as

"holistic", is far from valid or satisfactory. Each micro-strategy, as is evident from this study, is capable of distinguishing between different types of learners. This approach, which we call "atomistic", proved to be valid, provided that explicit reference is made to each macro-strategy and micro-strategy in the report of the study, as we have been doing. For example, strategy 36 (note-taking, as opposed to not doing so) does not seem to distinguish between learners. It was used by 49/49, 45/48, 96/96, 35/35 and 29/72 individuals in clusters (1), (2), (3), (4) and (5), respectively. But the learners are distinguished on the basis of the specific strategies within this strategy (e.g. 82.3% of the individuals in cluster (3) used a separate book for notes (micro-strategy 38), whereas only 8.6% of the individuals in cluster (5) used this strategy. In general, the results showed that both "good" and "underachieving" learners, contrary to what seems to be generally held, use macro- and micro-strategies. Three macro-strategies were shown to be common to all learners:

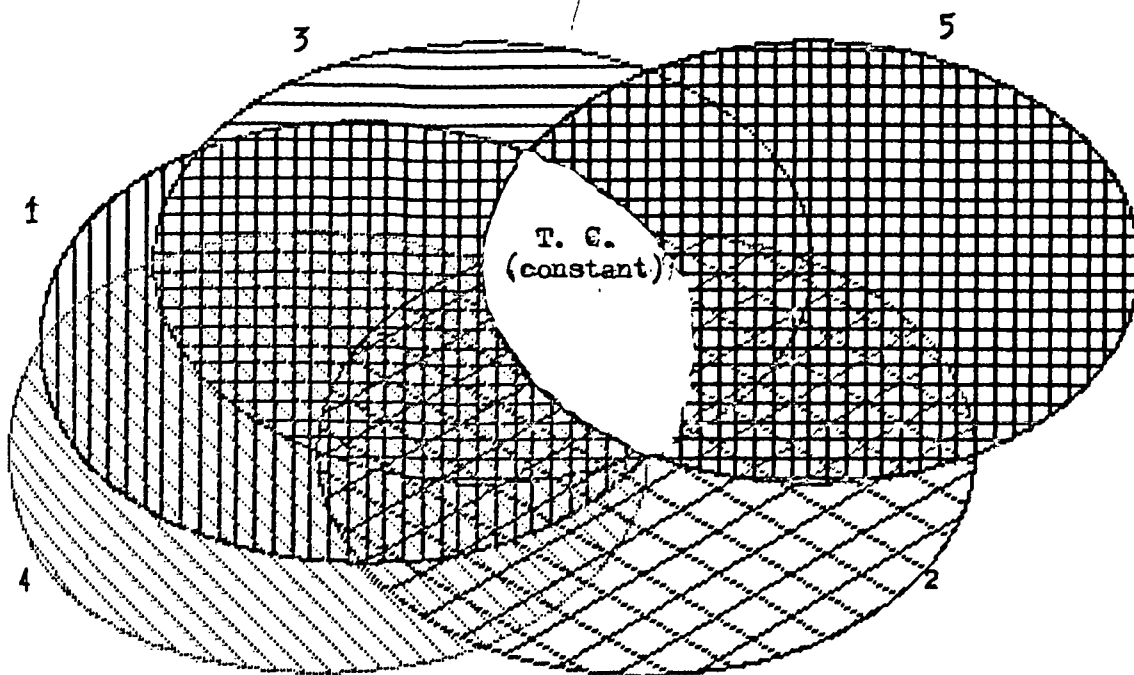
- (1) Using sources to find information about difficult words
- (2) Memorization
- (3) Note-taking.

However, with respect to the first class of strategy, there are more cases of overlooking on the part of "underachieving" learners than with "good" ones. But the main difference between learners lies in two aspects:

- (a) the choice of specific strategies within each of the above three macro-strategies, and
- (b) the presence/absence of the macro-strategy of practice.

I suggest the term tertium comparationis, to borrow Contrastive Analysis terminology (see James 1983), or constant to refer to the shared strategies, and the term variable to refer to the dissimilarity between the groups. Figure (5.5) (derived from the cluster diagnostics) summarizes the distribution of the strategies across the clusters. The central shaded area (T.C.) indicates the tertium comparationis, whereas the other shared specific strategies between each of the two clusters are indicated by the shaded areas of merger. As appears in the figure, and discussed in more detail in cluster diagnostics, there is more shared space among clusters (1), (3) and (4), than between those clusters, on the one hand, and clusters (2) and (5), on the other hand. There is also more shared ground between 2 and 5 than between any one of these two and any other cluster. It should be mentioned that the figure does not illustrate the results accurately because of the practical difficulty of making five circles meet at a particular point without making them cross each other, i. e. the shared area between cluster (3) and (5) does not actually exist as far as cluster diagnostics are concerned.

Fig. (5.5): Strategy use overlap among the clusters.



The question which needs further investigation is the finding that practice, from a macro-strategy and not micro-strategy use point of view, is the only macro-strategy that distinguishes between "good" and "underachieving" learners. The implication is that practice helps learning. It should be mentioned that some researchers claimed to have evidence to the contrary. We will deal with this question later.

One of the interesting points to mention is that the strategy of group work is referred to by O'Malley et al (1985) with the label "co-operation" under the class of strategy they called "social mediation". This may seem to contrast sharply with our finding in that it is a "good" learner strategy according to them, whereas it seems it is a "poor" learner strategy in our findings. However, it appears to me that the two strategies are not the same, in that in O'Malley et al's list, "good" learners co-operate to "obtain feedback, pool information, or model a language activity" (O'Malley et al 1985:34), which implies that each person has some vocabulary knowledge to share with the other(s). On the other hand co-operation in this study was used by "poor" learners in connection with a particular activity. It is used as a means of getting information about difficult words. This is understandable because the "poor" learner, faced with a lot of words to learn, finds it easy to work with his/her peers. In this study, the learners who worked in a group were lacking knowledge about the target words. Co-operation, thus, is a macro- rather than a micro-strategy. It comprises a number of strategies. The strategy of co-operation in the

sense defined by O'Malley et al (op cit) was not identified in present study. The implication is that some of the strategies of co-operation are characteristic of "good" learners, whereas others may be characteristic of "poor" learners. This gives us another piece of evidence that in the endeavour to distinguish between "good" learners and "poor" ones, explicit reference should be made to specific rather than classes of strategies.

As to the other strategies, the general profile of "good" learners is that they have some awareness of what they can learn about a word (aspects such as collocation and spelling). This is evident in them "asking" or "using dictionaries" as a source of information not only for the mere denotation of signs, but also for other aspects such as grammatical behaviour and derivations of words. A large number of this group also displayed recognition of the importance of learning words in a context, in that they looked for sentences in which the target word is used, and some of them included such illustrations in their notebooks. On the other hand, "underachieving" learners in general did not display awareness of what they can learn about a lexical item nor did they show that they learn words in context. They addressed the problem of vocabulary learning with some sort of tabula rasa with regard to the words they had already learned in that they learn every new word as if it was not related to other words they knew. This is shown in their notes of words. The "good" learners, in general, make use of

semantic relations such as synonymy, hyponymy and antonymy.

Learning words out of context, which seems to characterize "underachieving" learners, is also demonstrated in learning some aspects of words before knowing their meaning. This phenomenon occurred mainly with these learners. Unfortunately, the strategies associated with this phenomenon were not included in the analysis, as mentioned earlier in this thesis, because only a few cases were recorded for each one of the two strategies. These cases, though few, seem to fit into the profile of "underachieving" learners which emerged out of the analysis. Table (5.14) below lists the percentage of occurrence of each of these strategies for each type of learner.

Table 5.14: The strategies used before knowledge of word meaning is obtained

Description of Technique	Good learners	Underachieving learners
Learning spelling	1%	9%
Memorizing words	0%	10%

Thus far, we have been discussing the "good" and "poor" learners in general terms. The analysis distinguished between three types, or stages of development of strategy

249
+ 250

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missing.

use, of "good" learners: cluster (4) (Intermediate Government School pupils), cluster (1) (Secondary Government School pupils), and cluster (3) (Secondary Private School pupils and "good" University students), see Table (5.4). As for "bad" learners, only two stages were identified: stage (1): cluster 5 (secondary and intermediate school pupils); stage (2): cluster 2 (secondary school pupils and university students) (see Fig. 5.4). This is a clear evidence that the time spent learning English plays a limited role in helping "bad" learners develop their vocabulary LS in comparison with the "good" learners. In the discussion that follows some of the strategies that seem to develop with the level of education will be discussed.

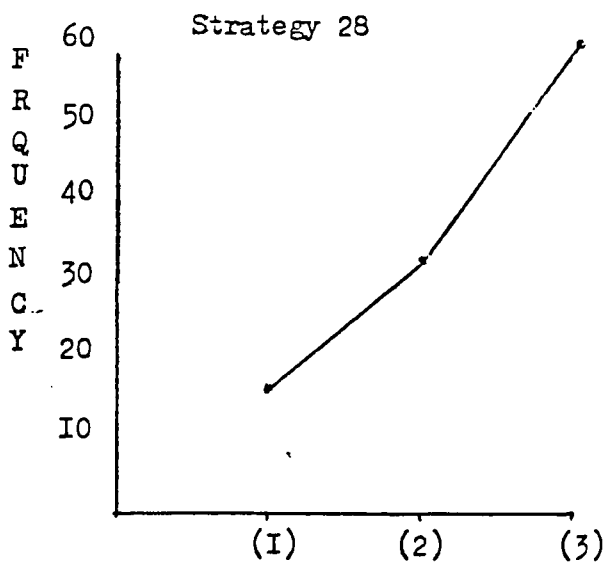
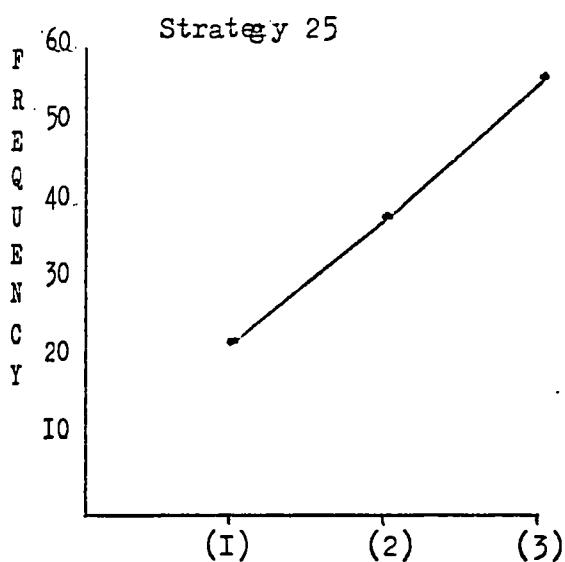
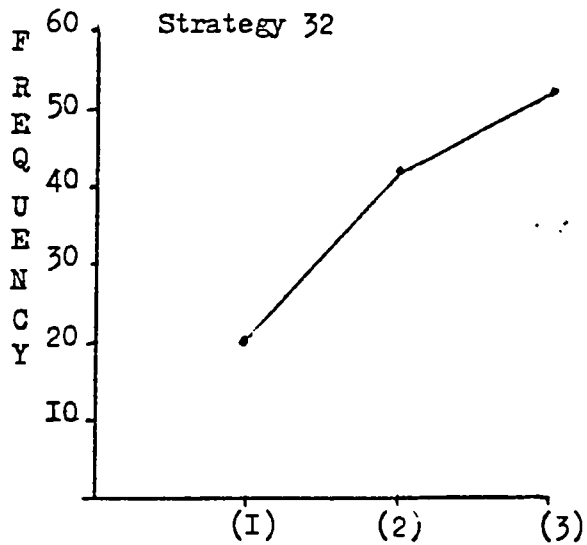
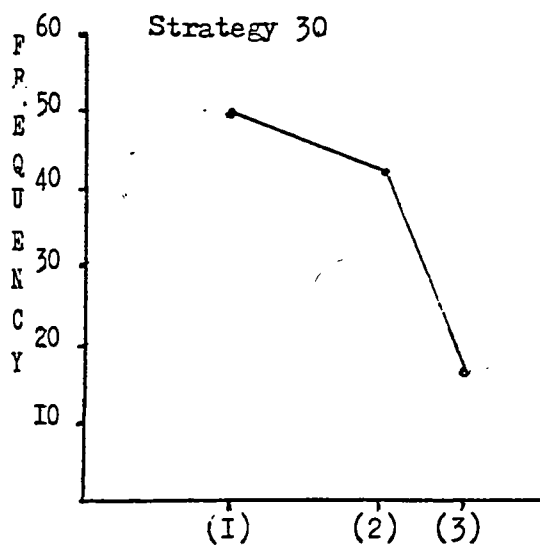
The level of education, simply, refers to the amount of TL a learner could be envisaged to have experienced at a particular stage of his/her studying the language. For instance, a person who has been learning a TL for one year could not be expected, at least theoretically, to have the same "amount" of language as somebody else who has been studying the same language for (say) five years and hence one might expect different strategies (regardless of good/bad dichotomy).

Some of the notable strategies that are sensitive to the level of education are as follows,

30 Practice: asking to confirm knowledge.

32 Practice: learner tests him/herself by going

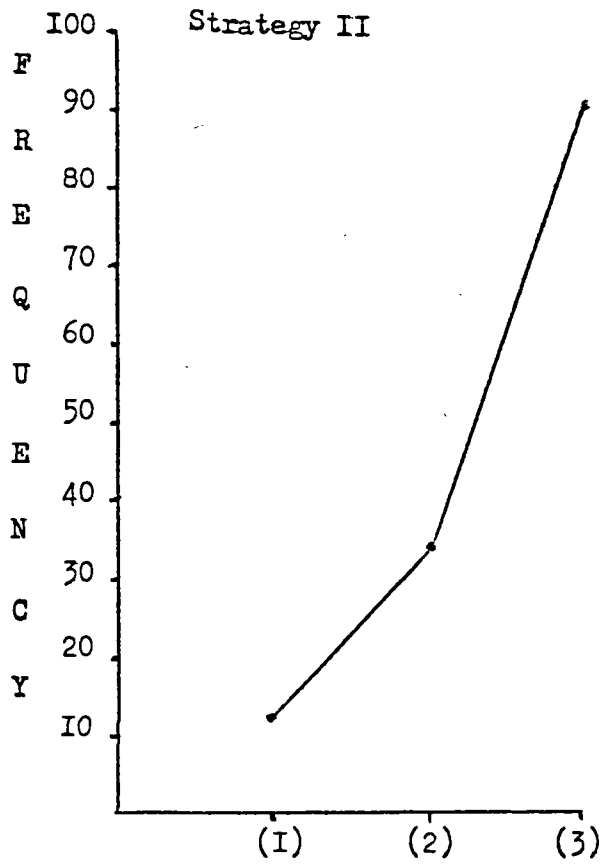
Fig. (5.6): Frequency of occurrence of some micro-strategies indicating developmental stages of strategy use in terms of number of years of learning English (i.e. level of education).



KEY:

- Intermediate level (1)
- Secondary school level (2)
- University level (3)

Fig. (5.6)(cont'd)



through lists of words,

27 Practice: using the newly-learned words in real situations, i.e. compositions.

28 Practice: using newly-learned words in situations imagined by the learner.

11 Sources of information: monolingual dictionary.

4 " : asking teacher

All these strategies, apart from 11, are practice strategies. It seems that the degree of sophistication in using practice strategies is related to the level of education. Figure (5.6) (based on the data in lists of the clusters diagnostics)) illustrates the frequency of occurrence of these strategies across the Intermediate, Secondary, Government schools and University levels. Private School pupils were excluded because of the fact that they were clustered with the university students (cluster 3), having spent more time studying English than the Government secondary school pupils, proves that the years of learning English is related to strategy use.// We have at our disposal quasi-longitudinal data, as far as Government school pupils and university students are concerned, that allow us to study the developmental patterns of vocabulary LS.

The lowest percentage for strategy 4 (asking teacher) is with the intermediate school pupils as it appears in cluster 2 and 4. This is no surprise given the fact that there are more pupils in class at the intermediate level than at other levels. Hence, the teacher cannot have a sufficient time for each pupil.

✓ One interesting point is that strategy 27 (using newly-learned words in real situations) seems to develop with the degree of achievement. This result is consistent with what O'Malley et al (1985) and Cohen and Aphek (1980) found. However, strategy 32 (learner tests him/her by going through lists of words) may seem to give a parallel example to what O'Malley et al's (1985) and Cohen and Aphek's (1980) studies seem to suggest. They found out that, as we discussed in chapter (3), beginners benefit from word lists more than more advanced learners. In fact, the results of our study show that beginners use word lists, as demonstrated by the use of strategy 30 (asking single words to confirm knowledge) more than more advanced learners (see Fig. 5.6). Both strategies 30 and 32 involve the use of words in isolation. They contrast in the use of written sources. Therefore, the results of this study, in this connection, are consistent with O'Malley et al (1985) and Cohen and Aphek (1980). Our study is more detailed, due to the "atomistic" approach adopted in that it gave two strategies in connection with the use of word lists as opposed to contextualization, depending on how the learner utilizes them; whether he/she goes through a list of words and their meanings, or goes through a list and asks somebody else for confirmation of his/her knowledge of these words.

An important point which should be mentioned is that strategy 12 (using a bilingual dictionary) occurs with a similar percentage for both the University and Secondary

Government school students. However, the difference in the use of this strategy between these two types of "good" learners is that it occurs as a modus operandi for the former, whereas it occurs for the latter only when they find it difficult to understand the definition given in the monolingual dictionary. The evidence for this is the explanations given by the learners themselves. The typical answer given by the University students to the question of why they use a bilingual dictionary is that they use it when "the definition in this dictionary (monolingual dictionary) is too difficult".

Related to the factor of the absolute "amount" of knowledge of the TL is the factor of age. The level of education indicates the age of the learner (see the description of subjects in the description of methodology of research). Some strategies seem to develop with age, and increase in the amount of knowledge of TL. This phenomenon is referred to here as the "developmental" pattern of the use of vocabulary learning strategies. The word "developmental" is used in interlanguage studies to refer to the phenomenon that some aspects of TL learning resemble patterns of L1 acquisition by native speakers of this language. But the word is used here in its everyday and general psychological use denoting growth, regardless of the distinctions that may exist between TL learners and children acquiring their L1. The degree of sophistication of some practice strategies seems to develop with age, in addition to the degree of knowledge of TL (see Figure 5.6).

The question that poses itself now is: if the level of education accounts for the differences between "good" Secondary School students and Intermediate School pupils, why are Private Secondary School pupils distinct from Public Secondary School pupils, although they are at the same level of education and within the same age group? Many factors could be behind this cluster structure. One possible factor is the learner's needs. The analysis has shown that "good" University students and Private Secondary School pupils are not different from each other as far as strategy choice is concerned. This, of course, suggests that in addition, to the factors of the level of achievement and education, there is at least another factor that is also related to strategy choice and hence, distinguishes between learners. The most likely explanation is learner's needs. University students do not only need English as a subject of interest to them (i.e. social satisfaction) but they also need to understand other subjects, the medium of instruction being English (utilitarian purpose). The specific strategies that are responsible for grouping private school pupils with University students and ^{that} made them distinct from public school pupils have all to do with using English in defining words, memorizing, and practising the TL lexical items. Those students were asked why they did not use a bilingual dictionary. The answer they gave was that part of the test in the examinations they have consists of words which they have to define. This was confirmed by the schools

authorities. This factor may explain the use of English by this group (as opposed to Arabic, i.e. using English synonyms and paraphrases rather than Arabic equivalents when memorizing words). The fact that they are able to use a monolingual dictionary may be explained by the fact they study other school subjects in English.

Another plausible factor is the difference in instruction these two groups receive at school. However, we can only speculate about the relevance of this factor because there is no clear evidence (because no data on instruction was collected) in the results that suggests that.

The suggestion that learner's needs affect strategy choice is, moreover, given support by cluster analysis in that "underachieving" University students were grouped in a different cluster from other "underachieving" pupils. The "underachieving" learners in University find themselves in a situation where they have to understand other subjects which are taught in English and all the references about them are in English. Given this situation it is not surprising that these students use a bilingual dictionary and groupwork to help them get information about the difficult words they encounter, whereas the other "underachieving" students and pupils do not. There is some sort of instrumental motivation. Other "underachieving" learners in schools do not have this pressure on them. English is only a school subject.

have access to the learning process and "talk it out loud". The range of LS identified in this study is more than that in the relevant research. The statistical analysis showed that there is a difference between the strategies used by "good" learners and those used by "poor" ones. The analysis also showed that neither the "good" learners group nor the "poor" one is a homogeneous group. Each subgroup was considered in this study as representing a stage in strategy use. The differences between the subgroups of both the "poor" and "good" learners are related to the factors of years of learning English and the use of English as a medium of instruction. The results also demonstrate that the differences between the two major groups ("good" and "poor" learners) lie mainly in the choice of micro-strategies. The only macro-strategy that markedly distinguishes between the two groups is practice. These findings suggest that the "atomistic" approach is more adequate than the "holistic" one in differentiating between learners.

CHAPTER (6)

ANALYSIS OF VOCABULARY DATA

In the previous chapter the subjects of the study have been described in terms of the strategies they employ to learn English vocabulary, and the findings discussed in the light of the basic research problem; namely, the clusters of vocabulary learning strategies employed. We will now proceed to describe the sample on the basis of their vocabulary achievement. This chapter is wholly devoted to the description of their vocabulary achievement, whereas the next chapter addresses the problem of the interrelationships between the strategies they used and their vocabulary achievement.

The analysis which will be dealt with here is concerned with a qualitative description of vocabulary achievement. It is meant to assess the validity of some assumptions and answer particular questions concerning what is learned and how learning develops as far as vocabulary is concerned, rather than giving an exhaustive description of what these learners know about English vocabulary. (See the research assumptions and questions at the beginning of chapter 4). The measurement used is norm-referenced rather than criterion-referenced (see the description of the methodology of research).

A description of the vocabulary aspects included in the analysis is given in chapter 2, which describes the scope of

the investigation of this study and also in chapter 4.

The aspects (constituting 10 variables as discussed in the methodology) were used to describe the sample using cluster analysis.

6. 1. THE NUMBER OF THE CLUSTERS (GROUPS) TO BE ANALYSED

Fig. (6.1) shows the fusion tree output by Clustan program Plink. Fig. (6.2) summarizes the fusion steps occurring in the sample. This figure shows the rising error of fusion from 8 to 2 clusters. As it appears, the first considerable plateau (indicating a relatively lesser change in the error followed by a steep one) occurs at the 3-cluster level. This plateau indicates that the 3-cluster level (just before a big jump in the rising fusion error) may be a significant and interesting level to describe the sample at. The 2-cluster level may also be a plausible cut-off point for further analysis. However, if for the moment we retain the "grouping" of the sample into 3 clusters we can also compare and contrast the 2 clusters (1) and (2), (see dendrogram) which would fuse together at the 2-cluster level (cluster (3) remains the same at both levels). The clusters are designated, here, cluster (1), cluster (2), and cluster (3), from left to right in the dendrogram, with 129, 69, and 102 individuals in each cluster, respectively.

