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Ministry of Higher Education and Scientific Research  
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Department of Letters and English Language**



**Raising Students' Awareness about  
Reading Strategies:  
A Case Study of ESP Students at the  
Faculty of Biology**

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in Partial Fulfillment of the Requirements for the Degree  
of Magistère in Applied Linguistics**

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# *DEDICATIONS*

*To my parents*

*To my husband*

*To my children*

*Ibrahim, Yahia and Nour*

*To all my colleagues*

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## Abstract

Biology students need to develop some reading abilities to have access to scientific literature related to their specialization. The present study aims at investigating the effects of explicit reading strategies instruction on Master II students' comprehension in the department of Biology, University of Constantine 1. It is hypothesized that if the learners are made aware about the effectiveness of reading strategies, they would be able to apply them appropriately for their specific purposes. In order to test out this hypothesis, we conducted an experimental study where a control group and experimental group were selected randomly from the whole population of the students of Biology. The two groups received the same treatment as the researcher provided them with the same reading materials and ESP texts. However, the experimental group received some explicit instruction on reading strategies such as previewing, skimming, scanning, anticipating and predicting. A statistical measure called the student *t-test* was used for analyzing the data. This test is very helpful as it generates more reliable results that proved to be highly significant. The results of the experiment reveal that the students in the experimental group outperformed those of the control group. This indicates that providing students with explicit instruction about reading strategies and raising their awareness to a maximum would help ESP students enhance their reading comprehension.

# **LIST OF ABBREVIATIONS**

**E.L:** English language

**E.L.T:** English language teaching

**G.E:** General English

**E.A.P:** English for academic purposes

**E.F.L:** English as a foreign language

**E.S.L:** English as a second language

**E.S.P:** English for specific purposes

**E.S.T:** English for science and technology

**G.P.E:** General English purpose

**R.S:** Reading strategies

**R.S.I:** Reading strategies instruction

**N:** Number

**G.R:** Groupe

**M.C.Q:** Multiple choice questions

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## **Introduction**

The following study is based on a personal experience and observations as an ESP teacher at the department of Biology. Master II students have to read scientific literature regularly in English. They need to exploit books, journals and the internet for their research work. Reading is very necessary for them for carrying out their studies as they are required to submit dissertations in partial fulfilment for the requirements of the master degree. Therefore, it is essential for them to develop an effective reading ability to achieve good comprehension. An appropriate monitoring of the reading strategies may help learners to enhance their reading comprehension. Reading strategies are mental processes used by the readers in order to perform certain reading tasks.

Reading strategies are also behavioural actions adopted by readers so that they can achieve success in reading. For e.g. the bottom-up processing involves a series of steps, the reader has to go through i.e. a series that involves moving from a step to another one, departing from recognizing the key features to every letter and word, sentences until reaching the meaning of the text. Other researchers on the other hand, focus on the top-down processing that is conceptually driven. This approach encourages students to use their background knowledge in order to make predictions about the text they read.

A significant outcome of the use of reading strategies resides mainly in the capability to achieve meaningful reading by employing strategies such as prediction, skimming, scanning, guessing the meaning of unfamiliar words and self-monitoring.

### **1. Statement of the Problem**

When comprehension is not achieved, especially in a foreign or a second language, students need to find solutions to their problems. And here lies the importance of reading strategies where they interfere as a facilitator of the reading process providing the students with a clear sense of what they are reading.

## **2. Aim of the Study**

The main objective of this research is to raise the awareness of Master II Biology students about the usefulness of reading strategies.

## **3. Assumptions**

a- In this research, we assume that students involved in this study are not aware about the effectiveness of reading strategies, and this would impede their reading comprehension.

b- We also assume that students come to the class with background knowledge including the knowledge of their native and other languages as well as scientific discourse in these languages.

## **4. Research Questions**

Does ignorance of the use of reading strategies result in a lack of understanding of scientific text?

Does awareness about the appropriate use of reading strategies make Master Biology learners' proficient readers?

## **5. Hypothesis**

We hypothesize that if ESP students of Biology were provided with effective instruction to raise their awareness about reading strategies, they would be able to use them more effectively and thus enhance their reading comprehension.