6. 2. DESCRIPTION OF THE CLUSTERS VIS-A -VIS THEIR MEMBERS

Having decided on the number of the groups to analysed, we will now proceed to compare and contrast the members of

Fig. (6.1): Dendrogram based on the vocabulary data

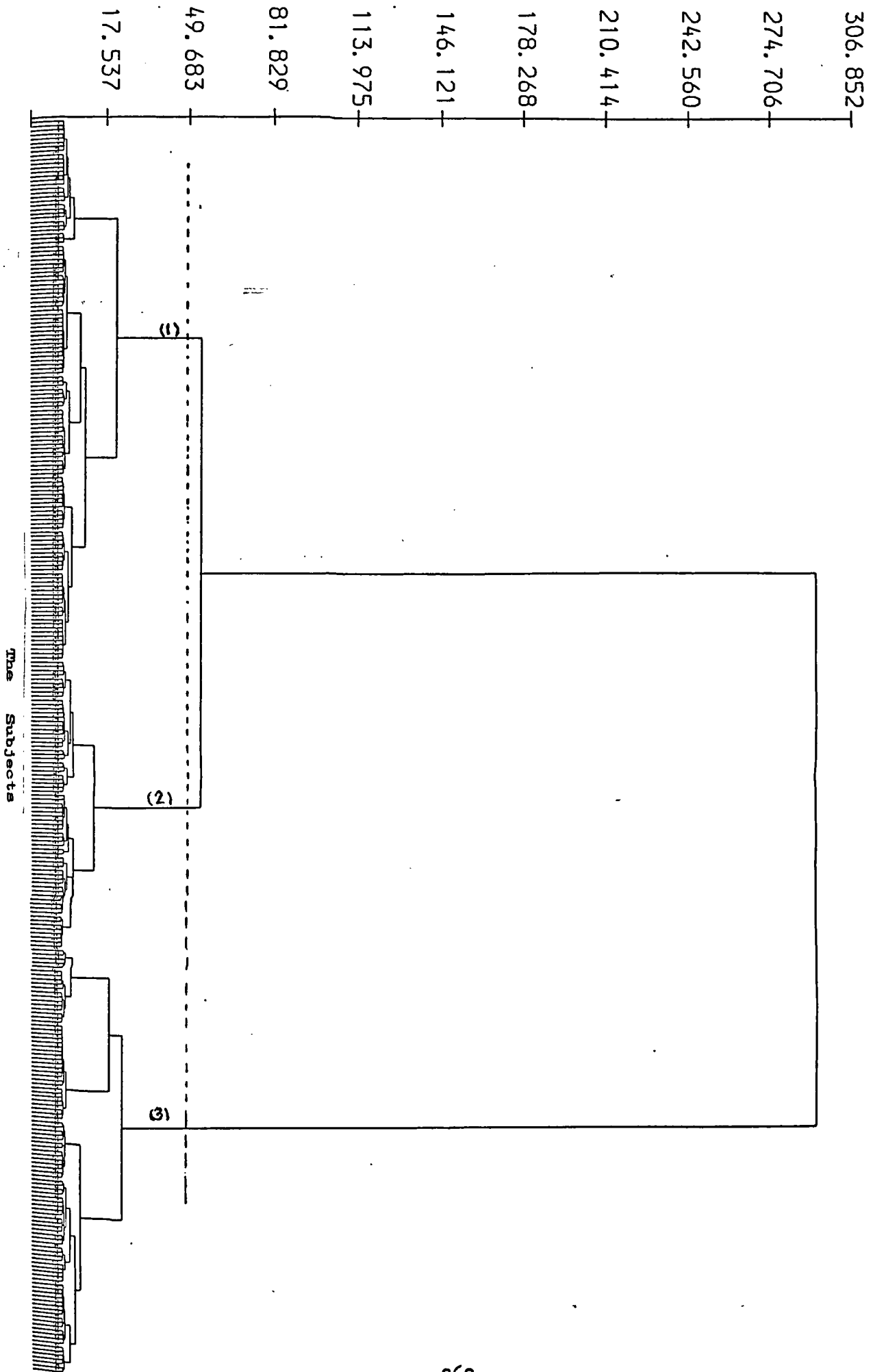
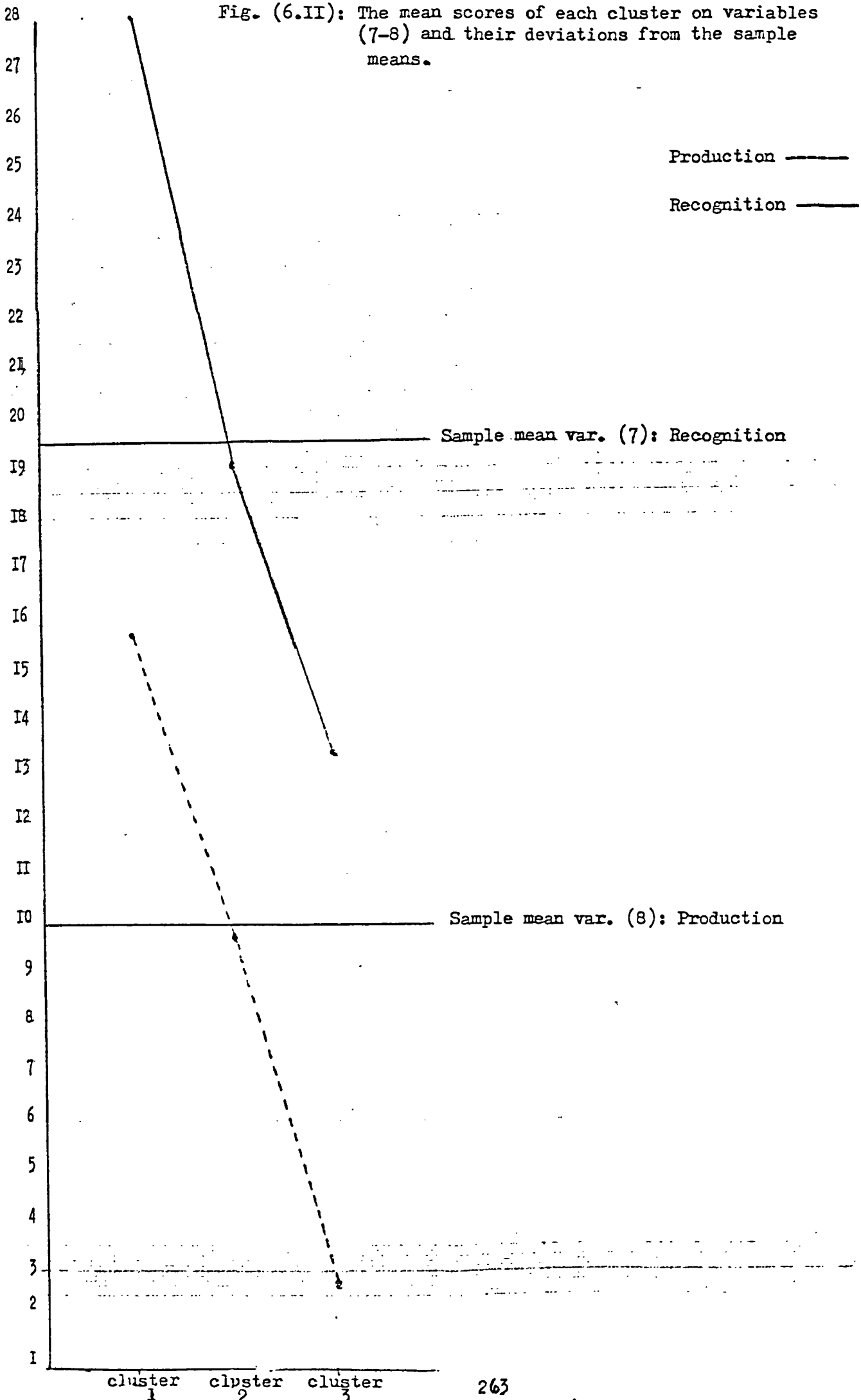


Fig. (6.II): The mean scores of each cluster on variables (7-8) and their deviations from the sample means.



each cluster with our presupposed groups; namely the distribution of the subjects in terms of their level of achievement and level of education across the clusters.

6.2. 1. THE DISTRIBUTION OF THE SUBJECTS IN TERMS OF THEIR LEVEL OF PROFICIENCY ACROSS CLUSTERS

The obvious assumption is that "good" learners will be grouped together as different from the "underachieving" ones. The validity of this assumption will be discussed here.

Table 6.1: The distribution of "good" and "underachieving" learners across the clusters.

Type of Learner	Cluster (1)	Cluster (2)	Cluster (3)
"Good"	28	54	98
"Underachieving"	101	15	4

Table (6.1) lists the number of learners, in terms of their level of achievement, in each cluster. As can be seen, cluster (1) is dominated by "underachieving" learners, forming 78.29% of the individuals in this cluster (101/129) (84.16%, 101/120 of the total number of this type of learners in the whole sample), with 21.71% members in this cluster being "good" learners. On the other hand, cluster (2) is dominated by "good" learners, forming 78.26% of the

total number of the individuals in this cluster. As to cluster (3), 96.07% of its members are "good" learners.

In sum, a large number of the (presupposed) "underachieving" learners (84.16%) seem to be distinguished from the "good" ones. The "good" learners were divided into two groups, whereas the "poor" ones were mainly grouped into one cluster. The implication of this distribution is that the variables of vocabulary achievement included in the analysis distinguished, to a large extent, between learners in terms of their level of achievement. However, this does not apply to all variables separately. This is evidenced by the fact that cluster analysis grouped some "good" learners with "underachieving" ones and vice versa, and also distinguished between two types of "good" learners as in cluster (2) and (3). This latter finding has a parallel and similar result in the analysis of the sample using learning strategies variables, as discussed earlier in chapter (5).

It is interesting to explore the distribution of variable scores in relation to the sample in more detail. In the next section, I will report and discuss the distribution of the sample across the clusters in terms both of their level of achievement and level of education. This will help us explore whether the level of the education is related to vocabulary achievement.

6.2.2. THE DISTRIBUTION OF THE SUBJECTS IN TERMS OF THEIR LEVEL OF EDUCATION AND ACHIEVEMENT ACROSS THE CLUSTER

Table (6.2) lists the number of the subjects in each cluster, at each of the three levels of education included in the analysis. As mentioned above, a large number (101/120, 84.16%) of the total number of "underachieving" learners in the whole sample are grouped in one cluster. This may suggest that the level of education plays a little or no role. However, we need to look at the distribution of the subjects more carefully before we make any generalizations.

"Good" university students and private school pupils form a cluster (cluster 3) of their own, as different from the other "good" pupils at the Secondary Government and Intermediate schools (cluster 2) - so there is a developmental sequence here (two stages). The latter two groups are the most indistinguishable from the "underachieving" learners. 47.5% and 20% (19/40 and 8/40) of these two groups, respectively ("good" learners at both secondary and Intermediate levels) are grouped with the "underachieving" learners.

In general, it appears that the higher the level of education, the more distinct each group, "good" and "poor", becomes. Translated into cluster membership, in cluster (1) (the only cluster dominated by "underachieving" learners) the number of "good" secondary school pupils is less than the number of "good" Intermediate school pupils, and the number

of University students is less than each of these two groups. On the other hand, some "underachieving" learners at a high level of education are indistinguishable from "good" learners at a lower level of education, i.e. 30% of the University "underachieving" students are in the same cluster (cluster (2)) which is dominated by "good" students at school level (government schools). 83.75% (20+27) of the members of this cluster are from the latter group (see table 18). These results clearly suggest that the level of vocabulary achievement is related to the level of education i. e. roughly years of learning English.

The same implication that some variables seem to fail to distinguish between some "good" learners and "underachieving" ones, which we mentioned in section 5.3.3.1 in connection with LS data above, seems to emerge from the figures in table (6.2) above.

There is one important question that warrants mentioning before we proceed. The question is related to whether the obtained clusters (based on lexical knowledge, of course) do or do not exactly fit the achievement level on language overall knowledge (on the basis of which the subjects of the study were classified, by the officials, as "good" or "bad"). The figures in table (6.2) above indicate that only 28 (15.55%) of the 180, presupposedly, "good" learners were grouped in the clusters dominated by, presupposedly, "bad" ones, whereas 19 (15.83%) of the 120, presupposedly, "bad" learners were grouped in the clusters dominated by,

presupposedly, "good" ones. This disagreement is not high

Table (6.2): Distribution of "good" learners and underachieving ones in different levels of education across the clusters.

Presupposed groups		Cluster 1	Cluster 2	Cluster 3
University Students	good	1	7	32
	underachieving	24	12	4
Private school pupils		0	0	60
Gov.sec. sch.pupils	good	8	27	5
	underachieving	38	2	0
Intermediate sch.pupils	good	19	20	1
	underachieving	39	1	0

enough to claim that there is no correlation between overall knowledge of language, and lexical knowledge. On the contrary, these figures suggest that there is a degree of correlation. Unfortunately, this correlation is hard to quantify because the learners were not tested on language overall for this study. However, an attempt will be made to shed more light on this correlation later in this study.

Thus far, we have been dealing with the clusters in terms of their membership. We will now proceed to the question of which variables characterize which cluster. The results and the discussion will mainly be concerned with the question of what levels of scores on the variables are typically associated with which clusters, and which variables seem to distinguish between the clusters.

6. 3 CLUSTER DIAGNOSTICS

The statistics which will be used are F-ratio and t-value as generated by Clustan. As the reader will have noticed, these statistics are different from the one (frequency ratio) which was used for strategy data. There are two reasons for this. First, F-ratio and t-value are suitable for interval data (scores) and not for binary data. Secondly, we are concerned in this chapter with averages of scores and, hence, occurrence/non-occurrence of a variable does not apply here.

For F-ratio, the variable is considered diagnostic, i.e. distinguishing at least one cluster markedly, if the intra-cluster variance is lower than that for the whole sample, $F\text{-ratio} < 1$. As to t-value, the deviations from zero show the diagnosticity of the variable. A positive t-value indicates that the variable is a positive diagnostic, in that its mean for the cluster is higher than the mean for the whole sample; whereas a negative t-value indicates that the mean score for a cluster is lower than that for the whole sample. In other words, a variable is considered diagnostic if,

- (1) It has a positive/negative t-value and/or
- (2) If the F-value is <1 (the intra-cluster variance is lower than that for the whole sample.) (see Wishart 1982, and Jones-Sargent 1983)

This definition of diagnosticity works neatly with clear-cut attributes which characterize one group (e.g. whether a person can produce a particular allophone) more than another. But with data such as ours, and with the distribution of the learners in each cluster, discussed above, which indicates overlap among the learners, we suggest that we should consider each variable as consisting of different levels of scores, rather than one level. By incorporating the definition of diagnosticity mentioned above and the idea of levels of scores, we suggest that if t-value is positive/negative, and/or F-ratio is <1 , then we will be speaking about a level of scores being typical of a group. In other words, a variable is considered diagnostic of a cluster when it distinguishes it markedly from the rest of the clusters. Hence, cluster means above as well as below the sample mean (positive and negative t-values) will be taken into consideration. The scores of each cluster are thus discussed relative to each other. It should be noted that this definition is an incorporation of suggestions made by Scholfield (forthcoming) concerning the levels of scores, and the suggestions made by Jones-Sargent (op cit.:206ff). In fact, Jones-Sargent suggested a similar definition in that

she used the actual means to describe her clusters (Loc.cit).

It should be noted that there is no standard measure of deciding how far above or below the sample mean a cluster mean has to be to be diagnostic, in the sense of distinguishing it markedly from the rest of the clusters. We will mainly depend on the visual representation of these means, i.e. the larger the distance between the three means the higher the diagnostic value for that variable as a distinguisher between the three clusters. A variable may also distinguish one cluster markedly from the rest of the clusters. Figs. (6.3, 6.8, 6.11-22, 6.15-16) show the deviation of each cluster mean from the sample mean. The dotplots (Figs. 6.4-7, 6.9-10, 6.13-14, 6.17-18) give the distribution of the members of each cluster along the same base. These plots give clear indications if there is overlap between two or more clusters, and they also show whether the scores of each cluster are spread over a wide range (big variance) or they are a bit skewed, etc. On the whole, by having the scores for each particular variable, of each cluster, plotted on the same base, we can see clearly which clusters have less or more variance and which are distinguished markedly from the rest of the clusters.

Tables 6.3-5 list the cluster diagnostics in descending order of t-value for cluster (1), (2), and (3), respectively.

6. 3. 1. MEANING VARIABLES (1-4)

The first point the reader may have noticed is that the scores for this aspect are remarkably low even for the "good" learners. The central aspect measured here concerns the degree to which the meaning ascribed to words by TL learners is identical to that of (adult) native speakers, but more importantly, how clusters differ among themselves in this respect. The results for the meaning variables are reported in tables (6.3-5). The meaning variables are coded 1-6 in the table, as can be seen in the definitions of the variables. Each of these variables will be considered separately.

We will now proceed to consider the degree of diagnosticity of each variable for each cluster.

(a) REAL SYNONYMS. (2)

Variable (1) encompasses these words. The main aspect measured here is the acquisition of synonymous TL words which have one L1 equivalent which can be used in all the situations in which the equivalent TL can be used. For example, the English words see, look, watch can be translated into Sudanese Arabic by one word. The assumption is that Sudanese learners of English treat these words as total synonyms.

This variable is the first variable on the list for cluster (1), whereas it is the third for cluster (2), and 5th for cluster (3) in terms of the size of t-value. Clusters

(2) and (3) that have a positive t-value (= the mean score is higher for these two clusters than for the whole sample); whereas cluster (1) has a large negative one. This indicates that, for cluster (1), this variable is the most difficult of all the variables in the analysis, whereas it is the second,

Table (6.3): Cluster diagnostics: cluster (1).

Variable	F-ratio	t-value	cluster mean	sample mean
1	0.2040	-.9084	3.3178	4.4133
8	0.2863	-.8857	2.7745	9.9100
2	0.1152	-.8017	3.1318	3.9867
4	0.2165	-.7898	2.1395	2.7300
7	0.2869	-0.7856	13.3646	19.6533
3	0.4382	-0.7611	2.2171	2.9100
9	0.4384	-0.7532	5.6202	12.1873
10	0.1819	-0.7413	2.2713	9.2067
5	0.5345	-0.6823	3.68	6.1167
6	0.35112	-0.5856	1.1705	3.1667

Table (6.4): Cluster diagnostics: Cluster (2).

Variable	F-ratio	t-value	cluster mean	cluster sample
4	0.6543	0.3030	2.9565	2.7300
10	0.3068	-0.3025	6.3768	9.2067
1	0.4939	0.2822	4.7536	4.4133
6	0.4934	-0.21615	2.2754	3.1167
9	0.2682	-0.1641	10.7536	12.1833
2	0.4042	0.1620	4.1594	3.1167
5	0.5172	-0.1224	5.6812	6.1167
3	0.5272	-0.0827	2.8046	2.9100
7	0.3323	-0.0780	19.0290	19.6533
8	0.5869	-0.0428	9.5652	0.9100

Table (6.5): Cluster diagnostics: cluster (3).

Variables	F-ratio	t-value	Cluster Mean	Sample Mean
10	0.4416	1.1421	19.8922	9.2067
9	0.3387	1.0636	21.4510	12.1873
7	0.4751	1.0463	28.0294	19.6533
3	0.2580	1.0185	3.7647	2.9100
1	0.3338	0.9581	5.5686	4.4133
5	0.4269	0.9457	9.4804	6.1167
6	0.8481	0.9176	6.2941	3.1667
2	0.8774	0.9044	4.9510	3.9867
4	.7497	.7939	3.3235	2.7300
8	.6444	.7234	15.7364	9.9100

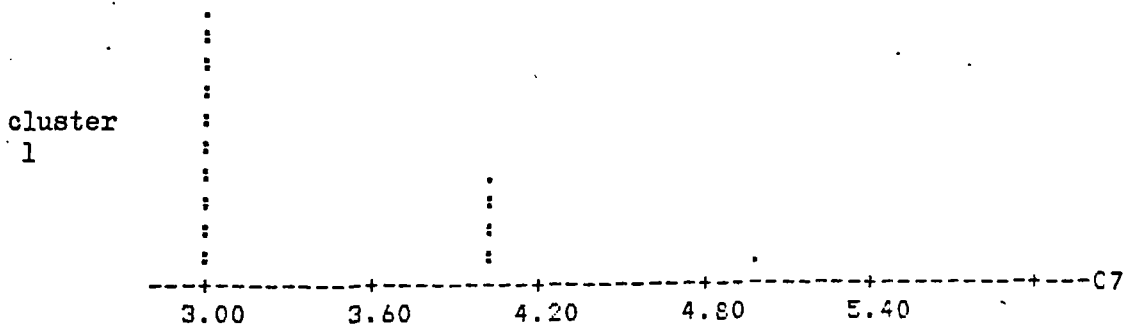
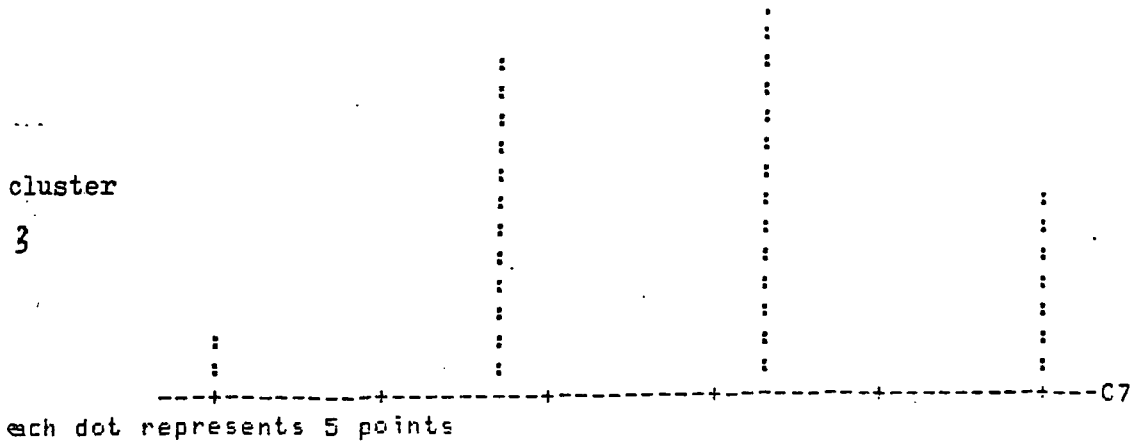
in terms of easiness, for cluster (2). However, this is not very illuminating as clusters (2) and (3) have higher positive t-values than cluster (1), and clusters (2) and (3) differ in the degree of deviation from the mean of the whole sample. We will consider the mean scores in order to illuminate these subtle differences. Fig. (6.3), illustrates the deviation of the mean of each cluster from the mean of the whole sample (see also the Dotplot 6.4). As appears, the difference between cluster (1) and each of clusters (2) and (3) is greater than between clusters (2) and (3). The deviation of the t-value for this cluster from sample mean is also the greatest as shown below,

		Cluster(1)	Cluster(2)	Cluster(3)
Cluster	\bar{X}	3.3178	4.7536	5.5686
Cluster	t-value	-0.9084	0.2922	0.9581

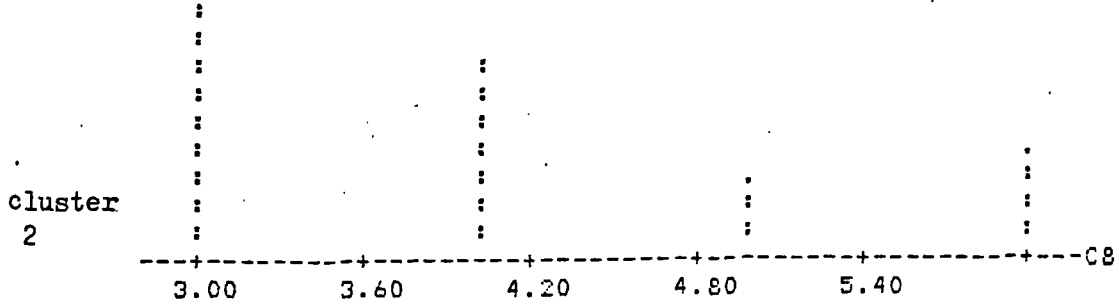
In other words, cluster (1) has the lowest mean (most of its members are concentrated on the left side on the dotplot). It seems to be markedly distinguished from the rest of the clusters. Therefore, this variable can be considered as a "good" negative distinguisher of this cluster. Each cluster has a relatively low variance, relative to the sample variance (see dotplot).

These findings suggest that Sudanese learners of English treat the synonymous words which have one equivalent in their L1 as complete synonyms. However the hypothesis in this study is that this confusion also extends to the English words which are not synonyms but are translated into SSA by only

Fig. (6.4): Dotplot of the scores of the subjects in each cluster on var. (1) drawn on the same base.



each dot represents 7 points



one word. This hypothesis will be discussed by considering the next variable.

(b) PSEUDOSYNONYMOUS: SYNONYMS (b): Variable 4

As can be seen in tables 6.3-5, this variable is ordered second for cluster (1), and first for cluster (2) and penultimate for cluster (3), in terms of the distance from zero (the size of the difference between cluster mean and sample mean). As the case with variable (1), cluster (1) has a negative t-value for this variable, whereas clusters (2) and (3) have positive ones. The implication of these facts (ordering of t-value) is that for cluster (1) this variable is the second most difficult aspect to learn.

F-ratio is positive for all the clusters. As can be seen in table (6.5), this variable is at the bottom of these easy variables to learn as far as cluster (3) is concerned. Following our definition of diagnosticity given at the outset of this chapter, we could say that this variable has three levels of scores each of which is diagnostic of the cluster to which it belongs. However, looking more closely at the figures, it seems clear that this variable distinguishes cluster (1) more markedly from the others (see dotplot 6.5). Fig. (6.3) illustrates the deviation of the mean of each cluster from the sample mean as well as illustrating the distances between the clusters. The means and t-values (tables 6.3-5) are as follows,

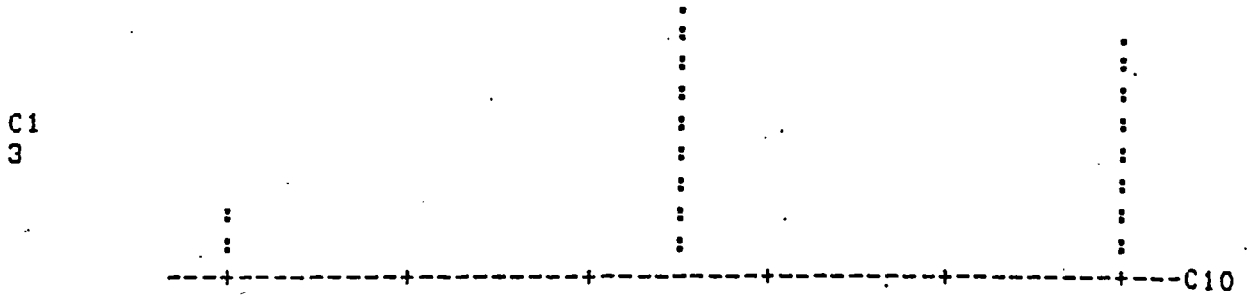
Cluster \bar{X}	Cluster (1) 2.1395	Cluster (2) 2.9565	Cluster (3) 3.3235
" t -value	-0.7898	0.3030	0.7939

These figures and Fig. 6.3 show that cluster (1) is clearly the furthest cluster considering the clusters in pairs in that it has the lowest mean. So this variable could be mainly regarded as a good "negative" distinguisher of cluster (1).

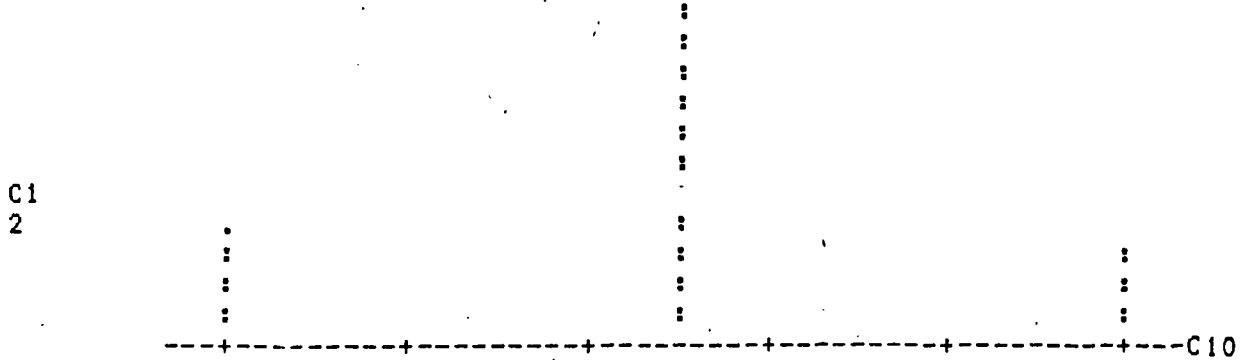
In general, considering the characteristics of the subjects in terms of level of education and level of achievement in each cluster, "underachieving" learners across all the levels included in the cluster analysis confused near synonyms more than "good" Government school pupils (cluster 2), and "good" University and public school pupils (cluster 3). "Good" Government school pupils have a higher average degree of confusion (lower score = higher degree of confusion), than that of "good" University Students and private school pupils. These latter two groups have a higher mean score for this variable than the rest of good pupils. In other words, these two groups are different, though not markedly. The "good" Intermediate school pupils are less distinct from the "poor" learners than "good" secondary school pupils. 19 (47.5%) of the members of the former were grouped with the "underachieving" learners (cluster 1); whereas only 20% of the latter were in cluster (1). The other most significant finding is that only 12.5% of the good

Fig. 6.5: Dotplot of the scores of the subject in each cluster of variable (4) drawn on the same base.

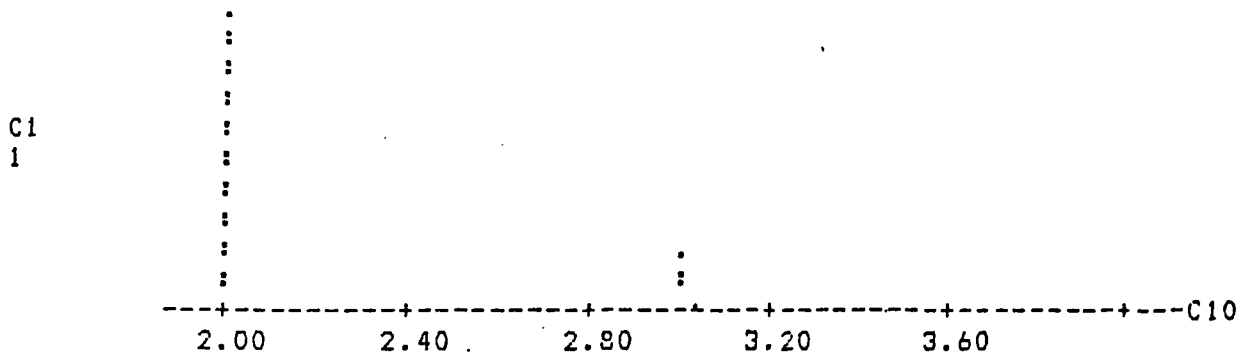
Each dot represents 3 points



Each dot represents 2 points



Each dot represents 6 points



secondary school pupils were grouped with their private secondary school counterparts, who have the highest mean, as discussed above.

These findings indicate that Sudanese learners of English confuse, (treat as synonyms) not only real synonyms but also some English pairs which have one equivalent in SSA.

(c) REAL POLYSEMOUS WORDS: POLYSEMES (a)

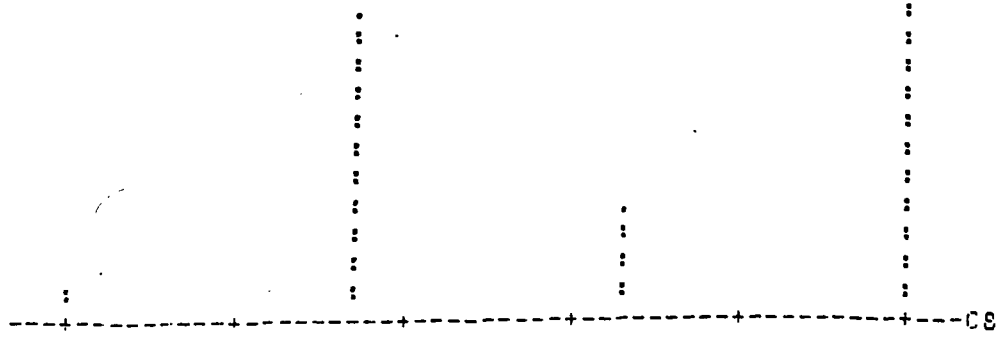
The polysemous (a) words are coded as variable (2) in tables 6.3-5. This appears third for clusters (1), sixth for (2), and the eighth variable for cluster (3) in the lists. The mean scores for this variable for cluster (2) and (3) are higher than the mean score for the whole sample (positive t-values); whereas the mean score for cluster (1) is lower than that for the whole sample (a negative t-value). However, the three clusters share the characteristic that the intra-cluster variance is lower than that of the whole sample (this does not show clearly on the dotplot (fig. 6.6) because the scores are generally very low).

The implication of this is that the mean score for each cluster can safely be said to typify a large number of individuals within each cluster. Fig. 6.3 illustrates the position of each cluster relative to the sample mean and to each other. It shows that cluster (1) is clearly distinguished from clusters (2) and (3) because the difference between the average of this cluster and the

Fig. (6.6): dotplot of the scores of the subjects in each cluster on variable (2) drawn on the same base.

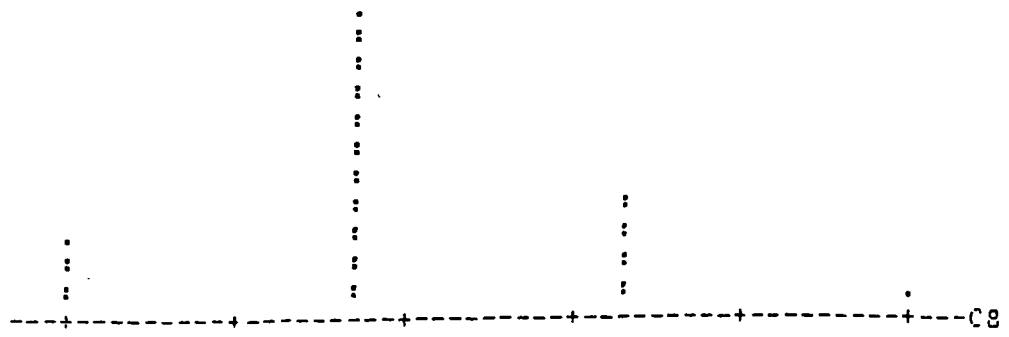
Each dot represents 2 points

C1
3



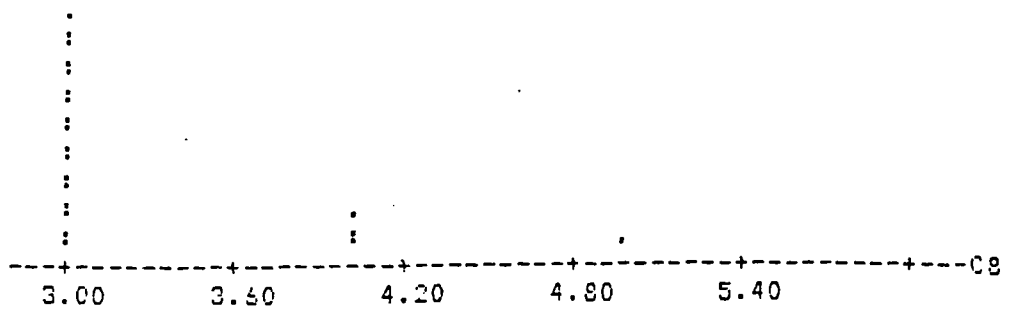
Each dot represents 2 points

C1
2



Each dot represents 7 points

C1
1



closest average (of cluster (2)), 1.0286, is bigger than the difference between the averages of clusters (2) and (3) (= 0.7916), the average for cluster (3) being the highest.

The means of the scores show that this variable stretches the clusters from each other more than the two variables discussed above. The F-ratios indicate that cluster (1), F-ratio=0.1152, is the most homogeneous, whereas cluster (3) is the least homogeneous, F-ratio=0.8774. This result suggests that although cluster (3) has the highest mean score, the scores seem to vary over a wide range (see fig. 6.6).

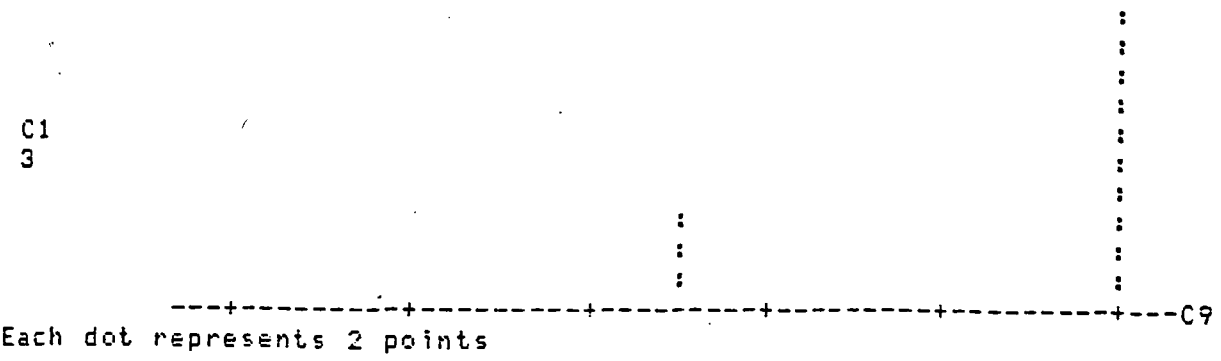
(d) POLYSEMES (b)

Variable 3, as coded in tables 6.3-5, represents this group of words. This variable has a negative t-value for both cluster (1) and cluster (2), but a positive one for cluster 3). However, all the clusters have a little or a lot variance (F-ratio <1) than the variance for the whole sample. Thus this variable is diagnostic of each cluster. Given the positive and negative t-values for this variable, it seems that there are different levels of scores. In this sense, each level of scores typifies the group to which it belongs.

Dotplot (6.7) and Fig. (6.3) do not show clearly which cluster is markedly distinguished. However, as it appears from the mean scores and the t-values below, like the other polysemous words discussed in the previous section, this variable stretches the three clusters more than the two

Fig. (6.7): Dotplot of the scores of the subjects in each cluster on var. (3) drawn on the same base.

Each dot represents 4 points



variables of synonymous words, in that, although cluster (3) seems to be more further stretched from each of clusters (1) and (2) than these two clusters from each other, the distance between each two clusters seems to be more or less similar. The figure shows that cluster (3) has the highest mean, whereas cluster (1) has the lowest one. The difference between the means of cluster (3) and (2) is 0.9601, and 0.5875 between the means of cluster (1) and (2).

	Cluster(1)	Cluster(2)	Cluster(3)
Cluster \bar{X}	2.2171	2.8046	3.7647
Cluster t-value	-0.7611	-0.827	1.0185

This confirms the general picture which seems to be consistent for the meaning variables that they place the clusters, in descending order of achievement, as follows: cluster (3), cluster (2), and cluster (1).

(e) SYNTAGMATIC ASPECTS OF MEANING : COLLOCATION

Variables 5 and 6 represent recognition and production of collocational patterns, respectively. The aspect under consideration here is the acquisition of the collocations of some English words, e.g. tall, long. As can be seen, both cluster (1) and cluster (2) have negative t-values for these two variables, whereas cluster (3) has positive t-values for both of them. The question of the difference between productive and recognition abilities will be dealt with in section 6.4. We will consider the mean scores for the two

variables together. These overall averages are tabulated below in table 6.6.

Table (6.6): Mean scores for "collocation" variables lumped together

Cluster	Cluster Mean	Sample Mean
1	4.8500	
2	7.9565	9.89971
3	15.7733	

It is quite clear from table (6.6), and F-ratios and t-values for each of the two variables in tables 6.3-5 that clusters (1) and (2) fall well behind cluster (3). However, cluster (2) scored higher, on average, for both recognition and production than cluster (1). It should also be noted that both the recognition and production variables have lower intra-cluster variance (F-ratio <1) than that for the whole sample for the three clusters. In other words the average scores for collocational patterns listed in table (6.3-5), quoted below, represent a large number of individuals within each cluster.

Variable 5: recognition

Cluster	(1)	(2)	(3)
X	3.68	5.6812	9.4804
t -value	-0.6823	-0.1224	0.9457

Variable 6: production

X	1.01705	2.2754	6.2941
t -value	-0.5856	-0.2615	.09176

Fig. (6.8): The mean scores of each cluster on vars. (5-6) and their deviations from the sample means on the same variables.

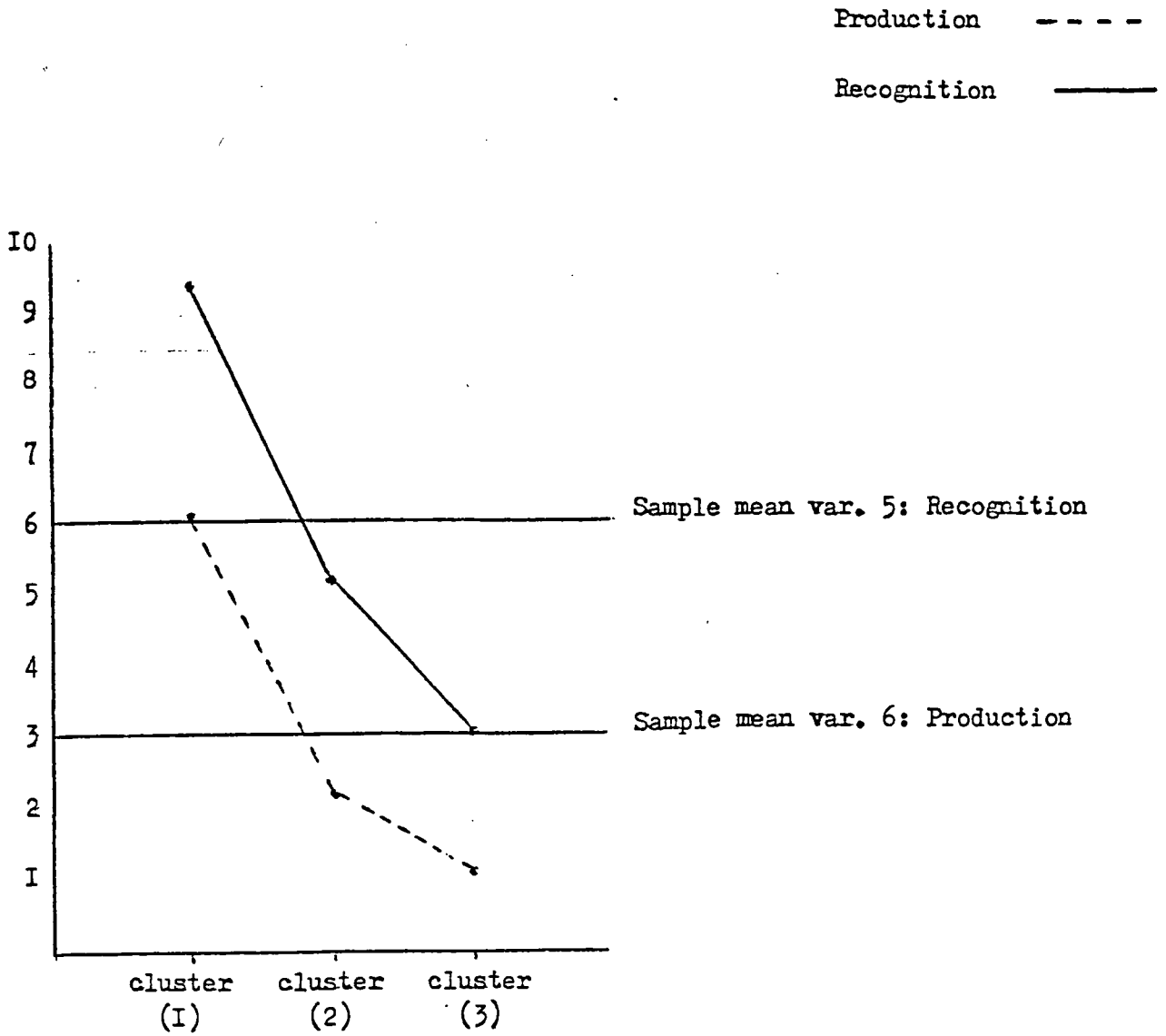


Fig. (6.9): Dotplot of the scores of each cluster on variable
 (5) drawn on the same base for the three clusters.

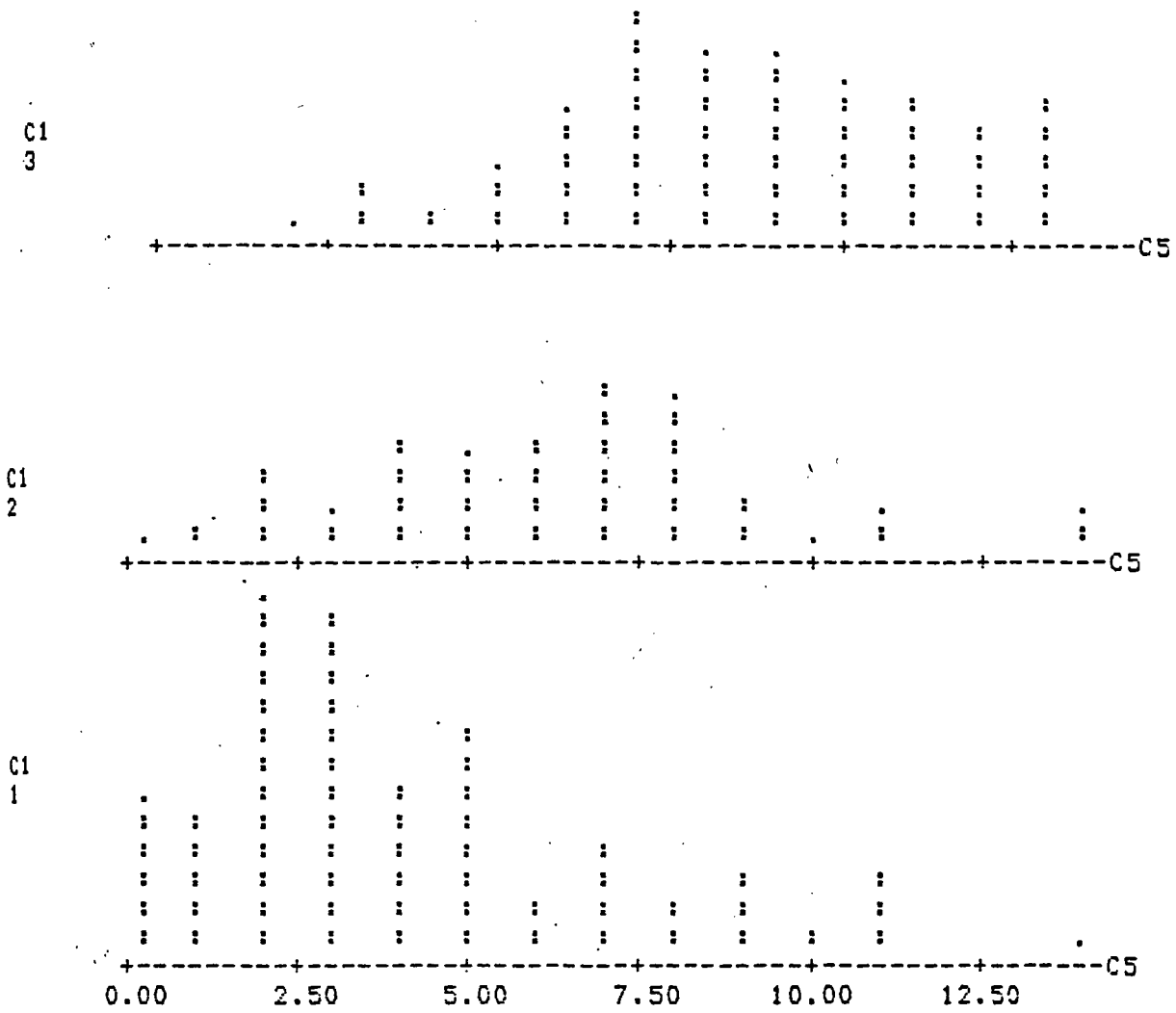
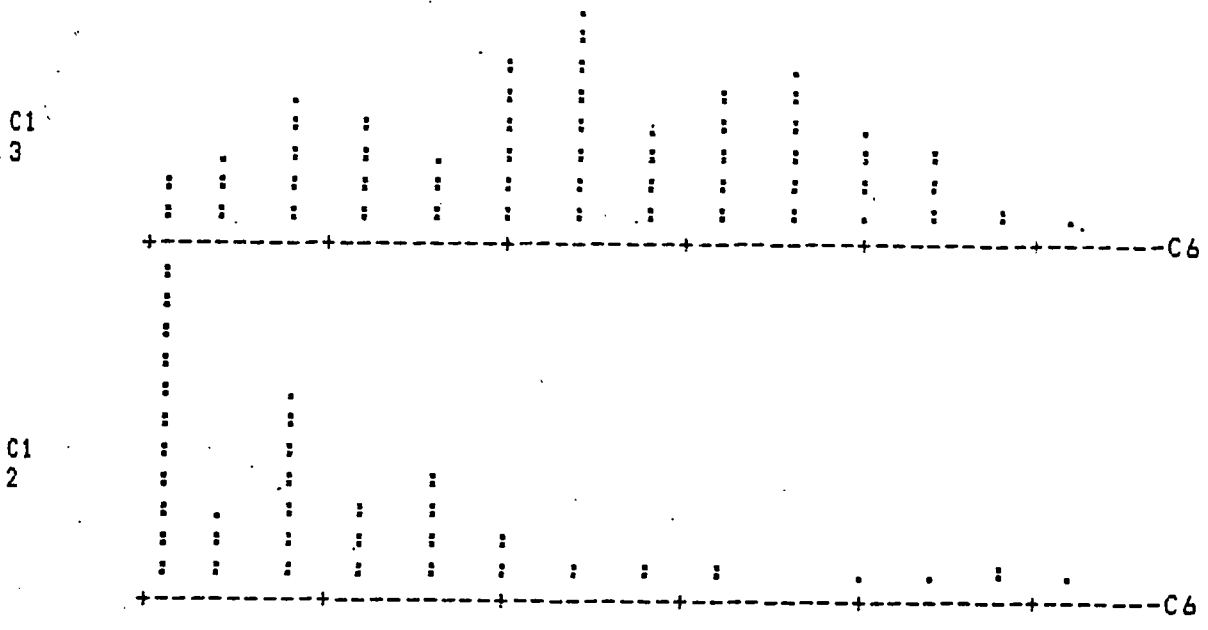
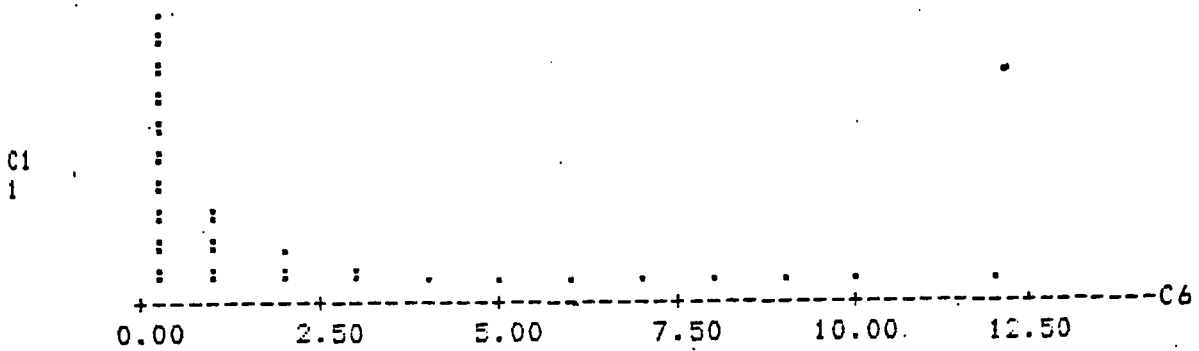


Fig. (6.I0): Dotplot of the scores of each cluster on variable (6)
 drawn on the same base for the three clusters.



Each dot represents 4 points



The two variables suggest that cluster (3) is markedly the best of the clusters as far as the knowledge of syntagmatic aspects of meaning is concerned. This can be more clearly seen in Figs. (6.8-10). The two variables seem to be good positive distinguishers of cluster (3). The other important finding is that cluster (2) is further stretched from cluster (1) with regard to production than with comprehension (see the dotplots in Figs. 6.9-10).

Cluster (3) has a remarkably smaller variance for the comprehension, $F\text{-ratio}=0.4269$, than for the production of collocations, $F\text{-ratio}=0.8481$ (see figs. 6.3-5). This is not the case with the rest of the clusters (see tables 6.3-5). The significance of this finding is that although cluster (3) is markedly distinguished from the rest of the clusters on the basis of the average scores for the production of collocation, it is less homogeneous as a group than the rest of the clusters.

To summarize, the subjects of the study scored remarkably low on the meaning variables. In general, these variables reflect the degree of overlap among the subjects of the study (see the results of variables 1 and 4) yet they seem to distinguish between the three clusters. This distinction lies mainly in the ability to recognize and use collocational patterns of words.

One of the most significant findings is that all the variables that are concerned with conceptual meaning (discrimination of polysemous and synonymous words) suggest

that cluster (1) is the most markedly "poor" group. The second important finding is that the variables of the syntagmatic aspects of meaning, on the other hand, showed cluster (3) is the most markedly different cluster, in addition to the finding that cluster (1) is the poorest. The other important finding is that variable (4) (which is concerned with the acquisition of TL "pseudosynonymous" words, e.g. watch, clock) shows that clusters (2) and (3) are closer to each other than with the rest of the variables. The third major finding is that the Sudanese learners of English tend to treat as complete synonyms not only the real English synonyms, but also the group of words that have one equivalent in their L1, as predicted in chapter 4.

6. 3. 2. LEXICAL-GRAMMATICAL VARIABLES

The grammatical variables are represented as 7-10. Variables 7, and 8 are recognition and production, of derivations and grammatical class, respectively, and variables 9, and 10 represent the recognition and production, respectively, of the selected grammatical idiosyncrasies of words. We will now consider each pair separately to discuss its diagnosticity.

(a) MORPHOLOGICAL FEATURES: DERIVATIONS AND GRAMMATICAL CLASS:

As can be seen in tables 6.3-5, clusters (1) and (2) have negative t-values for the production and recognition of

this aspect of lexical items, whereas cluster (3) has a positive t-value (see tables 6.3-5). However cluster (2), in contrast to cluster (1), has only marginal deviations from the mean of the whole sample: for variable 7, the difference (19.6533 - 19.0290) is only 0.6243, and for variable 8, it is (9.9100 - 9.5652) 0.3448, whereas for cluster (1) the differences are (19.6533-13.3646) 6.2887 and (9.9100-2.7748) 7.1352, respectively. Not only that, but variables 7 and 8 appear at the bottom of the list of the diagnostics of cluster (2) implying that these two variables have the least deviations from zero (the closest to the mean of the whole sample). The figures below illustrate these distances.

	Cluster	(1)	(2)	(3)
	\bar{X}	13.3646	19.0290	28.0294
Var.7 Comprehension	t-value	0.7856	0.0780	1.0463
	\bar{X}	2.7745	9.5652	15.7364
Var.8 Production	t-value	0.8857	0.0428	0.7234

The means and t-values above illustrate that each cluster is quite distinct from the others. Comprehension seems to be a good positive diagnostic for cluster (3) as opposed to the rest of the clusters (see also figs. 6.11-14). The production of derivations and correct form-class (var.8) stretches the three clusters from each other more than comprehension does.

Fig. (6.II): The mean scores of each cluster on variables (7-8) and their deviations from the sample means.

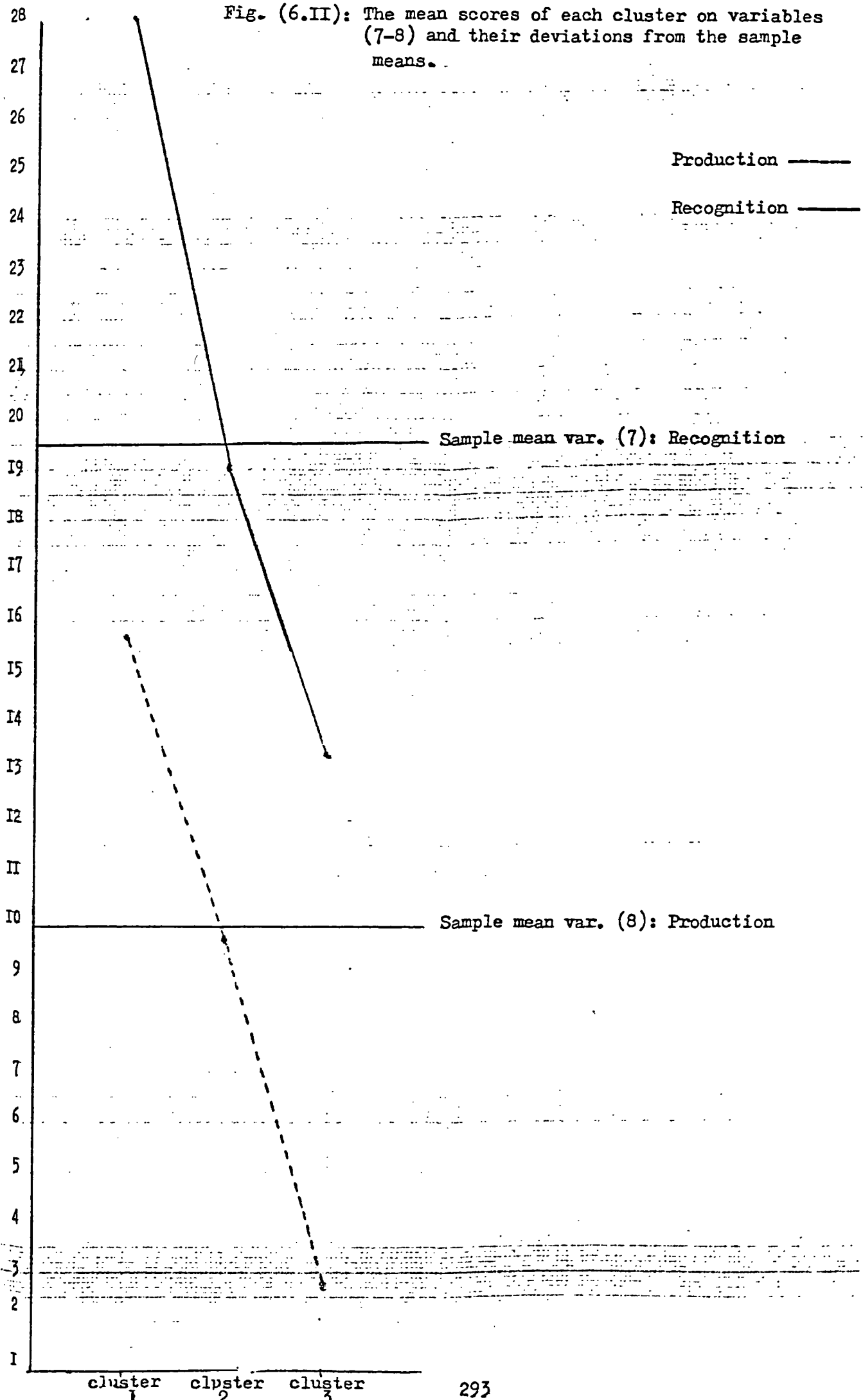


Fig. (6.I2): Dotplot of the scores of the clusters on variable (7)
 drawn on the same base for the three clusters.

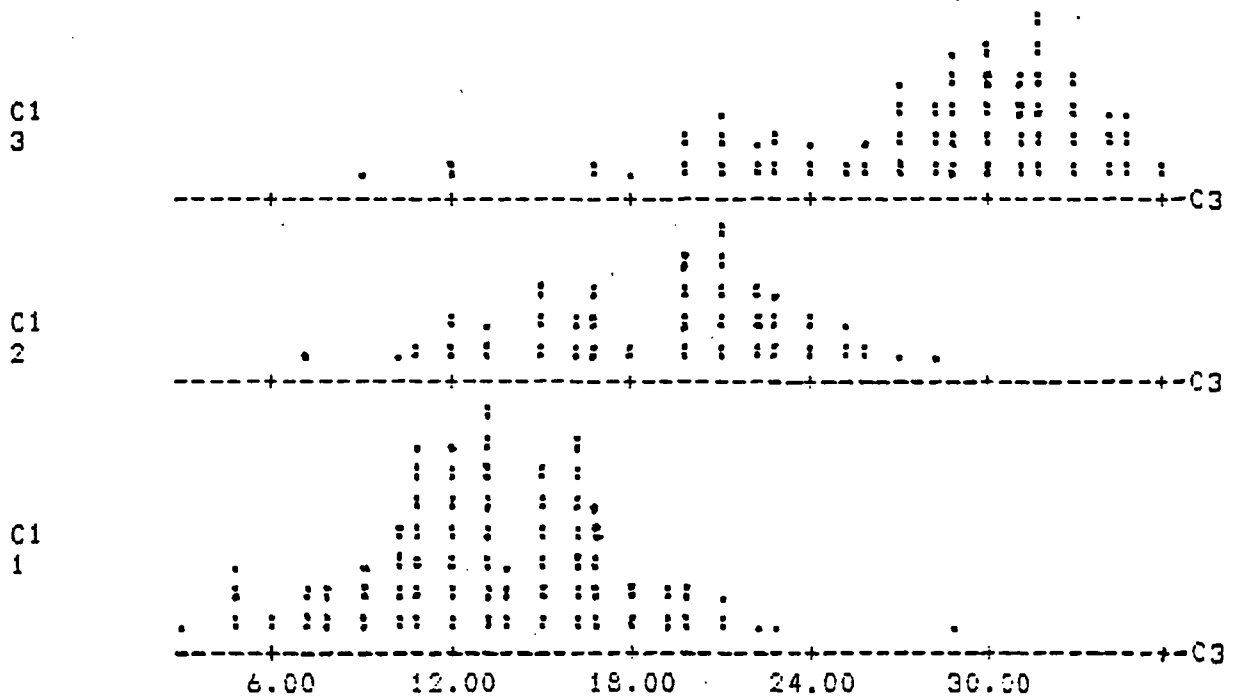
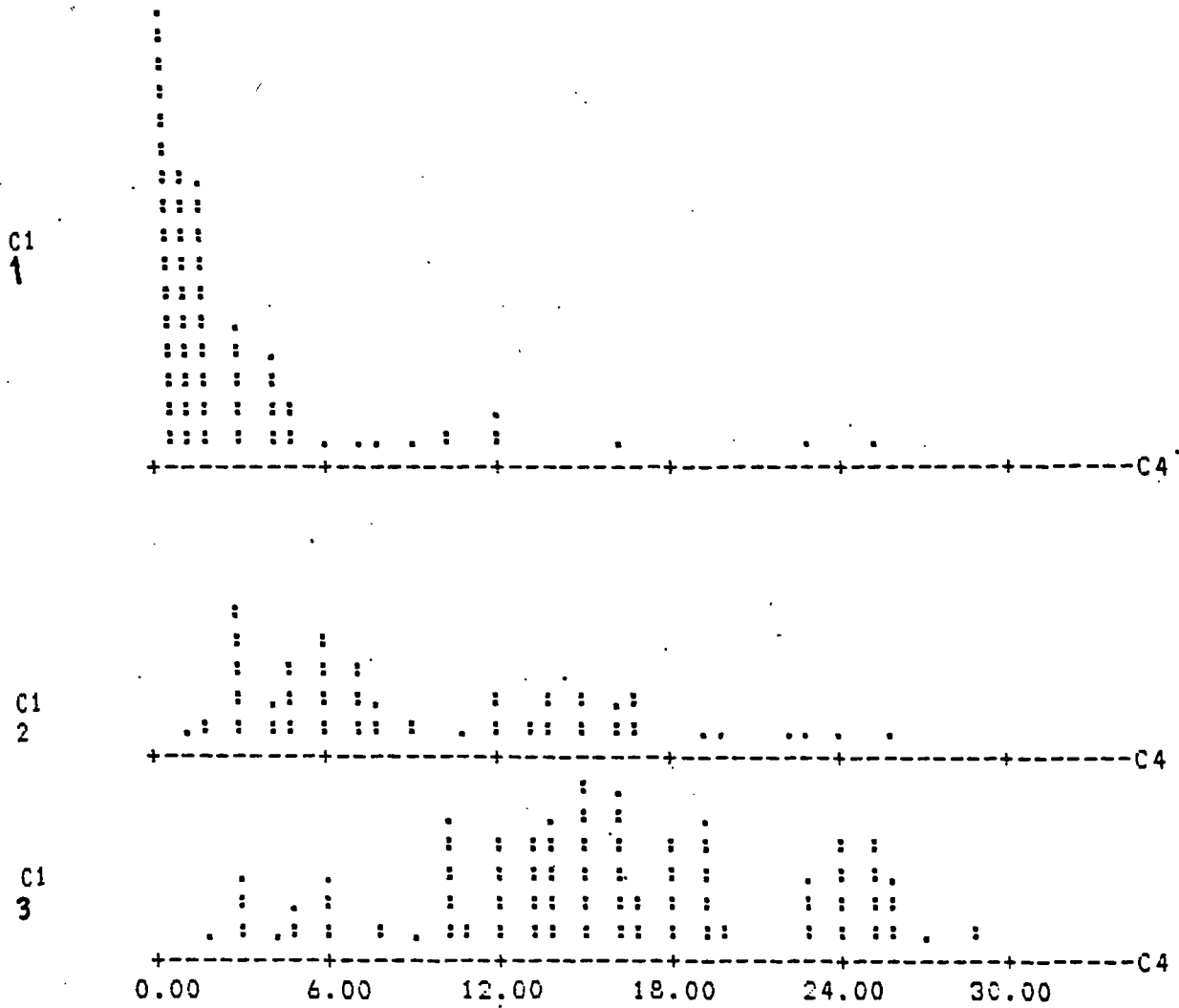


Fig. (6.I3): Dotplot of the scores of each cluster on variable (8)
 drawn on the same base for the three clusters.



In other words, as Figs. (6.12-13) show, there is a greater overlap between the subjects across the clusters with regard to comprehension than with production. However, cluster (1) seems to be more further stretched from both clusters (2) and (3), as having acquired less productive knowledge, than the latter two clusters from each other (see Fig. 6.11)

Considering the type of learners in each cluster, the comprehension and production of derivations and grammatical class distinguish clearly between three levels: "good", characteristic of private secondary school pupils and "good" University students (cluster 3), "intermediate", characteristic of the majority of the presupposed "good" secondary and intermediate Government school pupils (cluster 2), and "poor", characteristic of of the majority of the presupposed "underachieving" learners in the sample (cluster 1).

As is naturally expected (the idea of clustering is based on the degree of homogeneity), F-ratio is <1 for these two variables for all clusters indicating that the intra-cluster variance is lower than inter-cluster variance. Each level of scores can be said to represent a large number of the members of each cluster. Therefore, these variables are diagnostic in that each mean score represents a group, and hence three levels of scores. The other implication is that recognition (variable 7) seems to be linked to the factors of the levels of education and achievement (for more discussion see section 6.4 and the discussion of the result in the last section of

this chapter). The ability to produce is, as expected (chapter 4), systematically lower than the ability to recognize. Variable 7 contributed to the groupings of the three levels of it (corresponding to the three clusters) each of which characterizes a particular cluster (see tables 6.3-5 for F-ratio and t-value.)

(b) GRAMMATICAL IDIOSYNCRASIES OF LEXICAL ITEMS.

Variables 9 and 10 encoded this aspect in its recognition and production forms, respectively. These two variables give similar results to those of the morphological features in that clusters (1) and (2) have negative t-values for both variables, whereas cluster (3) has positive t-values for both variables.

	Cluster	(1)	(2)	(3)
var. 9 recognition	\bar{X}	5.6202	10.7536	21.4510
	t -value	-0.7532	-0.1641	1.0636
var. 10 production	\bar{X}	2.2713	6.3768	19.8922
	t -value	-0.7413	-0.3025	1.1421

There is a greater difference between clusters (1) and (2) with respect to production than with recognition (see the means above and the visual representation of this difference in Fig., (6.14). In addition to the finding that the comprehension and production of grammatical idiosyncrasies

distinguish clearly between the three clusters, they also signal cluster (3) as markedly different from the rest of the clusters in that these two variables are good positive diagnostics, or characteristics, of this cluster (see Figs. 6.14-16). This gives further confirmation that private secondary schools are better than Government secondary school pupils. The significant point to be made is that this variable stretches cluster (3) from the rest of the clusters much further than any other variable. This is shown in the dotplot by the concentration of most of the members of cluster (3) on the highest ranges of scores. By excluding cluster (1), whose members performed poorly on this task, as in the other tasks (see means of scores in table 6.3), the production of some grammatical idiosyncrasies of lexical items included in the analysis seems to be the most difficult grammatical aspect. This is supported by the fact that variable 10 has the highest negative deviation from zero for cluster (2) (corresponding to the amount of difference between the cluster mean and sample mean). Another piece of evidence is that variable 10 appears at the top of the diagnostics of cluster (3) as having the highest positive deviation from zero. This resulted from the fact that the individuals in the other clusters performed badly.

Production as well as recognition seems to have three levels of scores each of which typifies one cluster, as is the case with learning of morphological features related to

Fig. 6.I4) The mean scores of each cluster on variables (9-10) and their deviations from the sample means on the same variables.

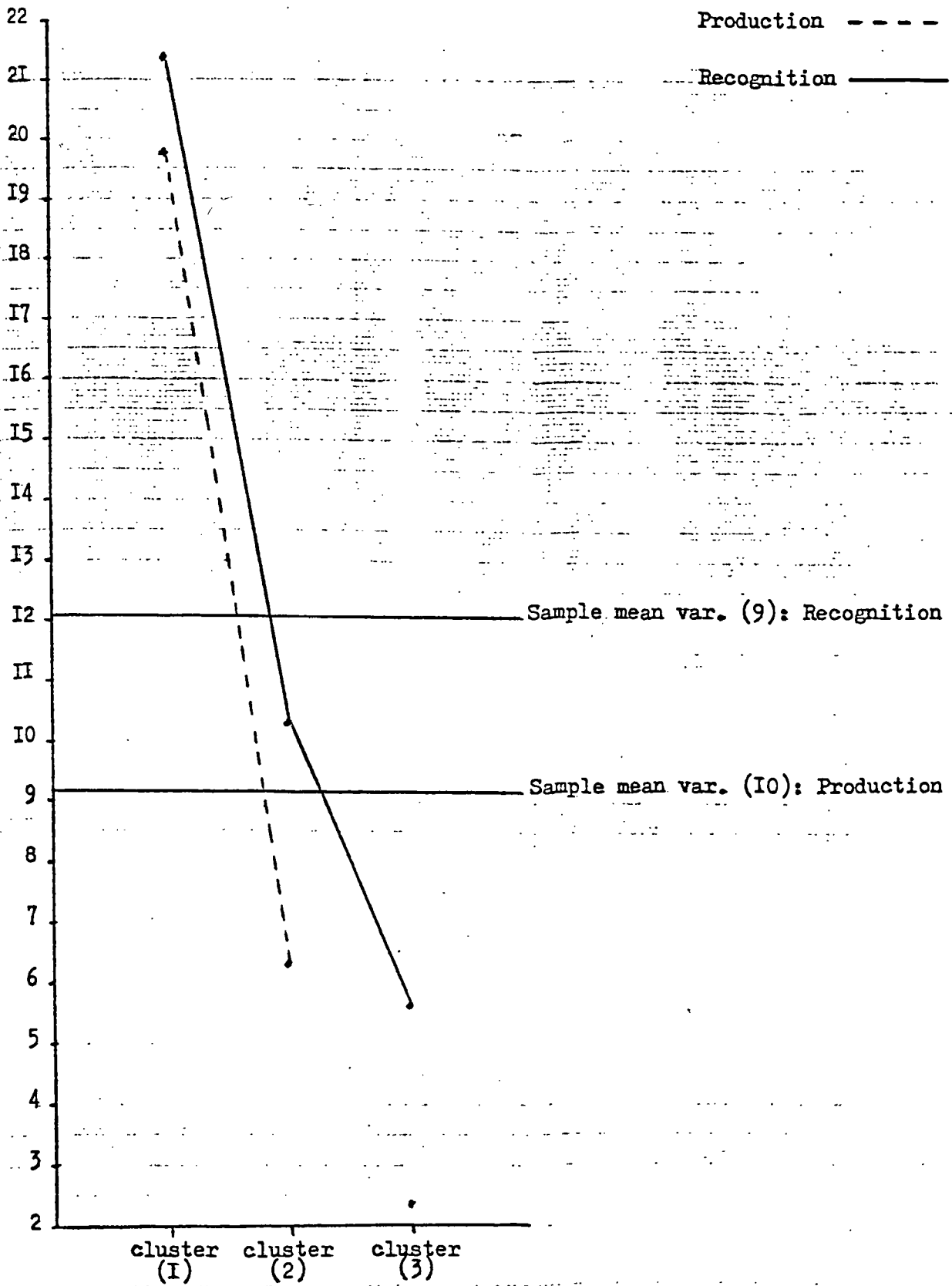


Fig. (6.15): Dotplot of the scores of each cluster on variable (9)

drawn on the same base for the three clusters.

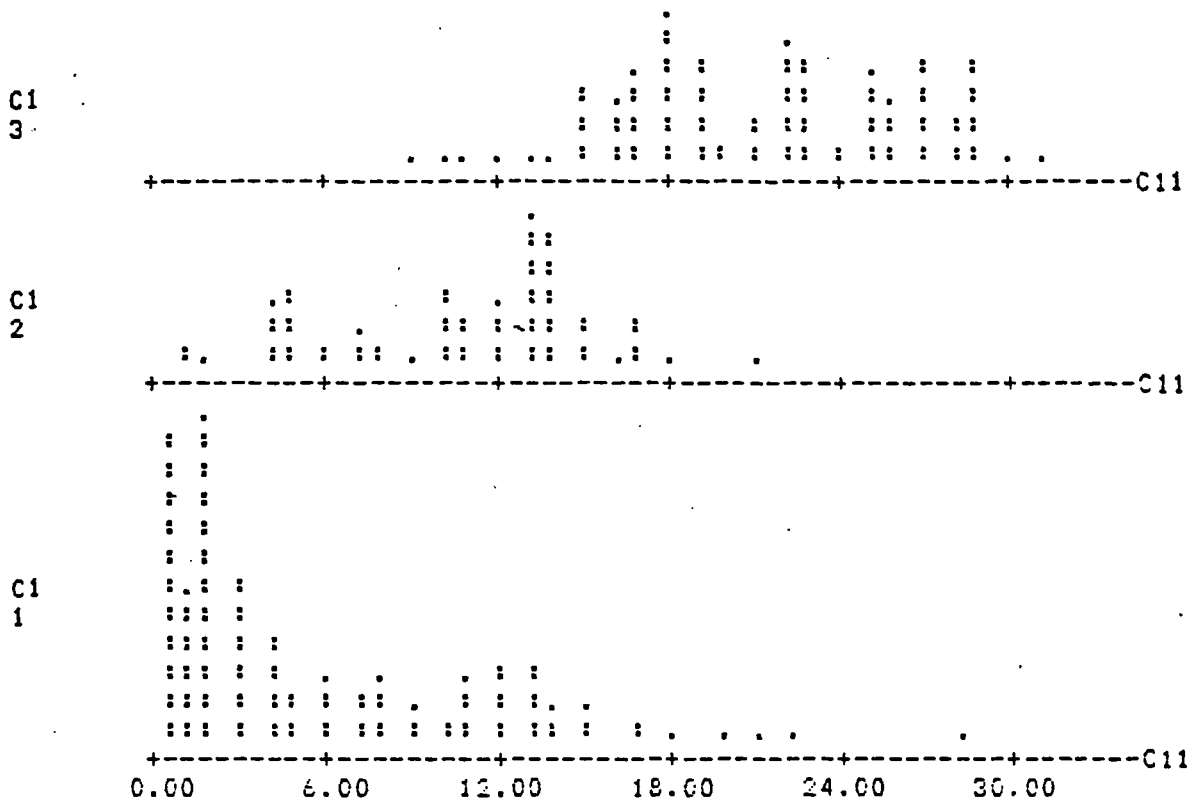
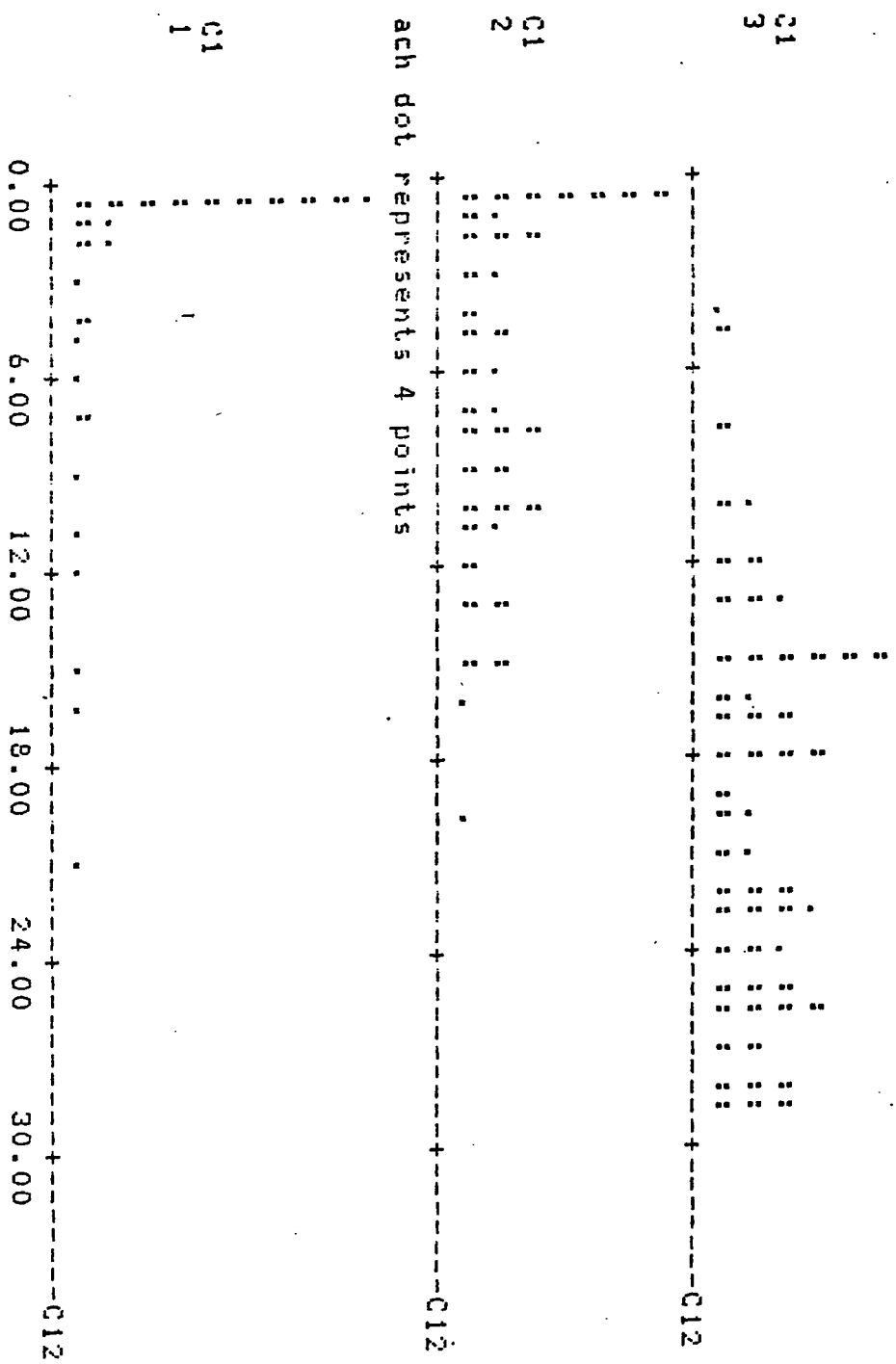


Fig. (6.I6): Dotplot of the scores of each cluster on variable (I0)
 drawn on the same base for the three clusters.



derivations and grammatical class of words.

In general, there are three levels of scores of each of the grammatical variables which distinguish between three levels of achievement.

6.4. RECOGNITION V. PRODUCTION

To reiterate, this study is not an exhaustive account of the vocabulary achievement of subjects of the study. It was meant to answer some research questions. One of the questions under investigation is the relationship between recognition ability and production ability of the subjects concerning some aspects of lexical items. The aspects for which both recognition and production abilities were measured are collocation, morphological features, and grammatical idiosyncrasies. These are coded as variables 5-6, 7-8, and 9-10 (see tables 6.3-5), respectively. As we hinted in the account of cluster diagnostics, the levels of the scores on recognition, on the one hand, and those on production, on the other, are different and they behave in a similar way in differentiating between learners. In this section we will attempt to examine these points in a more rigorous way. The inferential t-test (matched observation) was used to answer the question of whether the subjects of the study performed significantly different on these two conditions (tasks). The results are summarized in table (6.7) for each pair of variables -each variable represent two conditions recognition and production (see also Figs. 6.17-19).

The t-values for the three pairs are 11.12, 24.27, and 15.3. The critical value for the degree of freedom of 299 is 1.48, for 0.01 level for two-tailed t-test. This critical value is < the t-values of each of the three pairs. Therefore, the decision is that there is a significant difference between each two pairs (two tasks) at .001 level.

Another result is that the degree of correlation is also significant between the members of each pair. The other important finding is that the relationship is positive indicating a direct correlation.

The correlations are very high for all the pairs of variables (0.61, 0.93, 0.83). The smallest correlation coefficient is that for the derivations and grammatical class. One possible plausible explanation for this result is that derivations and grammatical class involve some rules, and consequently this may lead to rule rather than rote learning. Thus there is a scope for overgeneralization. This is certainly not the case with collocations and lexical-grammatical idiosyncrasies. Therefore, in addition to the finding that there is a difference between recognition and production because they involve different levels of cognitive control, the difference between the two abilities seems also to be related to the lexical aspect being learnt. The more the aspect involves some rules the more likely that the learner tends to overgeneralize in production. Consequently, the difference between recognition and production may increase. As to the non-rule governed aspects the learner

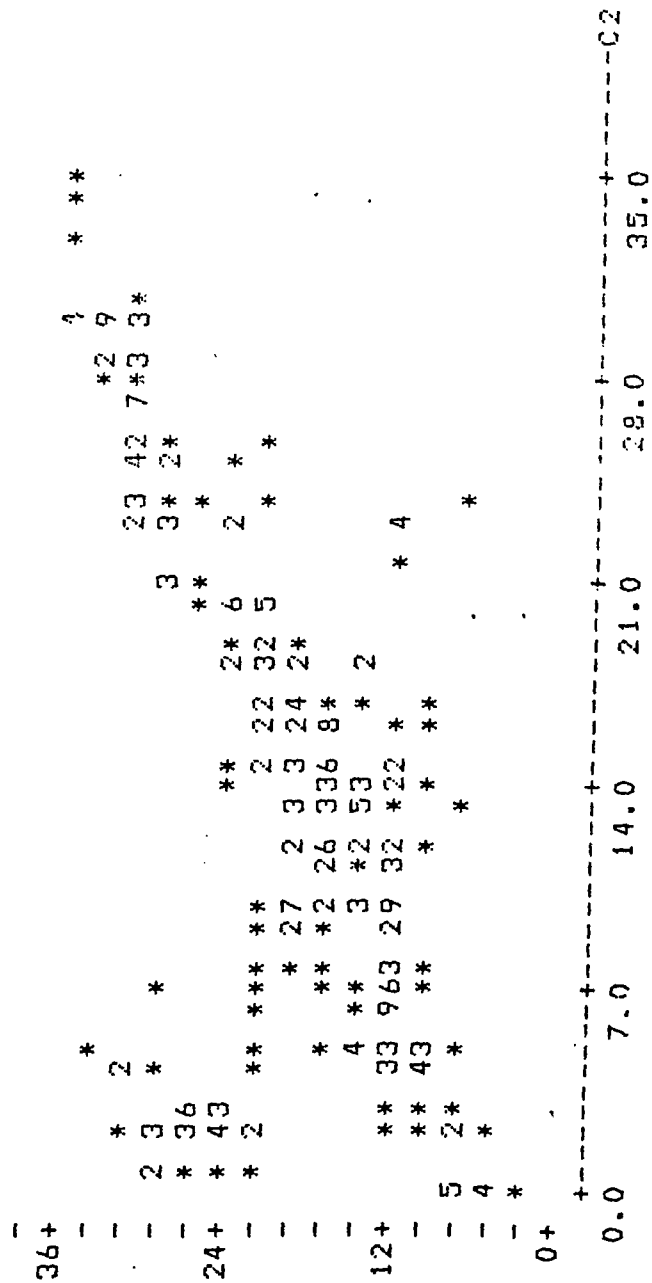
Table (6.7): T-test (matched observations) of the performance of the sample on recognition and production of some aspects of lexical items.

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	CORR.	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
RECOC (7)									
	300	19.6533	8.005	0.462	0.617	0.000	13.97	299	0.000
PROD (8)									
	300	9.9100	8.893	0.513					
RECOC (5)									
	300	12.1833	8.713	0.503	0.930	0.000	15.03	299	0.000
PROD (6)									
	300	9.2067	9.356	0.540					
RECOC (9)									
	300	6.1233	3.528	0.204	0.839	0.000	24.27	299	0.000
PROD (10)									
	300	3.3133	3.545	0.205					

Fig. (6.18): A plot of the correlation between the recognition and production abilities of the subjects of the study concerning word form class and derivations.

VAR 7 RECOGNITION

VAR. 8 PRODUCTION



either knows to produce the correct forms or he/she does not.

6. 5 GENERAL TRENDS AND DISCUSSIONS

The results have shown that all the linguistic variables are diagnostic in differing measure of each cluster because the F-ratios are < 1 for all the variables across the three clusters. This indicates that the intra-cluster variance is lower than the between cluster variance. This however, is not surprising as we expect the members of each cluster to reflect a higher degree of homogeneity among themselves than with the rest of the subjects in the other clusters as a result of the application of the clustering algorithm in the first place. The differences between clusters should be sought elsewhere. The means of all the variables are less than the sample means for cluster (1). This is indicated by the negative t-values showed in table (6.3) for this cluster, whereas cluster (2) has positive t-values for only the meaning variables coded 1, 2, 3. Cluster (3) has positive t-values for all the variables. In general, by considering t-values only, there is a sharp contrast between cluster (1) on the one hand, and clusters (2) and (3), on the other. Cluster (2) differs from cluster (3) in having negative t-values for the syntagmatic aspect of meaning and all the lexical-grammatical variables, However, the degree of the deviations of t-values from zero indicates that the means for all the variables across the clusters are different, as is obvious. This is the case even when some variables (i.e. 1, 2) have positive deviations for both

clusters (2) and (3).

These major results can be summarized in a more informative way in terms of which variables distinguish between the clusters best. Table (6.8) summarizes the basic results of the cluster diagnostics. The tick (/) above indicates that a cluster is markedly distinguished from the others. The combination of both the tick and the asterisk indicates that the variable stretches the clusters clearly from each other with similar distances between the two closer clusters. The cluster against which both signs appear for a particular variable is only marginally different from the rest of the clusters. For instance, considering var.2, the three clusters are clearly distinct from each other with almost the same amount of difference between cluster (1) and (2), on the one hand, and clusters (2) and (3) on the other; but the difference between cluster (1) and (2) is a little bit larger than that between (2) and (3).

The variables that distinguished one cluster markedly from the rest are 5, 6 (comprehension and production of collocations), 7 (comprehension of derivations and form - class), 9 and 10 (comprehension and production of grammatical idiosyncrasies), 1 (meaning: distinguishing TL synonyms whose semantic features, put together, form the features of one word in the learners' L1), 4 (TL pseudosynonyms). The first five variables distinguish cluster (3), whereas the last two are characteristic of cluster (1). With the actual means, discussed above, taken into consideration, the variables that

distinguished cluster (3) are "positive" distinguishers of this cluster, whereas the variables that distinguish cluster (1) are negative distinguishers of this cluster.

Table (6.8): Summary of the variables and how they separate the clusters from each other.

VARIABLE Description	Code	Cluster (1)	Cluster (2)	Cluster (3)
1. MEANING:				
a) Interlingual complexity, incongruence between L1 and L2	1 2	/	/*	
b) Inter- and intralingual complexity	3			/*
c) Collocations: comp.	4	/		/
" : prod.	5 6			/
2. LEXICAL-RELATED GRAM ASPECTS:				
a) Derivations: comp.	7			/
" : prod.	8	/*		
b) Gram. idiosyncrasies:				
Comp.	9			/
" :				
Prod.	10			/

Considering the actual means, it emerges that there are three levels of scores for each variable, corresponding to

three clusters. Given the low variance for each cluster, we could say that each level of score is diagnostic (characteristic) of each cluster. This information is summarized in table (6.9) below, in terms of averages of scores for all the variables for each cluster in descending order.

Table (6.9): Average of the total of the scores on all the variables for each cluster.

Cluster	Average of the total scores
3	118.481
2	68.381
1	39.741

It is also an interesting finding that the clusters differ in learning different aspects of lexical items, as reported in detail in the previous sections which dealt with the degree of diagnosticity of each variable in connection with each cluster. The obvious implication of this finding is that knowing one aspect of a word (e.g. meaning) does not necessarily mean knowing the other aspects. The other important finding is that the ability to recognize the correct lexical item or the correct form of it with

respect to a particular aspect does not entail the ability to produce that aspect of the word. These two results raise serious criticism against the findings of many studies measuring vocabulary size. Hartmann (1940) proposed a method for measuring "reading recognition" vocabulary. Knowing a word is defined for this method by the ability of informants to give a proper synonym, or use of illustration (p.437). A similar method used by Dick (1975) defines knowing as being "able to give at least an acceptable meaning " and one can do so by making a small sketch to illustrate the meaning, by showing in a sentence how the word is used (pp. 1-2). Groot and Hoekstra (1981) used the same technique with L2 learners allowing for Dutch translations. The results of the present study tells us that being able to give translations of words like "bank" and "shore", does not necessarily mean that the subjects differentiate between the two words. In fact, all the subjects would be classified as "knowing" these words if they were asked to translate them. The other serious scepticism regarding such studies is that recognizing a word as wrongly used in a context does not automatically mean that the subjects can supply the correct form.

Thirdly, one of the major findings is that not all the variables (=aspects of lexical item) are equally difficult or equally easy. This can be seen from the order of variables in terms of t-value for each cluster. The lower the position of a variable on the list the easier it is.

Comparing the clusters dominated by "good" learners

(clusters 2 and 3), it seems that the easiest aspects to learn are those concerned with conceptual meaning (variables 1-4). Both clusters (2) and (3), have positive t-values for them. The difference between these clusters as far as these variables are concerned lies mainly in the levels of scores. This generalization needs qualification. There is no denying that the meaning variables are the only variables on which two of the three have score means above the sample mean, but it is also true that the subjects scored remarkably lower than on the rest of the variables.

The production of the lexical-grammatical idiosyncrasies seems to be the most difficult aspect for cluster (2) because it has the highest deviation from the mean score of the whole sample. The second variable in terms of difficulty is the production of collocations (var. 6). This variable has the second highest deviation from the sample mean for this cluster.

Only a few speculations as to the possible reasons for these orderings will be made as the question of vocabulary achievement is discussed within the context of learning strategies. This whole question of explaining the findings mentioned above will be discussed in the next chapter.

Among variables 1-4, the general process that seems to govern the development of conceptual meaning is L1 transfer and simplification. As to L1 transfer, by considering the failure of some of the learners in distinguishing between synonyms such as bank and shore, and see, look, watch

(variables 1-2), it can easily be shown than the learners' L1 influences the acquisition of meaning . There is one word in SSA for bank/shore (=shati?). As to see/look/watch, there is also one word in SSA (the root of which is sh f) which has the basic features "+ turn the eyes to see something (deliberate action)", "+ use the power of sight (non -deliberate action)", and "+ to look at something more (attentively)". In other words this SSA word can be used in all the situations in which the English words look/see/watch can be used. Many learners in our sample failed to make the distinction between these English words. Each of these three words involves the use of the power of sight and since he/she can use only one word he/she concluded that using one of these TL words would also suffice.

The results suggest that production is proportional to recognition. They confirm the expectation that recognition precedes production, but not in the absolute sense, and production develops in a particular ratio of comprehension. Recognition, as is the case with production, develops with levels of achievement and levels of education. Stated in a negative manner, the result did not show that "good" secondary school students have a similar, in rate of development, ability of recognition as that of "good" University students, nor that they differ only in production.

In the end, there is some difficulty in comparing the results on different tests which makes it hard to make any

firm conclusions about exactly what differentiates the two "good" clusters, apart from being just further along the scale for each variable. It is also hard to say why there are two recognizable stages of "good" learners. Some explanations will be given in the next chapter.

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CHAPTER 7
THE RELATIONSHIPS BETWEEN VOCABULARY COMPETENCE
LEVELS AND STRATEGIES USED

As hinted in many places in chapter 6 above, the relationships between level of achievement (the "good" and "underachieving" distinction) and the type of strategies employed are far from simple. It has also been shown that grouping our sample in terms of vocabulary achievement, and strategies employed is both delicate and intricate.

In this chapter the question of the relationships between vocabulary achievement and strategies employed will be addressed in detail. Two approaches are adopted here:

- i) investigating the constitution of clusters in each clustering (for vocabulary achievement and vocabulary LS) in terms of correspondences in cluster membership between the two clusterings.
- ii) examining the strategies characteristic of each of the clusters obtained on the basis of the vocabulary variables.

These two approaches were suggested by Jones-Sargent (1983). The first approach is usually used in the preliminary stages of Cluster Analysis to decide on the issue of the appropriate algorithm method of clustering to be used (see Youngman (1979: 125ff), Jones-Sargent 1983: 247) .

The second is made possible by running a "mixed mode" CLUSTAN job (see the description of the methodology of this study). In this job, the input was numeric variables (vocabulary achievement scores), and binary variables (strategy use and non-use). The "strategy" variables were masked from analysis using CLUSTAN's masking facility. The clustering given is on the basis of the linguistic variables (see Fig. 11 in chapter (6) for the dendrogram) but the cluster diagnostics are for both numeric and binary variables.

7.1 CORRESPONDENCE OF CLUSTER-MEMBERSHIP OF THE CLUSTERS BASED ON STRATEGY USE AND THOSE BASED ON VOCABULARY KNOWLEDGE

Chapter (5) describes the sample on the basis of the strategies they used. The groupings given were designated cluster (1), cluster (2), cluster (3), cluster (4), and cluster (5). These clusters will be compared and contrasted with the clusters given by the groupings of the sample on the basis of vocabulary achievement variables. For simplicity, the former will be referred to as "strategy" clusters or clustering, and the latter, "linguistic" clusters or clustering.

Having clustered the sample on two different sets of variables: vocabulary knowledge and strategy use, we can now compare whether the sample behaves differently with respect to these two different sets of variables. If the two

clusterings produce similar distributions of the subjects across clusters, it will then be demonstrated that strategy use is related to success in vocabulary learning.

Table 7.1: Correspondences of cluster-membership between "strategy" clusters and "linguistic" ones.

		STRATEGY CLUSTERS						ROW TOTAL
		"bad".....>			"good"			
		5	2	4	1	3		
L I N G U I S T I C	"bad"	1	68 31		17	12	1	129
	·							
	"good"	2	3	13	18 28		7	69
	"good"	3	1	4	0	9	88	102
							--	
	COLUMN TOTAL		72	48	35	49	96	300

To facilitate the comparison between the two clusterings obtained, the results are crosstabulated (see table 7.1). The cells where there are a substantial number of cases similarly clustered by the two clusterings are shown in boxes, as shown in the table. As we discussed, there are five "strategy" clusters, and only three "linguistic" clusters; i.e. two of the former can have no counterparts in the latter.

"Strategy" cluster (5) is mostly contained by "linguistic" cluster (1), but the reverse is not true. The latter is split between "strategy" clusters (5), (4), and (1) in the ratios of 4:2:1. This is expected because all these clusters, like "linguistic" cluster (1), are dominated by "bad" learners.

"Strategy" cluster (2) is mainly split among two "linguistic" clusters, with 64.5% (31/49) in "linguistic" cluster (1). "Linguistic" cluster (2) is mainly split between strategy cluster (1), and (4), in the ratios of 3:4 (approximately). This lends further evidence for the relationship between vocabulary achievement and vocabulary LS used. "Linguistic" cluster (2) represents an earlier stage of "good" learning preceding the stage represented by cluster (3), as discussed above. The "strategy" clusters (1) and (4) also represent two preliminary stages of strategy use. Therefore, it is no surprise that the three combine together.

"Linguistic" cluster (3) coincides almost perfectly with "Strategy" cluster (3); only a few of its members are outside this cluster. It is split between "strategy" clusters (3) and each of strategy" clusters (1) (3) and in the ratio of 10:1 (approximately).

Therefore, the most marked relationship is between "linguistic" cluster (3) and "strategy" cluster (3). 91.6% of the cases in "strategy" cluster (3), and 86.3% of the

cases in "linguistic" cluster (3) are similarly clustered by the two solutions. The total proportion of the subjects who are similarly clustered by the two solutions is $233/300 = 77.6\%$. This is a substantial, but not perfect relationship. Strategy clusters (2) and (4) present an interesting case which warrants further investigation. The cases which seem interesting are those that are in "linguistic" clusters (1) and (2), simply, because of the sheer number of these subjects. The other subjects in clusters (2) and (4) are only five individuals who belong to "linguistic" cluster (3). Tables (7.2-3) give the type of learners in these two clusters.

As we discussed in chapter (5), "strategy" clustering, generally speaking, separated most of the "underachieving" learners from "good" ones. It also distinguished between two subtypes of "underachieving" learners. One subtype is University student (cluster (2), in the tables above). On the other hand, "linguistic" clustering grouped 23.3% of the "good" learners with the "bad" ones, and 12.5% of the "bad" learners with "good" ones (see section 6.2.2.). The major groups that are responsible for the breakdown of the pattern of correspondences between the obtained clusters and our presupposed clusters are some "underachieving" University students and "good" intermediate pupils. 80% of the 12.5% "bad" learners who were grouped with "good" learners are University students, whereas 67.9% of the 23.3% "good" learners who were grouped with "poor" ones are intermediate school pupils. The misplaced learners (from the point of

view of our presupposed groups) are 47.5% (almost half) of the "good" Intermediate school pupils and 40% of the "underachieving" University students. Each of these two groups is split into "linguistic" clusters (1) and (2). From a strategy use point of view, the people in each of these two clusters, concerning the learners under consideration, split into two clusters (see table 7.2). For example, from the "linguistic" clustering point of view, 13/40 of the "good" intermediate school pupils belong to the "poor" group (cluster 1); but from the "strategy" clustering point of view they belong to two different clusters (2 and 4). This is also the case with the learners in table (7.3), with the only difference being that the learners in "linguistic" (2) are described as "moderate", as far as their vocabulary achievement is concerned. The implication of this is that there are two different ways, in terms of strategies use, for being "moderate" or "underachieving". By considering the matter in the manner described, these cases may add up to the general similarity agreement between "linguistic" and "strategy" clusterings. The total proportion of agreement becomes 81%.

The subjects included in the study seem to be of three different levels of achievement in vocabulary: "good", "intermediate" and "poor" (see chapter 6). The relationship between these levels of achievement and strategy choice can be summarized as follows,

- a. There is one way to be "good" and that is by using

the LS appearing as positive diagnostics for "linguistic" cluster (3).

Table (7.2): The type of Learners in the "strategy" clusters 4 and 5 which are grouped in cluster (1) of the vocabulary achievement clusters.

Type of learner	No. of Indiv	Type of learner	No. of Indiv
"Good" Intermediate pupils	13	"Underachieving" University students	23
Secondary school pupils	2	"Underachieving" Secondary school pupils	6
"Underachieving" school pupils	2	"Good" Intermediate pupils	2

Table (7.3): The type of Learners in the "strategy" clusters 4 and 5 which are grouped in cluster (2) of the vocabulary achievement clusters.

Type of learner	No. of Indiv.	Type of learner	No. of Indiv.
"Good" Inter school pupils	13	"Underachieving" University students	12
"Good" secondary school pupils	5	"Good" Government secondary school pupils	1

- b. There are three ways of being "intermediate": -
 - using the characteristic LS of "linguistic" cluster (2)
 - using the characteristic LS of "strategy" cluster (2)
 - using the characteristic LS of "strategy" cluster (4)
- c. There are three ways of being "poor"; two being the same as the last two appearing in b above, and the third one is
 - The LS characteristic of "strategy" cluster (5).

This suggests clearly, as was discussed in chapter 5 and in many other places in this thesis, that "good" learners, including the "moderate" ones, and "poor" learners share some LS. Therefore, some of the differences between the strategies used by these two types of learners should be sought in the qualitative differences between LS, one can use a LS and employ it effectively or use it and employ it badly (something this study was not able to quantify), or resort should be made other aspects of the learners altogether. Further reference to this point will be made below.

In sum, the "strategy" and "vocabulary achievement" variables are both generally capable of distinguishing between "good" and "underachieving" learners. This suggests that there is some relationship between the level of

achievement and strategy choice. Moreover, the cross-comparisons of the two clusterings obtained showed a considerable degree of correspondence in cluster-membership. This lends more support to the finding that success in vocabulary learning is related to (at least a large number of) the strategies employed. However, the picture is more complicated. The expectation of discovering a simple relationship between strategies and success in vocabulary learning is less tenable than can generally be envisaged.

Having given evidence for the existence of the relationship, albeit complex, between the level of achievement of vocabulary knowledge of a learner and the strategies he/she used, we will turn now in pursuit of our search for the strategies that can best lead to success in vocabulary learning, to the analysis of the strategies used by each "linguistic" cluster.

7.2 THE STRATEGIES CHARACTERISTIC OF EACH "LINGUISTIC" CLUSTER.

The procedure and statistics adopted for analysing the strategies used by each "linguistic" cluster are the same as those used for "strategy" clusters (see chapter 5), that is, CLUSTAN'S diagnostics of binary variables (strategies) are analysed by considering binary frequency ratios. The difference is that the clusters analysed in chapter (5), are based on strategies, whereas in this chapter the clusters considered were generated from vocabulary achievement data. The clusters under investigation are, therefore, those

described in chapter (6), and referred to in section 6.1 as "linguistic" clusters. In addition to the procedures described in chapter (5), two other tests will be applied to the data because of the partial difference in the question at issue. The first test is concerned with, what one might call, the "internal" consistency of each cluster. The clusters which will be dealt with are based on vocabulary achievement (the subjects were grouped on the basis of their scores on different aspects of lexical items.) We may, legitimately (at least theoretically) expect that the subjects in any cluster defined this way may not show any degree of "homogeneity" in terms of strategy use, as a group. The implication of this would be that there is no relationship between strategy use and success in vocabulary learning. If, on the other hand, each cluster shows a degree of homogeneity as a group as distinct from the others, as if the grouping had been made on the basis of strategies, the implication would be that there is a relationship between strategy use and success in vocabulary learning.

The other test which will be applied is what we refer to as "external" consistency. If the results show high "internal" consistency, then, it is worthwhile comparing and contrasting the characteristics that will emerge for each cluster with the general profiles of learners which were discussed in chapter (5). Each "linguistic" cluster will be compared to its corresponding "strategy" cluster (see section 5.3). This will help us investigate whether the general profile for each type of learner is consistent using two

different sorts of variables and hence, give answer to the problem under consideration: the relationship between strategy use and success in vocabulary learning.

The cluster diagnostics given by Clustan will also be used to describe each cluster in terms of the characteristic LS. This information will further be utilized for suggesting some pedagogical implications.

The fusion tree obtained for our purpose in this chapter is the same as that obtained for the analysis in chapter (6) (see fig. 6.1). The reader is also referred to section 6.2 and its subsections for the description of the clusters membership.

The results have shown that strategy use is related, although in a complex manner, to success in vocabulary learning. The aim of the analysis here is to investigate the strategies that are diagnostic of each level of vocabulary achievement. Because our major aim is to explore which strategies when used are related to which level of vocabulary achievement we will mainly be concentrating on positive diagnostics, rather than negative ones.

7. 2. 1 CLUSTER DIAGNOSTICS:

Tables (7.4-6) list the positive cluster diagnostics for each cluster. There are some variables which are positive for more than one cluster. Clusters (1) and (2) share 6 strategies, whereas clusters (2) and (3) share 19 strategies. Clusters (1) and (3) do not share any of their positive

Table (7.5): Cluster diagnostics: Positive diagnostics of cluster (1)

Var.	Cluster Frequency	Sample Freq	Ratio	Definition
5	74	103	1.65	Sources of information: overlook as opposed to using source.
45(2)	64	96	1.55	Note-taking: listing words and their Arabic equivalents only.
33	77	132	1.36	Preferred source of infor.: asking somebody.
23(2)	80	144	1.29	Memorization: saying word repeatedly.
2(2)	116	229	1.18	Sources of information: asking classmates.
9(2)	46	100	1.07	: group work.
34(2)	31	69	1.04	Preferred source of infor.: group work.

(2) Indicates that these variables are also positive diagnostics for cluster (2)

Table(7.6): positive diagnostics of cluster (2)

Var. Cluster Frequency	Sample Freq.	Ratio	Definition
26	41	1.78	Memorization: write + say word + Arabic equivalent repeatedly.
9(1)	39	1.70	Sources of information: group work.
47(3)	39	1.61	Note-taking: listing words, their Arabic equivalent and English meaning together.
12(3)	43	1.42	Dictionary use: bilingual dictionary.
39(3)	27	1.41	Note-taking: organizing words in the order encountered
29(3)	31	1.39	Practice: asking somebody to test oneself about particular lexical items.
43(3)	32	1.38	Note-taking: keeping information about spelling.
3(3)	64	1.29	Sources of information: guess.
27(3)	44	1.26	Practice: making use of newly-learned words in real situations (i.e. writing a composition.)
22(3)	35	1.22	Memorization: writing + saying word repeatedly.
34(1)	19	1.20	Preferred source of information: group work.
45(1)	26	1.18	Note-taking: listing words + their Arabic equivalents only.
28(3)	13	"	Practice: making use of newly-learned lexical items in imaginary situations.
38(3)	38	1.17	Note-taking: taking notes about difficult words in separate book.
37(3)	66	1.13	" : making notes in the margin of textbook, as opposed to using a separate book.
36(3)	66	"	" : making notes about difficult word.
32(3)	38	1.12	Practice: testing oneself by going through (a) list (s) of words.
23(1)	37	"	Memorization: saying word repeatedly.
2(1)	58	1.10	Learning: some aspects of words before knowing their meaning.
49(3)	23	1.09	Note-taking: keeping infor. about gram. class of words.
4	42	1.07	Sources of information: ask teacher
30(3)	39	1.05	Practice: asking other people to verify knowledge.
15(3)	46	"	Dictionary use: looking for meaning
7(3)	19	"	Sources of information + information sought: ask for Arabic equivalent.
10(3)	46	1.04	" : dictionary.
48(3)	25	1.02	Note-taking: keeping word derivations in the entries of words.

(1) Indicates that these variables are also positive diagnostics for cluster (1)
(3)

diagnostics. The rest of the variables, which are unmarked as shared by another cluster, on the list of each cluster, are positive only for that cluster. It is these strategies that mark each cluster. Now we will turn to report and discuss the results of the positive diagnostics.

The maximum possible diagnostic levels for clusters (1), (2) and (3) are $300/129=2.35$, $300/69=4.34$, and $300/102=2.94$, respectively. None of the variables has the maximum ratio for any of the clusters.

7.2.1.1 CLUSTERS (1) AND (2)

Among the most significant strategies that are shared by these two clusters are some of strategies that fall within the classes of sources of information and note-taking. These strategies are 9 (group work), 2 (ask classmates), and 45 (listing words and their Arabic equivalents). In other words, the major areas of contrast between these two clusters are the macro-strategies of dictionary use and practice.

However, if we consider intra-cluster percentages of occurrence of binary variables (see the definition of diagnosticity discussed in chapter 5), it appears that some of these strategies occur with higher frequency for cluster (1) than cluster (2) and vice versa. Some of these strategies thus, typify one cluster. This is the case with two strategies: strategy 45 occurs with a percentage of 49.6 ($64/129$) for cluster (1), whereas its percentage for cluster

(2) is only 37.6 (26/69), strategy 9 occurs with a percentage of 56.5%(39/69) for the latter, and only 35.5%(46/129) for the former.

On the other side of the problem, cluster (1) has two strategies which occur as positive diagnostics for it only. Strategy (5) (overlooking as opposed to using sources) occurs at the highest diagnostic level of the diagnostic variables for this cluster (1.65); 71.8% (74/103) of those who (sometimes) did not use sources to get information about words in the whole sample are members of this cluster. Strategy 33 (preferred source of information: asking somebody) occurs with a percentage of 59.7% (77/129). Strategy 34 (preferred source of information: group work) was employed by 31/129. The percentage of the users of these two strategies in this cluster is 95.3% (108/129). Strategies (34) and (33) are mutually exclusive, i.e. preferring the use of one source necessarily excludes preference for the others. We can, therefore, safely say that cluster (1) is characterized by the non-use of the written sources of information about words, e.g. dictionary.

The general profile of this group is considerably consistent with the general profile of its corresponding "strategy" cluster (5) (see 5.3.3.5). Both of them are dominated by "underachieving" learners. Among the striking similarities is the absence of all the practice strategies (strategies 27-32) and dictionary use from their positive diagnostics. Overlooking, as opposed to using sources to get

information about difficult words (var. 5), appears at the highest levels of positive cluster diagnostic for both of them. By and large, the two clusters are more similar than different.

As to the strategies that occur as positive diagnostics for only cluster (2), they will be discussed in connection with cluster (3) because both of the clusters are dominated by "good" learners. We hope more will be revealed about them by juxtaposing them. To recapitulate, the results above show that clusters (1) and (2) are clearly different from each other. This shows that there is "internal" consistency in that the two clusters, being distinct on the basis of their vocabulary knowledge, also showed that they form different clusters in terms of strategy use.

One of the problematic cases is the presence of variable 45 (listing words and the Arabic equivalent in note-taking) on the list of the positive diagnostics of cluster (1), and the absence of var. 36 (taking notes as opposed to not doing so). The use of the former implies the use of the latter. However, the latter does not appear in the positive diagnostics because it was used by a large number of cases in our sample. Consequently, the individuals who used it in any cluster can only be a fraction (less than one).

7.2.1.2 CLUSTERS (2) AND (3):

These two clusters share the following variables

i Sources of information and dictionary use:

Table (7.7): Cluster diagnostics: positive diagnostics of cluster
(3)

No.	Var.	Cluster Frequency	Sample Freq.	Ratio $\frac{f}{F}$	Definition
1	46	52	61	2.51	Note-taking: listing words + their E. meanings.
2	21	42	50	2.47	Dictionary: seeking examples demonstrating word usage.
3	6	68	81	"	Sources of inform: ask about meaning by demanding E. paraphrase or synonym.
4	11	95	118	2.37	Dictionary use: using monolingual dictionary.
5	24	62	80	2.28	Memorization: saying + writing word + English synonym repeatedly.
6	25	67	92	2.14	" : writing + saying E. synonym repeatedly and then writing the word in question then repeating the process.
7	42	39	58	1.98	Note-taking: Organising ones words as encountered.
8	8	39	59	1.94	Source of inform + inform. sought: sentence as an example.
9	31	74	121	1.80	Practice: Making use of newly-learned words in imaginary situations.
10	16	65	107	1.79	Dictionary use: looking for word derivations.
11	28(2)	29	48	1.78	Practice: making use of newly-learned words in imaginary situation.
12	48(2)	48	107	1.76	Note-taking: keeping word derivations in the entries of words.
13	49(2)	55	92	"	" : keeping information about gramm. class.
14	4	4	1.74	Source of inform: ask teacher.	
15	35	56	100	1.65	Preferred source of inform: dictionary.
16	17	89	160	1.64	Dictionary use: looking for gramm. class of words.
17	38(2)	78	142	1.63	Note-taking: taking notes about difficult words in a separate book.
18	27(2)	83	152	1.61	Practice: using newly-learned words in real situations (i.e. writing a composition).
19	32(2)	78	147	1.56	" : testing oneself by going through (a) list(s) of words.
20	15(2)	100	190	1.55	Dictionary use: looking for meaning.
21	10(2)	101	192	"	Sources of inform.: dictionary.
22	4	86	170	1.49	" : ask teacher.
23	43(2)	50	102	1.43	Note-taking: keeping inform. about spelling.
24	30(2)	78	161	1.41	" : organizing words in the order encouraged.
25	39(2)	38	83	1.35	" : organising words in the order encouraged.
26	47(2)	48	105	1.34	" : keeping inform. about gramm. class of words in the entries.
27	3(2)	92	215	1.26	Sources of inform: guessing.
28	22(2)	53	126	1.24	Memorization: writing + saying a word repeatedly.
29	7(2)	33	79	1.23	Sources of inform + inform sought: Arabic Equivalent.
30	36(2)	102	254	1.18	Note-taking: take note of words as opposed to not keeping notes.
31	37(2)	101	253	1.17	" : keeping notes in the margin of the textbooks as opposed to using a separate book.
32	29(2)	35	97	1.06	Practice: ask somebody to verify knowledge.
33	12(2)	46	132	1.02	Sources of inform: bilingual dictionary.

var. 15 (looking for meaning)

" 10 (dictionary) as opposed to any other sources (e.g. asking)

" 7 information sought: Arabic equivalent

" 12 bilingual dictionary, dictionary

" 3 guessing

ii Note-taking

var. 48 (keeping word derivations in the entries of words)

" 49 (keeping information about grammatical class of words)

" 38 (taking notes about words in a separate book as opposed to writing in the margins of textbooks)

" 43 (keeping information about spelling)

" 39 (organizing words as encountered)

" 36 (taking notes, as opposed to not doing so.)

" 37 (taking notes in the margins of the textbook.)

" 47 (listing words, their Arabic equivalent and meaning in English.)

iii Practice.

var. 27 (using newly-learned words in real situations).

" 32 (testing oneself by going through a list(s) of words).

" 29 (asking somebody to verify knowledge)

" 28 (making use of newly-learned lexical items)

in imaginative situations.)

" 30 (asking other people to verify knowledge.)

iv Memorization.

var. 22 (writing and saying words repeatedly.)

Despite the fact that the two clusters share the above-mentioned variables, the within-cluster percentage shows some differences between these two clusters. (see the cluster means, tables 7.5-6). Variable 48 (listing derivations in entries of words) occurs with a percentage of 37.7 for cluster (2), whereas 47.1% of the members of cluster (3) used this strategy. Var. 47 (listing words and their Arabic equivalents + meaning in English) was used by 56.5 % of the members of cluster (2), whereas it was used by only 45.1 % of members of cluster (3). The latter two variables are two of the most significant variables, especially in connection with the question of the relationship between vocabulary achievement and strategies employed. They show a consistent picture of the difference between clusters (2) and (3). The picture that emerges from the results for these two variables is that the members of cluster (3), compared to cluster (2), use English in vocabulary learning more than Arabic. This picture fits the general profile of cluster (3) which emerges from other variables - the ones that are diagnostic only of cluster (3). 14 of the total of the variables included in the analysis are positive diagnostic only for this cluster (see table 7.6); 8 of these variable are concerned with involving TL in learning (strategies 46, 21, 6, 11, 24, 25, 8, and 31). Some of the notable variables of these are

variable 11 (using monolingual dictionary), used by 95/102=93.1%, and the variables related to dictionary use: var. 21 (looking for sentences exemplifying word usage). 42/50= 84.0% of the users of this variable are in this cluster. Var. 16 (looking for word deviations) was used by 65/102. 65/107= 60.7 of those who employed this strategy are in this cluster.

Cluster (2), on the other hand, used TL in learning vocabulary more than cluster (1). None of the micro-strategies that involve such an aspect are positive for cluster (1), whereas, a number of them appear in the list of the positive diagnostics of cluster (2): e.g. Strategy 47 (listing both Arabic equivalents and English synonyms in the entries of words in vocabulary book), 48 (keeping information about word derivations in vocabulary book).

Another evidence of the consistency of the distinction between clusters (2) and (3) is that variable 26 (memorization: writing + say word + Arabic equivalent only) is a positive diagnostic only for cluster (2). The consistency appears in the use of L1 more than TL in vocabulary learning. This contrasts with the use of variable 24 (memorization: saying + writing word + English synonym repeatedly) which is positive only for cluster (3).

In short, clusters (2) and (3) are clearly two different groups as far as strategy use is concerned.

Apart from this internal consistency there is also

external consistency with the general profile given in Chapter (5). Cluster (2) corresponds to cluster (4) in chapter (5). Both of them are generally characterized by using Arabic more than English in vocabulary learning (See cluster diagnostics of cluster (4) in chapter 5). "Linguistic" cluster (3) corresponds to the "strategy" cluster (3), and both of them are characterized by using TL in vocabulary learning; they both share variables 46, 6, 11, 21, 24, and 25 (see tables for definitions).

7. 3. SUMMARY AND DISCUSSION OF THE POINTS RAISED IN THIS CHAPTER.

The assumption that vocabulary achievement is related to the strategies employed is supported by the results reported. The crosstabulations of the two solutions suggest that there is a high degree of correspondence in cluster membership. Two other aspects were also examined, "internal" and "external" consistency. The former aspect aimed to test the "homogeneity" of the general characteristics of each cluster in terms of the strategies used, whereas the latter refers to the degree of agreement between the characteristics of each of these clusters and the corresponding clusters generated on the basis of strategy use.

The results showed that there is a high degree of internal and external consistency. Cluster (1) (dominated by "underachieving" learners) is clearly different from the rest of the clusters which were dominated by either "intermediate"

or "good" learners (internal consistency). The characteristics of this cluster show a general agreement between this cluster and cluster (5), see chapter 5, which is dominated by the same subjects as those of the cluster under investigation (external consistency). Clusters (2) and (3) are clearly distinct from each other in terms of the degree of the use of L1 in vocabulary learning. The fact that they show a difference reflects internal consistency. "Linguistic" clusters (2) and (3) show similar characteristics as those of the corresponding "strategy" cluster (4) and cluster (3), respectively (external consistency).

However, the relationship between vocabulary achievement and the strategies used is more complex than the summary of the results seems to imply. There are a number of important issues which should be taken into account in interpreting the results before making any extrapolations from these general results.

First, the positive diagnostics showed that there is no strategy which is exclusive to any cluster (having the highest possible diagnostic level for a cluster). The results suggest that any strong claim that some strategies are exclusive to either "good" or "underachieving learners is far from valid.

Second, the macro-strategies of note-taking and memorization are shared by all the learners, but the "good" and "poor" learners differ in the micro-strategies they used

as manifestation of these classes of strategies (see the list of the positive diagnostics shared by the three clusters above). This result is not consistent with most of the studies (O'Malley et al 1985, Rubin 1983). This can easily be explained by the fact that these studies focussed on "good" learners without considering rigorously the possibility that "poor" learners may also use these strategies. The results of the present study highlight the problem of the qualitative differences between specific strategies. LS are not equally effective. Assuming, as the results discussed in this chapter suggest, that some LS are positively correlated with success in learning TL vocabulary, the specific strategies used by cluster (3) are more pedagogically significant than the rest.

Cluster (3) used memorization and note-taking in more demanding ways than cluster (2), and the latter used more sophisticated strategies than cluster (1). For cluster (1) memorization involves only saying the target word repeatedly (strategy 23), and no practice follows, whereas for cluster (2) it involves not only saying the word repeatedly, but also writing it repeatedly together with its L1 equivalent. This process is further followed by practice. More demanding than that, cluster (3) did all the above and also engaged in writing the word and its English paraphrase/ synonyms repeatedly. By and large the "good" learners (clusters (2) and (3)) share the characteristic that they combine both writing and saying, whereas the "poor" ones (cluster (1))

memorize words by only saying them . It seems that writing is an aid to memory because it is used by "good" learners. However, it seems that it is not only the physical action that helps learning, but the information involved in this physical action of writing also seems to play a role. Cluster (3) used TL (in the form of paraphrases/synonym) in this activity, whereas cluster (2) used their L1. This result gives further evidence that involving the TL in the learning activity seems to be related to success.

Third, there seems to be a relationship between the sheer number of the LS used and the level of achievement. The results show that the higher the level of achievement the larger the number of LS used, as can be seen from the sheer length of the list of the positive diagnostics for each cluster. The numbers of the positive diagnostics are 7, 26, 33 for clusters (1), (2), and (3), respectively. This result is consistent with Chesterfield and Chesterfield (1985). Their study showed that the children with greater achievement used more LS than "their less proficient peers" (Chesterfield and Chesterfield (1985: 56). This is a significant result because it implies that the mere use of more LS correlates with success.

Fourth, the analysis of vocabulary achievement showed that there is a difference between cluster (2) and cluster (3) in recognition and production of syntagmatic aspects of meaning (vars. 5 and 6) and the grammatical idiosyncrasies of words (vars 9 and 10). Cluster (2) has (negative t-values)

for all these variables, whereas cluster (3) (positive t-values) (see chapter 6). Despite that, some of the learning strategies that one would expect to be directly associated with learning these aspects appear in the list of the positive diagnostics of both clusters, except strategy 16 (Dictionary use: looking for the word derivations) which is positive only for cluster (3). This might be taken as direct evidence against any relationship between vocabulary achievement and vocabulary learning strategies. My argument is to the contrary. Three arguments will be put forward why these examples should not be taken as evidence against this relationship. However, these examples will also be taken to discuss how complex the interaction is between success in vocabulary learning and the strategies used. No claim will be made to the effect that one particular strategy is related to *success in learning a particular aspect*.

The first argument is that one may use a strategy but not effectively. No strong claim for this argument can be made in this study as we have no conclusive evidence.

The second argument is that a number of strategies may be related to success in learning a particular aspect and that factors other than strategies may also be relevant. For one thing, the members of clusters (1) have very low scores, compared to (2) and (3) for aspects in the counter examples above, and the learning strategies associated with them are negative diagnostics, whereas cluster (2) has these strategies as positive diagnostics, as we stated above. This

is an example par excellence substantiating our claim that there is a positive relationship between success in vocabulary learning and the type of the strategies used.

The third argument is that the frequency ratio by itself does not tell whether a particular variable is characteristic of a group or not. We must also consider the percentage of occurrence of the variable across the cluster. The superiority of cluster (3) over cluster (2) in relation to the syntagmatic aspect of meaning as well as the grammatical idiosyncrasies of lexical items may well be, among other factors, explained by strategy use. Cluster (2) has strategy 11 (using monolingual dictionary), as a negative diagnostic. It appears that the effect of this strategy on success in vocabulary learning is more than relevant research seems to suggest. To understand the effects that a bilingual or a monolingual dictionary may have on their users, we will state briefly the basic characteristics of each.

In a monolingual dictionary, the main entry, e.g. pugnacious, is a lexical item with the definition being a syntactic construction, not itself a lexical item, although some words are defined in many dictionaries synonymously. In de Saussure's terms, there is a sign on the one hand, a syntagm, on the other, the semantic relation between the two being that of synonymy (Baxter, 1980).

e.g. pugnacious is defined in LDOCE as follows:

"(of people or behaviour, but not countries) fond of quarrelling or

fighting"

In a bilingual dictionary, an English entry is matched with one or more lexical items from L1, the relation between the two being of translation equivalence. 93.1% of the members of cluster (3) have the advantage of having access to the information in the monolingual dictionary. Cluster diagnostics also show that strategy 21 (dictionary use: seeking examples demonstrating word usage) is positive only for this cluster. The majority of the members of cluster (2) do not have the advantage of this knowledge, being users of bilingual dictionaries. The sentences given in monolingual dictionaries as examples for usage do not only demonstrate the denotation of the word but also encompass a lot of information concerning grammatical idiosyncrasies and collocations. *The accumulation of examples demonstrating word usage helps in advancing vocabulary learning because of the wealth of information contained in these examples.*

The other class of strategies which can account for the superiority of cluster (3) is practice strategies, especially strategy 27 (using newly-learned words in real situations). Before we go into the discussion of the qualitative differences of these strategies, it is worth mentioning again that the class of the strategies of practice is the only macro-strategy that makes the "good" learners (cluster (2) and (3)) contrast sharply with the "poor" ones (cluster (1)). None of the practice strategies appears in the positive diagnostics of cluster (1) (see tables 7.5-7). This result

is consistent with most of the studies that were conducted on "good" learners (Stern 1975; Wesche 1975; Naiman et al 1978; O'Malley et al 1985). All these studies posited that "active involvement" is a characteristic of "good" learners.

Two major factors may affect the use of these strategies: the number of opportunities in real life that make it possible for a learner to use words, and the diversity of situations (the type of topics), as opposed to fixed situations. A distinction of two types of practising newly-learned words in real situations is in order. A learner may deliberately practise using words to help retain them, or he/she may find himself/herself in situations where using English is part of their academic duty. Learners at the University level and Private Secondary school pupils have more opportunities in real life to use English because all their academic work is carried out in English. This factor, coupled with adopting the strategy of deliberate practice, helps the learners in cluster (3) to be higher input generators, to use Seliger's term, than the members in cluster (2) i.e. they write essays on many different topics (i.e. History, Geography), whereas Government school pupils (cluster (2)) only write compositions and answer, in single sentences in most cases, comprehension questions. In other words the latter group have less opportunities and less diversified situations in which they can, deliberately, practise their English words than the former group. Good University students and Private school pupils also do a lot of unconscious practice (not deliberately made), that can

also advance their vocabulary learning by virtue of writing essays and participating in classroom discussions which obviously require English words as the medium of instruction is English, whereas the government school pupils, in contrast, can only do this in their English classes and for their English lessons. The finding under consideration is consistent with Seliger's (1977) results. He compared the scores on achievement test of learners who had done little or no practice (low input generators) with some others who had done a lot of practice (high input generators). He concluded that practice is related to success in TL learning.

The notion of non-deliberate practice is given further support by the finding that "under-achieving" learners who study other subjects in English showed success. 40% of the "under-achieving" University students were grouped on the basis of their vocabulary knowledge with "good" government school pupils (see chapter 6). But the major difference between the practice of this group, on the one hand, and "good" University students and Private school pupils, on the other, is that the practice performed by the latter group is both self-initiated (deliberate) and imposed, whereas the practice performed by the former group is non-deliberate in most of the cases. Strategy 27 which involves deliberate practice by using words in real situations, was mainly used by the latter group.

Fifth, the mere use of a dictionary, whether it is monolingual or bilingual, seems to be a feature of "good"

(cluster (3)) and "moderate" learners (cluster (2)). This is suggested by the finding that strategy 5 (overlooking) and strategy 33 (asking to get information about words, i.e. not using written sources to get information about words) are only positive for cluster (1); the "underachieving" group.

Sixth, it appears that the use of English in the actual process of learning, as illustrated above, seems to be a crucial factor in vocabulary learning. In addition to the comparisons between clusters (2) and (3) above, cluster (1) gives further evidence. This cluster has not got a single positive strategy which involves the use of English. This may account for its lowest score on vocabulary achievement. Considering the nature of most the stimuli used for the test of meaning, which implies that errors are indicative of the effect use of L1, the results suggest that cluster (1) has the highest degree of transfer.

The final point to be made is that the discussion above seems to suggest that learning a lexical word consists of compilation of different lexical aspects, improving little by little the accuracy of the entries. This seems to be consistent with the assumption that lexicon is the repository of the idiosyncratic properties of the words of the language. Without denying that the results concerned with collocations and grammatical idiosyncrasies give the impression that lexicon appears as a library in which enormous amounts of information are stored, our data does not give conclusive evidence to validate or repudiate this assumption. However,

there is some evidence in our data that shows that there is a degree of "productivity" concerning the learning of some aspects, particularly, derivations and grammatical class. As discussed at the end of chapter (6), the tables of cluster diagnostics show that there is only a marginal difference between cluster (2) and (3) with respect to these aspects (vars 7 and 8).

In sum, the results showed that there is a close relationship between the level of achievement in vocabulary and the vocabulary learning strategies used, and that this relationship is highly complex. The results also showed that the assumption that there may be a particular set of strategies that distinguish markedly between "good" and "under-achieving" learners is less tenuous than finding a theory that can account for the linguistic behaviour of these learners. However, the strategies associated with dictionary use and practice seem to play a major role in differentiating between these two types of learners. The qualitative differences between specific strategies seem to play a major role in differentiating between these two types of learners as most of the macro-strategies are shared by all the learners. In this context, increasing achievement in TL seems to imply using micro-strategies in more demanding ways, in particular, use of TL in the actual process of learning.

CHAPTER (8)

SUMMARY AND CONCLUSIONS

The principal findings of the study will now be summarized, followed by suggestions for future research, and the presentation of some practical implications for the classroom practitioner.

8. 1 SUMMARY OF THE FINDINGS.

The study set out to investigate the following problems:

1. Identify the LS of both "good" and "poor" learners.
2. Investigate whether the LS identified are related to the factors of
 - (a) Level of education (number of years learning English
 - (b) Level of overall language achievement
 - (c) The use of the TL as the medium of instruction for other subjects.
3. Investigate the vocabulary achievement of the same learners.
4. Investigate whether the LS identified are related to the level of vocabulary achievement.

The statistical tool used was cluster analysis. The approach used for variable sampling was "atomistic", i.e. micro- and not macro-strategies were used as variables. The results obtained showed a number of interesting findings.

For the first problem, the vocabulary LS identified extend beyond the range of LS identified in the relevant research. The other significant finding was that the subjects were able to reflect on their learning to the extent that they were able to identify the specific strategies which they were asked about in the interviews. The use of the techniques of think-aloud, observation and questionnaire proved to be prolific in that a large number of cases of strategy use were identified in the data.

As to the second problem, the results can be divided into two categories: the results concerning the cluster membership with respect to the presupposed groups, and the findings concerning the characteristic strategies of the obtained clusters. As to the former, five groups were obtained on the basis of LS alone (by deciding on the 5-cluster level as the most appropriate level of clustering). The distinction between "good" and "poor" learners at each level of education (norm-referenced basis) accounts for a number of differences within both the "good" learners' group and "poor" learners' one. In other words neither the "good" nor the "poor" group seem to form a homogeneous group as far as vocabulary LS use is concerned. These differences can be accounted for by (1) the sheer amount of TL knowledge a learner has, which, roughly, corresponds to level of education, (2) use of English as a medium of instruction. These findings were revealed by investigating the characteristics of the learners

in each cluster.

As to the finding concerning the cluster diagnostics, these have shown that the "good" and "poor" learners are similar as far as macro -strategies are concerned, whereas they differ greatly in the choice of the micro-strategies. The only macro-strategy that separates the "good" learners in whole sample from the "poor" ones is the strategy of practice. These findings support the "atomistic"/"holistic" dichotomy which was made in this study. Not only that, but they also support the assumption that the differences between "good" and "poor" learners can most appropriately be dealt with by considering the specific strategies they employ rather than the classes of strategies.

As to third question in the study (vocabulary achievement), the principal findings showed that the sample can most appropriately be divided into three levels (=3 clusters). Considering the characteristics of each subject in each cluster, it seems that the use of English as a medium of instruction is one of the factors behind the structure of the clusters . However, in accordance with the main aims of the study, particularly, the relation between vocabulary achievement and LS, I suggested that speculations about this relationship should be made by considering the LS used. In that way the questions of the study were answered directly. This leads us the next major finding.

Concerning the relationship between LS and the level of vocabulary achievement, three aspects were examined: comparison of cluster membership in the two solutions obtained, internal consistency of strategy use by each "linguistic" cluster, and the degree of correspondence in strategy use between each "linguistic" cluster and its corresponding "strategy" one. As to the first measure, the cross-tabulations of the cluster membership for the solutions obtained using vocabulary achievement (three clusters) in one and vocabulary LS (5 clusters) in the other showed that 77.6 of the total subjects in the study were similarly grouped in the two solutions, suggesting a substantial relationship between the level of vocabulary achievement and the LS used. There are two "strategy" clusters which have no corresponding ones in the vocabulary achievement solution as the latter was analysed at the three cluster level. Reading these clusters across vocabulary achievement ones suggests that the "intermediate" and "poor" learners, in terms of their vocabulary achievement, share some LS which do not seem to be shared by "good" learners.

The cluster diagnostics in terms of strategy use showed that the three clusters which were generated on the basis of vocabulary knowledge are quite distinct, as far as the LS they use is concerned, just as if the clustering had been made on the basis of strategy use (internal consistency). The three vocabulary clusters show a high degree of resemblance to their corresponding "strategy" clusters vis -a

-vis the characteristic strategies for each. The other two "strategy" clusters, read through vocabulary achievement clusters, suggest that the "intermediate" and "poor" learners, in terms of their vocabulary knowledge, share the LS used by both of these strategy clusters as well as each one keeping its own identity by the particular strategies which are characteristic of its members. The "good" learners, in terms of vocabulary achievement (cluster 3), are distinct from both the "intermediate" and "poor" learners.

One of the principal findings is that the more the learner uses the TL in the actual process of learning, the higher level he/she achieves. The use of L1 (Arabic) seems to be a characteristic of less proficient learners. The clusters were ordered in an ascending order in terms of the use of L1 in learning as follows: cluster (1), cluster (2), and cluster (3). This finding could be used to account for the other suggestion in the study that some learners (good and poor) at the lower level of education (intermediate school) are, generally, similar as far as learning conceptual meaning is concerned.

8.2 THE LIMITATIONS AND IMPLICATIONS OF THE STUDY.

The results of the study lead to many more questions to ask and new directions to pursue. The study also can have some implications for designers of TL textbooks intended for teaching, as well as some implications for the classroom

practitioner. However, before we try to draw out any didactic pointers, we must point out that this study suffers from some drawbacks and limitations, which we have to consider. We will deal with these shortcomings first so that the implications should not be given more weight than they actually deserve.

8. 2. 1. THE LIMITATIONS OF THE STUDY

First, the data dealt with cannot be said to be complete. In this connection, a number of weaknesses can be mentioned. First, there may be some strategies which the learners did not manage to verbalize. Secondly, the evidence we have is for the use/non-use of a LS and not for how often a LS is used by a person. Thirdly, only one kind of learning task could be set for think-aloud, which perhaps dictated to some extent the LS used.

As to the vocabulary variables, more conclusions could have been got for different aspects of vocabulary items if the tests had been devised where the same words were tested in all the aspects included. Secondly, only some of the aspects of the vocabulary items were included in the analysis.

Concerning the analysis, five points can be made. First, the main statistical tool used, cluster analysis, was mainly used as a data exploration technique, which is the usual use of this technique (though some statisticians (Everitt

1974) mentioned "hypothesis testing" as one of the uses of this technique). The results of the present analysis were discussed with respect to some assumptions; but no "significant" difference, in the strict statistical sense, between the groups can be claimed. The technique, however, proved to be useful, and it needs to be replicated using the same procedure to establish reliability of the results. Hence, the difference between the groups should not be stereotyped before such measures have been taken. This is especially true if we consider the fact that cluster analysis does not give an automatic solution. The decision on the number of clusters is the responsibility of the researcher. In many cases the number of the clusters in a dataset depends on the definition of cluster by the clustering algorithm, or presupposed groups implicit in the research (Youngman 1979:130ff). However, we tried in this study to avoid the situation of being criticized for "putting the cart before the horse" by adopting a mathematical solution in determining the number of clusters.

Secondly, the solution given, using Ward's method and the Euclidean distance is by no means the only solution. We chose this combination because it seems meaningful, in contradistinction to the solutions obtained using other methods, from the point of view of the basic research questions. This supports our suggestion that this study be replicated using the same statistical methods but using different clustering techniques, and by using a different sample of subjects. On the basis of this point and the

first one above, it should be stressed that the differences between the groups are still tentative. A lot of research is needed because the present groups, established in this study, need to be validated, or even rejected.

Thirdly, the study set out to investigate the LS of both "good" and "poor" learners at different levels of education and with different degrees of exposure to the TL. This is not to deny that factors other than the mere years of learning English, and type of school or University requirements (which proved to be related to the choice of LS) may also be relevant to LS. The present study, hence, is not an account of all the possible factors. Therefore the implications for the classroom practitioner are limited to the factors considered in the study. *No cause-effect between LS and vocabulary achievement can be claimed because the study is not experimental.*

The fourth point is that some of the cluster diagnostics listed in the tables are problematic and raise many questions concerning the sampling (of variables) procedure adopted in this study. For instance, variable 36 (note-taking: taking notes about difficult words as opposed to not doing so), does not appear on the list of the positive diagnostics of cluster (1) whereas var. 45 (listing words and Arabic equivalents) does. This may seem surprising as the use of the former strategy implies the use of the latter because they are logically related. Generally speaking, there is criticism

against the use of such a priori correlated variables if the statistical tool used is cluster analysis because they may introduce bias (Jones-Sargent, 1983). However, most studies involving cluster analysis used such variables, largely because it is sometimes difficult to anticipate the degree of association between the variables, as Jones-Sargent (ibid) said. In our case, only two variables (10 and 36) are logically correlated to other variables, but they seem to be more useful than otherwise in that they highlight what might appear to be discrepancies in the results. We have already discussed this discrepancy in the discussion of the positive diagnostics of cluster (1). This is not to deny the effect such variables may have had in the analysis.

Fifth, there is a minor problem concerning the presentation of the results. Clusters can usually be visually displayed to allow easy detection. However all the procedures suggested for this purpose (e.g plotting factors after having used factor analysis, multidimensional scaling, etc.) seemed not to fit our data either because of the type of data we have (i.e factor analysis assumes continuous data, whereas the data on strategies was binary) or because of the vastness of the data (49 var.x300 subjects, 10 var.x300) which turned out to be too large for the only program available for multidimensional scaling (ALSCAL in SPSS).

Some other limitations will be discussed during the course of the discussion of the directions for further

research.

8. 2. 2. IMPLICATIONS FOR FURTHER RESEARCH.

This study has left some questions unanswered, and some of the results seem to have clear directions for future research. First, the results have shown that the types of learners in almost all cases were distinguished on the basis of specific strategies rather than classes of strategies. This finding has a significant implication for variable sampling in future research. The atomistic approach, advocated in this study, seems to invite further applications. The "holistic" approach can best be used for making generalizations. One possible line of research is to isolate the strategies that have been collected to investigate the differences between different types of learners. Wider replications of this approach are crucial as far as pedagogy is concerned. If, for example, it turned out that "good" learners, largely, (say) practise what they learn, and that there are systematic differences between the practice strategies employed by "good" learners at different levels of education, then, it will be deemed necessary to instruct their prospective less proficient peers, by considering such differences. In other words, instructing less proficient learners to use practice strategies without considering which particular ones are used by their more proficient peers, the assumption above being valid, may not bring about success and may be detrimental.

Secondly, it is my belief that the activity of learning is a complex process which involves long periods of time. This leads us to one further limitation in the present study. As is clear, this study is cross-sectional and pseudo-longitudinal, and most of the data dealt with was gathered during one-hour sessions, approximately, of verbalizations for each subject. We cannot claim that the learner can display his/her full repertoire of LS within this short time. I tried in this study to make up for this shortcoming by using interviews. However, no claim was made to the effect that the list of strategies in this study gives an exhaustive enumeration. It seems more illuminating to conduct studies on a true longitudinal basis. These studies will be more useful if they use both the learner's output and his/her verbalizations about LS. The importance of using the learner's output is that it can be used to investigate the learning process, i.e the stages of learning, which reflect the hypotheses the learner makes so as to discover the vocabulary system of the TL. However, the learners' vocabulary knowledge needs to be carefully handled in that controlled elicitation techniques need to be used to safeguard against the possibility of the influence of other factors in the learners' performance (see chapter 3 for more details.). Combining both the learner's performance in TL and the learners' verbalizations on a longitudinal basis help us to investigate, among other things, if particular strategies enhance particular processes and it also makes it easier to investigate the nature of such interaction between

the two.

Thirdly, cluster analysis provided a useful technique in this study. It proved to be an illuminating technique that warrants further applications. The advantage of using this technique is that it can reveal the subgroups of what we may oversimplify and consider as one group without forcing a priori groupings on the sample. This is particularly useful in identifying different subtypes of "good" learners and, hence, discover which LS are more characteristic of which subtype. The systematicity, if any, of such differences can easily be tested using the same technique with data collected from a different sample. On small-scale data, such systematicity can also be tested by using the subset of data that seems to distinguish (a) group(s) markedly. We suggest that further applications of this tool with LS data will reveal essential information concerning the basic question of who uses which LS, and whether there are systematic differences between the emerging subgroups. It can also be used to test the distinction between the dichotomy of holistic/atomistic approaches quite easily .

In a nutshell, for a growing field such as the study of LS and the learner factors that affect LS choice there is a need for generation of hypotheses so that valid models can be established. Cluster analysis seems to be a prime candidate in this respect.

Fourthly, the correlation between recognition and

production of lexical-grammatical aspects showed that the two abilities are positively correlated. Our concern in the discussion of the results was with the deviations of these correlations from zero, and the use of this information to explain the potential power of each of these variables in differentiating between clusters. However, as we discussed above, one question that poses itself is whether there are redundant variables in the input data. The extension of this problem, in a more meaningful way, in further research is seen by the writer of this study in the amount of knowledge (if any) that is required to develop the production ability in connection with a particular lexical item. Hence, one possible and potentially useful line of research is the question of the relationship between lexical knowledge and lexical control. Is the ability to produce a purely cognitive one, or is it related to the amount of information one knows about a particular lexical item? The last part of this question can be rephrased as: is there a minimum knowledge that correlates, positively, with production ability? Is (are) there any aspect(s) the knowledge of which correlates highly with production? One possible project along these lines is to collect data on recognition and production of the aspects of lexical items, and, then, use cluster analysis, or, for a shorter procedure, factor analysis. The use of cluster analysis for such a project requires repetition of analysis a number of times (=computer runs), and it also requires the use of CLUSTAN'S "masking" facility in order to change the input variables so that a

number of solutions will be obtained, first for all the variables (aspects), secondly, each single aspect, and thirdly, all the possible combinations of aspects. The next step will be the comparison of these solutions at a particular level of clustering. This seems complicated and long, but it is viable and worthwhile doing, and (thanks to the sophisticated CLUSTAN computer program) many of the steps above are ^{available} at the press of a button. A similar line of research (using a different statistical technique, but following a similar research question) has been followed in one recent study conducted by Olshtain (1987). Her main aim was to investigate whether the knowledge of word-formation by TL learners of Hebrew is indicative of proficiency in TL in general.

The difference between Olshtain's research and the line of research suggested in the present study is that Olshtain sought to investigate whether the acquisition of rules of word-formation (one aspect) could be taken as an index of overall language proficiency, whereas the suggested project is concerned with the linguistic knowledge and cognitive control involved in the comprehension and production of vocabulary only. The line of research I suggested above is viable not only in its methodology but the results can be of interest to classroom practitioners and learners alike. It addresses the question of linguistic knowledge and cognitive control directly.

8. 2. 3 PEDAGOGICAL IMPLICATIONS

It should be noted that this study was planned as an investigation of vocabulary learning. None of its aims involved seeking an answer to questions which concern the classroom practitioner (i.e. teacher) in a direct way. However, the results can potentially be useful to the classroom practitioner in a number of ways.

The first point to be made is that the studies which used the learner as the informant of his/her own strategies, as we discussed in chapter (2) and (3) above, start with a pedagogical goal, that once the LS of "good" learners are identified they can be taught to less proficient ones. However, this process is not as simple as this proposition seems to suggest. The results of this study suggest that the differences between "good" learners and "underachievers" should not be stereotyped. In our endeavour to instruct "underachievers" to use the "good" learners LS we should consider the LS used by the "good" learners at the same level of education, and the LS that seem to enhance learning irrespective of the level of education.

However, before we embark on instructing underachievers to use particular LS, and, indeed, before we make any further suggestions for this purpose, certain considerations have to be taken into account. The implications and suggestions which will be made may have little effect in places like the Sudan, because the teaching and the examinations given to government school pupils put the prime focus on grammar. This

encourages the pupils to concentrate more on grammar. Any attempts to revise the input to the learner must be accompanied by revising the teaching and examinations so that the knowledge of vocabulary plays some role. We have a piece of evidence in our study that examinations affect the choice of LS. The results showed that the secondary private school pupils use a monolingual dictionary, and the reasons given by these learners for that is the English language examinations include giving definitions for some words (see chapter 4). So, if the whole teaching question is not reconsidered, the suggestions we have made in this subsection may run contrary to the learners' immediate needs, i.e passing an examination, and thus produce little effect.

The first implication to be made is concerned with providing opportunity for practice, i.e eliciting more and more production. The results of our study, being consistent with some correlational studies (Seliger, 1977; Chaudron, 1985), have shown that greater opportunity to produce TL enhances the learner's interlanguage development. Unlike other researchers on LS, I suggest that ample opportunity to practise TL vocabulary must be provided for both "good", learners and "poor" ones. The results of this study showed that private secondary school pupils scored higher on the vocabulary knowledge test than their "good" counterpart ones in government secondary schools. The explanation given in this study is that the former group do more practice than the latter one (see chapter 5). Therefore, we suggest that more

production needs to be elicited from these learners. Pedagogical research is rife with games and production tricks which can be used for this purpose.

We need most importantly, to help the "underachieving" learners. These learners need to be shown the importance of practice. The suggestion which I feel is more profitable is bringing to the consciousness of such learners the usefulness of practice. We have already discussed, at the outset of this study, that to instruct learners to use a particular LS it is more useful to show them the ineffectiveness of their present LS as well as the effectiveness of the LS we want them to use. In simple terms, it is more likely that the learners may believe the "tale", in case they do not believe the "teller". This could involve the following procedure.

Sample: Strategy Instruction:

Procedure (1): first, choose from the class, a group of pupils or students who do little or no practice at all, and a group of learners who had the highest contact with TL words outside the class. This can be done in the classroom by interviewing the learners. The rest of the pupils or students will only be watching but quite aware of what each group represents as far as practice is concerned. The next procedure is to give the two groups a small oral vocabulary test. The expectation is that the high input generators will do better than the low input generators. The subjects used in this small experiment as well as the rest of the class

will see quite clearly the benefit of practice. Then the teacher discusses the importance of this class of strategies and how to do it effectively.

Sample: Strategy Instruction:

Procedure (2): a follow-up procedure can be made by using the same groups, and teaching them English words. Then the teacher teaches the two groups some practice strategies, i.e. using words in context, and how to use them, at home, to practise the words, and then asks the two groups to use these strategies to practise these words outside the classroom, i.e. at home, and tells them that they will be given a small test about these words in the next English class. However, creating opportunity for practice is a matter of motivation. Hence, we need to motivate the "underachieving" learners so that they will find it interesting to practice TL words. One way of motivating underachieving ones is to create an atmosphere of "competitiveness" by showing them that the "good" ones are good because they do a lot of practice. The above procedure could create the desired motivation.

Then the teacher gives a test (say) a day later. Our assumption is that there will be no difference between the two groups. This will give the teacher the opportunity to talk more about the usefulness of practice.

However, these techniques of instruction are only tentative, and they best give small pedagogical research

projects.

The other important class of strategies is that which is related to the use of a monolingual dictionary. This strategy is central and affects many other strategies in that it gives the basic input for other strategies, i.e. contextualization (in memorization and practice), and the entries in the vocabulary book which in its turn gives input for further practice. The study showed that the use of a monolingual dictionary has great potential for enhancing TL vocabulary in the learners' interlanguage. However, this presupposes the availability of a suitable dictionary, and the learner also requires some training to be able to use the dictionary appropriately.

The question that poses itself now is concerned with the suitability of a dictionary. One important feature that makes a dictionary suitable for a group of learners is that the definitions should be understandable to them. Scholfield (1983) describes this phenomenon using Grice's (1975) maxims of co-operative communication principles. The maxim that is of relevance here is the one of "manner", in that the definitions should be understandable, i.e. containing no words that the learner may not know. Our study has shown that "good" government secondary and Intermediate schools pupils do not use monolingual dictionaries. The explanation given by the learners themselves is that they (after three years, in case of Intermediate school subjects, and six years, in case of secondary school pupils, of instruction in English)

do not understand the definitions. Therefore such dictionaries flout the maxim of "manner". To make a dictionary suitable for a group of learners we need to know, inter alia, which words they may have encountered. This, of course, depends on the criteria of vocabulary selection adopted, i.e. frequency, availability. As it is not reasonable to assume that course-designers select the same criterion for selection in different countries, it is consequently, not reasonable to use the same dictionary with all learners in all the countries. In the context of the Sudan, the general verdict of the subjects at the secondary school level, in our study do, not seem to make use of the available dictionaries because of their comprehensibility. One solution is to compile a dictionary that is suitable for such learners. This is necessary because the NILE course, the course taught in the Sudan, requires, explicitly, from the learners to use a dictionary, e.g. in Book 5 it says that "you know the first of these, but you may have to look the others up in the dictionary. Do so if necessary" (p.26). However, our study showed that they do not look ^{them} up in a dictionary.

Another possible solution, instead of making a new dictionary, is to restrict the words to the difficult words, newly-presented, in the textbook intended for teaching, and annexe a small dictionary, defining those words, to it. This solution may be more practical in that it costs less money. Some people may say that this kind of appendix is already given in the form of word glosses. My main objection to such

glosses is that they bear little resemblance to dictionary-type entries in that less information is given. We have already seen, chapter 2 above, that knowing the conceptual meaning does not guarantee that the learner will be able to handle the word appropriately neither in production nor in comprehension. Such a small dictionary can also help in reinforcing other words already presented since it is these words that will be used in the definition itself (as "genus" and "differentiate"), and the sentences provided to illustrate word usage.

Using a monolingual dictionary, for TL learners, is a skill that requires training. This training should have two aspects. First, the learners should be made familiar with defining words by synonyms and/or paraphrases, and second, the learners need to be made aware of the dangers of using a bilingual dictionary only. Training concerning these two aspects should take place at earlier stages of learning.

As to the the first problem, learners can be trained by explaining words in context. This, of course, requires some changes in the present courses, or augmenting them by some materials produced by the teacher. The teacher, then, has to make the learners look up meanings of words in the text itself.

e.g.

The volcano has been erupting, sending out lava, for the past several weeks or so. And the magma, melted rock, moves towards the ocean. If the mountain maintains, keeps up, the flow of lava, homes may be

destroyed by the lava. But the residents, the people who live there, are not in any danger. Tourism has even increased, gone up, as people come to watch the event.

The words erupt, increase, magma, residents and increased are defined in the context. This procedure gives easy texts to comprehend as well as provide synonyms and paraphrase. Definitions in context can be given in a more subtle way to avoid the text being unnatural.

e.g "They dug a hole and gently lowered the body into the grave."

"Because she did not have enough money to pay for the refrigerator, the salesman suggested that she pay for it in instalments over a period of time."

These two examples were taken from Nation (1980). However, the issue under consideration is completely different. Nation discussed these examples as one way of inferring "meaning" using contextual clues. One of these contextual clues is the definitions given in context. We propose that explicit explanations such as in the examples above should be given in some texts so that the learner gets used to using the TL in defining the words of the same language.

The other aspect of training the learners, "underachievers" in particular, is that they must be made aware of the limitations of the bilingual dictionary before

telling them to use monolingual ones. Porte (1986) suggested a procedure for this purpose in connection with guessing from context. He used polysemous words to show that knowing the different equivalents of a TL word in L1 is not enough. Contextual information, he rightly suggests, is also needed if a more exact mapping is required. However, I think the problem of exact mapping is also present even if a monolingual dictionary is used. (See Scholfield 1983). This is obvious because the definitions and examples in a monolingual dictionary do not exhaust the potential contexts in which a word can be used, which also add more shades of meaning to the word. On the other hand, the problem that there is no exact L1-TL mapping, exists without the additional problem of context. We need to show the learner the real limitations and the problems that a bilingual dictionary may cause even if context is not a factor. These limitations lie in the lexical incongruencies between L1 and the TL. The incongruence in lexical mapping between L1 and TL can manifest itself in some or all the aspects of lexical items. The samples of exercises below, following my general belief of "demonstrate, don't tell," show how the learners can be made aware of the limitations of using a bilingual dictionary. The sample exercises below are concerned with conceptual and collocative meaning. These samples are only illustrations of the kind of training we propose. Similar exercises can be made for the other aspects.

Sample Exercise (1) : CONCEPTUAL MEANING

AIM: Demonstrates the limitations of bilingual dictionaries as far as conceptual meaning is concerned.

PROCEDURE : The teacher divides the class into small groups. He should, then, present the following sentences (or the like)

1. The house shook when the earthquake started.
2. *I shivered when the earthquake started.
3. I trembled when the earthquake started.

The teacher asks the learners to work first individually, using a bilingual dictionary, to translate the underlined words into Arabic. The three words are translated into one Arabic word. Then, the teacher asks the learners to compare their translations with the other people in the group. The teacher, then, asks the learners to decide on the acceptability of the sentences and the reasons why. To do this they should use a monolingual dictionary. The teacher, then, should discuss the danger of using a bilingual dictionary in the case of such words by making the learners compare their notes using a bilingual dictionary and a monolingual one, and discuss the error that they made, due to the information in the bilingual dictionary.

Sample Exercise (2) : COLLOCATIVE MEANING: The aim of the sample exercise which will be discussed below is, like the previous one on conceptual meaning to draw the attention of

the learners to the limitation of the strategy of looking for L1 equivalent words of TL difficult words.

PROCEDURE: The same procedure as the above can be followed.

The sentences to deal with are:

1. *The house is tall.
2. The man is tall.
3. We had a *vivacious discussion on the subject.
4. She is a vivacious girl.
5. They had a lively discussion.

The word tall is translated into Arabic to contain both tall and long. The words vivacious and lively has one Arabic equivalent word which can be used in all the contexts above.

Thus far, in this chapter, we have recapitulated the main findings, and discussed some of the weaknesses, some directions for future research and a few implications for teaching vocabulary. On the next page, in conclusion to this study, some basic points will be emphasized.

Collecting data and analysing it may be tedious, but drawing conclusions seems to be interesting. At the end of this study, I would like to stress some points which I hope will be as interesting and stimulating to the reader as they are to me. The present inquiry has shown that TL learners of English do use some LS to help them learn vocabulary and that these strategies are related to the level of overall language achievement as well as vocabulary achievement. Different stages of development of LS use have been identified for both "good" and "underachieving" learners. This indicates that the simple dichotomy of "good" v. "bad" learners is neither realistic nor helpful as far as pedagogy is concerned. The study, however, suffers from some limitations and weaknesses both in its methodology and the statistical treatment. Cluster analysis proved, nevertheless, to be a useful statistical method which warrants further applications in the field. Some pedagogical implications can be drawn, as we have seen, from these results.

APPENDIX

Some Typologies of LS in *other studies*

III. VOCABULARY

1. making up vocabulary charts in L2/L1 and memorizing them (this was regarded as especially useful for beginners) (14); writing vocabulary down (3) in different situations, e.g., when watching T.V.: making index cards (1): going over vocabulary lists at regular intervals: making new lists of the words one doesn't know yet (1)
2. learning words in context (textual, situational) (8): (at an advanced level one must learn the whole concept of a word, usage, accent, etc.)
3. putting words into different structures and drilling oneself (4)
4. learning words that are associated in a field (4) (same subject area, the same lexical and semantic fields)
5. reading aloud and/or silently (4) (looking up words either after one has finished reading or when one is reading, putting a number over the word one doesn't know, making a list at the top of the page of the words unknown and then reading the paragraph again to check if one remembers the words)
6. using a dictionary when necessary (4) (underlining the words one has looked up so that one can check later if one remembers them)
7. reading a dictionary (3)
8. listening to conversations or the radio (e.g., songs - trying to break the sound stream into words) (3)
9. (a) carrying a notebook around and writing down items, if possible in context (1)
(b) writing down words one hears in phonetic transcriptions (if one doesn't know the spelling) (1)
10. using new words in phrases or in a practical context (1)
11. games (1)
 - (a) trying to think of words which have the same ending - even with the help of a dictionary (checking later if one remembers them)
 - (b) giving a French (L2) word and four choices for translations (only one is correct)
 - (c) "French baseball" (team-pitcher asks batter a word - if he knows the word, batter goes to first base, if he doesn't know it but the catcher does, he is out)
12. repeating words (1)
13. switching on tape-recorder with vocabulary - when one feels relaxed (subconscious learning) (1)

The full list of Rubi 's Observational schedule (1981)
from which Rubin's vocabulary LS discussed in chapter
3 were extrated.

Observation Schedule of Language Learners

1. Processes which may contribute directly to learning

A. Clarification/verification

1. Asks for an example of how to use a particular word expression
2. Repeats word to confirm understanding
3. Repeats part of word or sentence, asks for the rest
4. Asks for correct form to use
5. Puts word in sentence to check understanding
6. Asks for translation from native to second language or vice versa
7. Asks question about culture
8. Asks for repetition (of sentence or word)
9. Asks for meaning of item, sentence, phrase
10. Looks up words in dictionary or structure in grammar book
11. Asks for difference between two words, phrases
12. Asks if given utterance is correct
13. Asks if rule fits a particular case
14. Restates in own words or briefer terms ('just' means 'only')
15. Paraphrases a sentence to check understanding
16. Asks for paraphrase to check understanding
17. Asks to be corrected
18. Asks if a given form is explained by a previously learned rule

B. Monitoring

1. Corrects error in own/other's pronunciation, vocabulary, spelling, grammar, style
2. Observes and analyzes language use of others to see how message was interpreted by addressee
3. Notes source of own errors e.g., own language interference, other language interference

C. Memorization

Of words, frequently-used simple sentences, basic sentence patterns, songs, verb declensions, dialogues/monologues, formulaic chunks

1. Takes notes of new items with or without examples, with or without context, with or without definitions
2. Pronounces out loud
3. Finds some sort of association (semantic, visual, auditory, kinesic)
4. Uses other mechanical devices e.g., puts new words in right pocket, moves to the left when learned; writes out items to be learned several times, etc.

D. Guessing/inductive inferencing: uses hunches from a wide range of possible sources of meaning for a particular circumstance

1. Uses clues from the following to guess the meaning
 - Other items in the sentence/phrase
 - Key words in a sentence
 - Syntactic structure
 - Pictures
 - Context of discourse
 - Topic of discourse
 - Gestures

Rubin's list (cont'd)

Word Association or other features which are contingent on each other
Intonation
Own native language or other foreign language
Part of word
Narrative/conversational sequence

2. Correlates word with action
3. Distinguishes relevant from irrelevant clues in deducing meaning
4. Ignores difficult words; tries to get an overall picture

F. Deductive reasoning (looks for and uses general rules)

1. Compares native/other language to target language to help identify regular similarities and differences (from: A. Cohen)
2. Groups words according to similarity of endings (from: A. Cohen)
3. Looks for rules of co-occurrence restrictions and contextual/stylistic rules
4. Infers grammatical rules by analogy
5. Infers vocabulary by analogy
(e.g., if nación = nation; then does relación = relation?)
6. Recognizes patterns of own pronunciation and grammatical difficulties
7. Notes exceptions to rules and questions rules for this
8. When using dictionary, recognizes limitations of dictionary in providing equivalents and develops a theory about the nature of these limitations
9. Develops and revises grasp of target language on a continuing basis: processing new information, discarding hypotheses, formulating new ones
10. Finds meaning of item/word by breaking it down into its parts

F. Practice

1. Experiments with new sounds in isolation and in context, uses mirror for practice
2. Repeats sentences until produced easily
3. Practises intonation contours, e.g., begins with shorter sentences and then lengthens sentences by adding adjectives and adverbs; maintains rhythm all the time
4. Talks to self in target language (e.g., tells self what he/she did all day)
5. Consciously applies grammatical rules when speaking (from: A. Cohen)
6. Drills self on words in different forms (from: A. Cohen)
7. Makes use of new words when speaking
8. When corrected practises correct form, possibly extending it to other contexts
9. Listens carefully to what is said and how it is said: accent, intonation, tone and stress, register; tries to imitate pronunciation and other aspects (from A. Cohen)

II. Processes which may contribute indirectly to learning

A. Creates opportunity for practice

1. Creates situation with natives in order to verify/test/practice
2. Initiates conversation with fellow student/teacher/native speaker
3. Answers to self, questions to other students
4. Spends extra time in language lab
5. Listens to TV/radio, attends movies or parties or uses advertisements, reads extra books often first in native language, then in target language
6. Identifies learning preferences and selects learning situations accordingly (from: Naiman, Fröhlich and Stern)

The interview-guide and the vocabulary tests used.

Interview-guide:

1. If you come across a new word, how do you get further information about it?

Prompts: Ask teacher? ASk classmates? Use a dictionary? Guess its meaning from context? Overlook it altogether?

If you ask somebody, what information do you ask about?

Prompts: English synonym/paraphrase? Arabic equivalent? A sentence illustrating usage?

2. If you use a dictionary, which type do you use?

Prompts: Monolingual? Bilingual? Both?

Why?

What information do you look up in a dictionary?

Prompts: Spelling? Pronunciation? Meaning? Collocations? Grammatical Class? Word derivations? A sentence illustrating word usage?

3. Do you keep notes of and about words?

If yes, Where do you keep them?

Prompts: In the margins of textbooks? A separate book? Both?

If you use a separate book, how do you organize the words in it?

Prompts: Alphabetically? In the order encountered? In terms of meaning Relation (i.e. similar word together, opposites together)? In the order encountered, but keep reorganizing them in terms of meaning during revision?

What information do you keep about words?

Prompts: (as for dictionary, above).

4. What do you do to further enhance learning words?

Prompts: Ask to verify knowledge? Go through word lists? Ask to be tested? Check written sources to confirm knowledge? Experiment with word in real situations (e.g. conversation)? Imagine a situation in which a word can be used and use it in it (creating a scenario, while sitting on your own, and use your words by imagining other people, or yourself, participating in the conversation)? Other?

Collocation

--Ali is very thick, but he is strong. He can run fast, and he can swim like a fish. In the afternoon, he often plays football.

--His sister, Samia, is only nine years old, but she is very long. She can run fast and she can swim, too. She plays table-tennis every day. She can sing well.

--Last Friday Samia went to the vegetable market to buy some potatoes. While she was walking in the market she heard a sound greeting her: 'Hello, Samia. How are you?' It was her friend Alawiya. Samia was very happy because she had not seen Alawiya for two years.

--Samia draws pictures, too. She draws very well. When she draws a picture, she draws the lines first. She uses a pencil for this. If she does a mistake, she can use a rubber.

--A: 'Can I have a piece of paper?'

B: 'Yes, certainly. Take that one over there.'

A: 'Thank you, but this is a very tall paper.'

--Ali's son is only 3 months old, but he is very big. He is nice and quiet. He does not scream at all.

--A: 'Could you please copy this passage for me?'

B: 'Yes, which one?'

A: This one, please. Please do not make a mistake because I do not have time to revise.

--I walked for 6 hours in the forest until I came to a city. I did not know what it was called, but there was crowded traffic.

--I bought a lot of vegetables yesterday. But I did not buy tomatoes. My wife does not like them. She said 'tomatoes smell sour.'

--The voice of heavy traffic did not let me sleep last night. It is always like that. But I will move to another house in a quiet area.

--Last summer I went for a tall journey. I went to Spain, Scotland, Norway and China. I had a nice time, but I spent all my money. I cannot go anywhere this summer.

--A: This lemon juice smells bitter. Can I have another juice, please?'

B: Which one do you like?

A: Orange, please.

--A: Have you seen Marra Mountain?

B: No, I have not, but I have heard it is a very tall mountain.

--A: Have you made your work?

B: No, I have not. My father was not well and I had to take him to the hospital. But I will give it to you tomorrow.

--A: You are very high.

B: Yes, I know. I am three meters. But have you seen my brother? You will be surprised.

Lexical-grammatical aspects of lexical items : (a)

- I arrived to Cairo yesterday. I am a long way from Juba now, but I still remember the nice days I spent there. Cairo is also a nice place.
- I will leave to France next week. I am enjoying myself now. I have seen more pyramids, but there are bigger ones here than the ones in the Sudan.
- I am a world-famous traveller now. They have written about me in the papers, and I was asked to talk in radio and television about my long journey.
- Some people think I am mad. They laugh on me. But there are a lot of people who like my adventures.
- I don't want going anywhere after this journey. I will have a rest for a whole year after which I will start a new journey. I may come back to the Sudan.
- I am back home now. I am sorry I didn't write to you while I was in France. I tried phone you, but the lines to the Sudan were engaged all the time.
- I don't ^{think} Ali will succeed to pass the entry examination. All the pupils are working hard, but Ali is playing all the time.
- I am sure he will stop play when the time of the examination comes. He is very clever. I'm sure will pass.
- Yes, but I still think it is very careless from him not to revise. I will talk to his father.
- Please don't. He will not make him do. The boy can deceive his father quite easily. I know the two of them.
- The man loves his son. I think he will be angry from you if you tell him.
- Oh, it is five o'clock I left from home at about 12 o'clock. I have to go now. See you.
- Al-salahi is famous by his paintings. He is a Sudanese artist.
- Where did you get that dictionary from. It is quite good. Did you buy it?

No, it didn't cost me.

— I enjoyed because it was a very good film. I didn't like yesterday's Film.

— Can you put that book? You can have a look at it later on.

— He decided for leaving. I think he is leaving tomorrow.

— I told this soup is very hot, but you didn't listen.

Lexical-grammatical aspects: (b)

--The northern part of the Sudan has not always been a desert. It used to rain quite a lot more than it does today. The river was even more wide than it is today.

--This test is boring. Next time I will give an interestinger one. Just be patient until you finish this one.

--I am going to the grocer's to buy a sugar. Do you want me to bring anything for you? They will close after 20 minutes.

--"Yes, but which one are going to?"

"I am going to 'Hill Side Grocer."

"O, yes, it is the most cheap shop in the area. Will you get onions for me, please?"

--Hamada said to Ai, 'shall we go to the cinema tonight?' Ali said, 'No, I can't. I have many homework to do. But we can go on Thursday evening.'

--Hamada and Ali will go to the cinema on Thursday.

Hamada said, 'Which cinema shall we go to?' Ali said, 'The Blue Nile'.

Hamada said, 'No, it is the expensivest cinema in the town.'

-Ali could not think of any other cinema. He said, "which one shall we go to, then? Hamada said, "Halfaya." Ali said, "No, no, it is the dirtiest cinema in the Sudan!"

--Tim has a small garden. But he has much vegetables. He works in his garden in every day.

--While I was walking in the forest I found myself in a strange place. I could hear the birds singing in the trees. I could also hear noises coming from the right.

--Arthur had no job for three years. One day he came home looking very happy. There was only his mother in the house. His wife had gone to the market. He said to his mother, 'I found a job.' His mother was very happy and she said, 'How much hours do you have to work?' Arthur said, '44 hours a week.'

--Sami, Ali's brother has a few homework. He can go out a play.

--This three girls are pupils in Saint David's School. They are late now. The headmaster will tell their parents about that.

--My brother does not eat anything in the morning. But sometimes he has a few butter and milk.

--Samia told Susan that she can use a little eggs and sugar. Samia knows how to make a cake.

--Some Sudanese people have a red hair. These people live in the eastern part of the Sudan. They are called Hadandawa.

--Customer: I want some tomato.

Shopkeeper: Yes, Ali, over there. Just help yourself.

Customer: Oh, thank you. When do you close?

Shopkeeper: 6 o'clock.

--Susan is going to bake a cake. She has some egg, butter, sugar and milk. She wants to make a chocolate cake but she has no chocolate. She does not know how to bake any other cake.

--Ali has a lot of homeworks. He can not out and play with other boys. His father will not him go out before he finishes.

Form class and word derivations

(1) Look at the dates and the pictures below each of them. The sentences given below each picture tell you how the weather is like during the time specified.

(a) It is sometimes cloudy. It sometimes rains. Do not go out without taking your umbrella with you. A cloudy day may protect you from the heat, but remember, they may bring rain.

(b) It is sometimes windy. The wind often blows. You do not need to take your umbrella with you.

(2) A: Whose car is that?

B: It is Ali's. It is a Ferrari.

A: Yes, it is a very fast car, isn't it?

B: Yes, but it is not expensive.

(3) A: Can I have a word with you?

B: Yes, sir.

A: Sit down, please. You do not do anything well.

B: Now, just a minute.

A: You do not even work hardly.

B: I do work hardly. I am a very hardly worker.

A: You drive very dangerous.

B: No, I don't. I am afraid you get it all wrong. In fact,
I am not dangerously at all.

A: Just wait a minute. Let me finish please.

B: Yes but....

A: You don't even speak clear.

B: Let me explain.

A: You do not work quick and you are very carelessly.

B: You are mistaken, sir.

A: Go back to your work and be carefully, ok?

(3) A: Why are you driving slow?

B: I am going very fastly. This is the speed limit.

A: Forget about the speed limit.

B: Well, I am just driving careful. The roads are crowded.

(4) Dr. Jones: What is the matter with Roy? Is he hunger?

Mrs. Williams: No, he has just eaten.

Dr. Jones: Is he thirst?

Mrs. Williams: No, he has just had two glasses of juice.

(5) This is Jane. She is very laziness.

She does not work, she stays in bed all the time.

(6) This is Joe Dickson. He is an actor.

He is very fame. He is coming to Sudan
next month. He also draws pictures.

First he draws the lines. He uses a
pencil for this. When he finishes this,

he puts in colours. He uses a brush and some paintings for this.

(7) Ali and Hassan play tennis every Sunday. Ali is a badly player. Hassan always wins and Ali always loses.

But today, Hassan has a cold. He is playing bad. Ali will win for the first time in his life.

(8) A: I am going to swimmer.

B: Are you going to the river or the swimming pool?

A: I am going to the river. Are you going?

B: No, I am not a good swim, but if you like to go to the swimming pool, I will go with you.

(9) Samia never gets up before 9 o'clock. She always has breakfast in bed. Her friends call her "the laziness girl".

She also likes drawing pictures. She painted this picture yesterday. She sells her painting pictures in the market. I bought one yesterday.

- (10) Sammy is running up the hill. He is a fastly man. He is in the lead now.
- (11) This is Adil. He not runner now. He is not a good run at all.
- (12) Mrs. Molly is cooking dinner for her family. She is a good wife. She is also a good cooker.
- (13) Mr. Jum'a is very tired now. He could not sleep last night because of the noisy of heavy machines near his house.
- (14) His wife is making a cup of tea for him. Jum'a does not eat at home because his wife is not a good cook.
- (15) A: Do you want a drinking?
B: Yes please. Can I have orange juice, please?

A sample of the researcher's notes concerning a preliminary
record of the learners' verbalizations.

The researcher's notes on the preliminary analysis of the verbal reports

Subj	notes
40	<p>First tries to pronounce the word then tries look it up in the dictionary, write the word repeat it many times, ^{Does not write} write it its meaning from the dictionary; but reads it understands it, goes to the next - uses English-English dictionary - if the meaning is difficult writes it down using an English paraphrase or sometimes Arabic translation from an English-Arabic dictionary, sees other related words N, V, adj, etc but not the pronunciation uses mental images to learn the word meaning with abstract meanings ^{tries} to visualize some "events", "conditions" at where the meaning is relevant e.g. anarchy visualize an untidy</p>
41	<p>Tries to pronounce the word, then looks it up in the dictionary writes the meaning while repeating the word, tries to correct the pronun from the dictionary, writes the word meaning; see if the know other words of similar meaning, uses English-Arabic dictionary, with English-English, write the meaning in a paraphrase in English and ^{Sometimes} always Arabic translation sees other related words N, V, adj, etc - uses mental images to learn the meaning but</p>

Does not repeat the word, ~~look it up~~ ^{but} ~~Does not~~ writes it, looks it up in the dictionary 'English-English' & sometimes learns the pronunciation, sees other related words: v., adj., n. etc. Does not use mental images, ^{uses} words with similar meaning, writes the meaning in a paraphrase in English; ~~try to use it in~~ sentences when they are few words. In memorizing the word: first try to ~~use~~ remember the word ^{alone} ~~by itself~~ if failed read the meaning and repeat the word after remembering it.

A sample of the learners' notes during the think-aloud
task

'Good' learners:

Subject (a):

English Language

foliage = leaves.

inimitable = too good to be imitated.

mentor = a wise giver of advice.

propinquity = vicinity.

stock = a number of things standing together.

odious = hateful.

intimidate = to make afraid, to frighten.

stamen = small headed-stalk in the middle of a flower which
bear the pollen.

manacle = a handcuff; to put manacle on.

jeer = to make fun of

jolly = merry, noisy, feasting and merriment.

stench = a strong bad smell.

intimate = knowing much about; familiar.

dram = to turn a story into a play to be acted.

jester = one who jests.

Subject (a):

foliage = leaves

propinquity = nearness, vicinity

stamen = a small-headed stam in the middle of the flower
which bears the pollen.

jolly = merry - noisy, feasting and merriment.

stench = strong bad smell.

jeer = to make fun of.

mentor = a wise giver of advice.

manacle = a handseal = to put a manacles on.

intimidate = frighten

dram = to turn a story into a play.

inimitable = too good to be imitated.

stock = a number of things standing together

jester = a person who jests.

odious = hateful

intimate = familiarize

Subject (a):

Vocabulary

jollige

menator

~~intimidate~~ intimidate

intimidable

~~in~~ stack

stench

jeer

jolly

dram

jester

inimical propinquity

odious

stamen

~~intimidate~~

Subject (b):

1. stratum : - layers of rock or other material forming part of the earth surface - ^{أطباق}
2. obstinate : - unwilling to obey - not giving up an opinion - not moved by reasoning - ^{أعس}
3. shin : - front of the lower part of the leg
4. contaminate : - make dirty, have a bad effect - ^{تسبب}
5. strategy : - art of moving armies (before a battle) ^{تكتيك}
general plan of action (strategic)
6. congestion : - collection & Congested (too full of people)
congest : - collect into a mass
7. tilt : - slope of a tent ... (1/3)
8. nip : - small piece of skin between fingers ^{أصبع}
to stop a grow of something (plant),
(ripped by frost in the end, nip up: to remove,
nipper: - thing use for nipping.
9. forlorn : - cheerless & deserted ^{بائس}
10. inert : - lifeless and soft (as when sleep) inertia -
when you lost your power

Subject (b):

1 stratum

2 nipples

3 tit

4 tilt $\frac{1}{3}$ (1)

5 nip

6 congregation

7 forlorn

8 strategy

9 stem

10 inert

11 obstinate

12 shin , shane (2)

13 anarchy

14 monarchy } (sounds)

15 invert

16

17

18

(1) pronounced in Arabic as [tilit].

(2) Shane was his English language teacher.

Subject (c):

Impert, without power to move or act

congregation

congregation gathering of people

shin front part of the leg below ^{the} knee

obstinate

obstinate children

obstin

adv obstinacy

not easily overcome

stem

its steep - steep ² or ask

steep descent

steep place stem = stem as of the explanation

to sack

monarchy monarchy

government by monarchy

monarch - supreme ruler

monarchy is m = system of government by

single ruler

stratum : horizontal layer of rock

contaminate : make dirty

forlorn : unhappy

adv forlornness

congestion : being congested

anarchy =

delayed by the congested

of traffic in town

in

'Poor' learners:

Subject (a):

amanda / disorder
straw stratum → GB → division
obstinate → ^{eye} ^{circle} ^{as} ^{lots}
shin relatives
contaminate → make dirty
strategy →
congestion →
tilt → came into sloping position
nip →
fanciful - not happy
insult
congregation → gathering of people
ripples
tit → kind of small bird
stubborn - difficult to deal with
insect
manacher ^{ing} ^{it} ^{much} ^{is}

ripples rip/les ⊙

Hug
rip
chior
shime
manarchy
fowlorn
unhappy

Subject (b):

salwards ^{سَالِوَارِسْ}

tripping

steady ^{سْتِيدِي}

fouls

preserved ^{پِرِسِوَرِدْ}

pop

sedentary

occupation, ^{اِسْتَاغَالَة}

tram tramane

Sedentary ^{سِدِنْتَارِي}

Smartest

vigorous ^{وِجُورَسْ}

employment ^{اِسْتَاغَالَة}

fare

dealers

flourish

mountainous

apocalyptic

flipper

compensatory

numerous

uncatalogued

irritations ^{اِزْجَاعٌ} to cause pain

drafty

steak

hazards

Subject (c):

monarch
forlorn = un happy
obstinate = عاقبة سيئة
steep = -سlo
stratum = layer or طبقات
contaminate
monarchy = state ruled by government by...
stubborn
congregation =
skin
stem = عرق
ment = without power to move congested
congestion = being blocked
anarchy
strategy = اراتيجية
invert = put upside down or in the opposite order

A sample of the learners' responses for the test on meaning.

'Good' learners:

sand.

3) Bank and river :- The bank is part of the river. The river contains water while beach contains sand.

Bank and money :- bank is a place where money is stored. Money is made of special kind of paper while bank is a building.

Bank and beach :- The bank is a place where money is stored in a safe place. The bank contains money while beach contains sand.

book - reading - reading is the action denomi-
opening the book
book - ticket - ticket is taken to book a seat
is a cinema or theatre
reading - ticket - no relationship
reserve

All in one family
father - uncle - both are brothers father is the reason
for my birth while my uncle is not
father - cousin - father is uncle of the cousin but
cousin
father - sister - father is the reason for sister's birth
father - aunt - they are brothers

Book		Reading
used for reading		from books
Book		ticket
can be borrowed or bought by tickets		to buy books

Can be reserved in the counter		books reserving
Reading	no comparison	ticket
Reading	no comparison	reserved
ticket	no comparison	reserve
	no comparison	

Father	are brothers	uncle
husband of mother		brother of father or mother
Father		Cousin
Uncle of Cousin		nephew or niece of father
Father	of one parents	Sister

Father		aint
her brother		his sister

'Poor' learners:

bank-river	نهر	اسم ماء - به الماء
	كل حقل يسبح للأف	صين - فرق تقديس
bank-sea	قسط	الاول صافقوه الكائن لهم

look	نظرت	الاختلاف
look	كلمات	الحرق
look	توصيف	الساعة
father	أب	الاب
uncle	عم	العم
father	أب	الاب
avost	أب	الاب

اسم	تعريف
father/uncle	ابوك عمك والذئ والذي يدعوك اما خالك هو أخ لأمك
father aunt	الخاله اخت لأمك اما الاب صالحه والمرءه
	الاب هو الذي يحمل كس اسمك ماتة اما الاسم هو التي تعطينك على اسمها

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