## **6. Tools of Research**

In this research, we have chosen to administer a comprehension test in which the participants are introduced to an informative/expository text followed by three multiple-choice questions using two strategies, namely skimming and scanning. The main objective is to assess the participants' ability to extract meanings from texts. To check the hypothesis, we have suggested to us t-test to compute the data obtained from the participants.

## **6. Structure of the Dissertation**

This work is divided into four chapters. Chapter one surveys the literature on ESP (English for Specific Purposes). We discuss the factors that led to the emergence of ESP and expose some definitions in this field by attaching particular importance to the learner`s needs because the character of need is central to ESP and to our study. We also review some approaches to language description and to course design. Chapter two reviews issues about definitions, models, and types of the reading skill and focuses on comprehension by considering the linguistic, cognitive, communicative, and strategic elements that contribute to the extraction of meaning. We also describe components of scientific course and typical strategies generally adopted by ESP students when reading their specialized literature. Chapter three surveys some issues about language learning and introduces language learning strategies by concentrating on their definitions, classifications, and features. It focuses on reading strategies by yielding various definitions. Finally it examines the teaching/learning situation at the Faculty of Biology and its impact on the learners in choosing reading strategies. Finally, chapter four is devoted to the experimental work, it includes an analysis of the student`s needs, the findings of the questionnaire suggested a strategy training course in some reading strategies via explicit strategy instruction. To this end, some lessons are tailored, and students are trained. Then an experiment is designed to test if explicit reading strategies instruction would be efficient in promoting reading comprehension.



## Chapter One

### English for Specific Purposes: Some Current Issues

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# Chapter One

## English for Specific Purposes: Some Current Issues

### Introduction

English is the accepted international language of technology and commerce. A great number of people need English as an indispensable means of communication and, as a medium to proceed to science and specific professions, their needs have created a demand for a certain type of teaching.

For many years and for many ESP learners (by particular reference Biology students) English has been taught as a literary language with no specific purpose in mind, except, perhaps, to pass examination. This kind of teaching is nowadays considered as having less relevance and there is “.... A growing dissatisfaction with the language teaching practice, where all learners were served up with literature regardless of their aims, needs or interests” (McDonough 1984: 4).

In the 1960's, a number of educators and linguists realised that English should be considered more as a tool than as a subject. Strevens (1977: 19 and 89) pointed out the irrelevance of literary training to large numbers of learners for whom English was a tool in a job or profession. Robinson (1980) was one of the many teaching experts to distinguish between language as a subject and language as a service. All these works, reflections and researches gave birth to English for Specific Purpose (ESP).

### 1.1. Origins of ESP

“Despite rumours of its death, ESP is still dynamic and it is becoming multidisciplinary.” (Ivans and St John, 1998). For most practitioners of ESP, three major factors are common to its emergence. Namely an expansion scientific, technical and economic

activity, a revolution in linguistics and a new view of the teaching/learning situation i.e. the focus on the learners.

After World War Two, there was an expansion in scientific, technical and economic activity all over the world. Thus, the development of technology and commerce created a demand for language which could be used among countries of the world. English proved to be the appropriate language for the main reason that science and technology, which is largely a product of American scientific effort, developed through this language. A great deal of world's scientific, commercial, economic and technological knowledge is written and published in English even if the writers are neither English nor Americans. English has also become the main language for transmitting news. In fact, international newspapers such as the 'International Herald Tribune' and international news such as 'Newsweek' are read in English even in non-speaking countries.

This development was accelerated by the oil crisis of the early 1970's, which resulted in a massive flow of funds and western expertise into the OPEC world. This gave birth to a number of activities in English across the world such as the use of English for air traffic control and in the United Nations.

As the demand for English courses according to specific needs was growing, a need to learn English because it was the key to international technology, commerce and communication, many linguists and researchers in ELT realised that the aim of teaching a language which had for a long time been about the description of the language should change. It was felt that in order to be taught appropriately, a language should be used in real communication. On the other hand, as a language varies from one situation to another, one must determine the main features as the basis of the learner's course. In other word, it was realised that there are differences between, for example, the English of chemistry and that of biology. Thus, the English needed by a particular group of learners could be identified by

analysing the linguistic characteristics of their specialist area of work or study that would form the basis of the learner's course. In the field of ESP, a lot of research was done, such as the description of written scientific and technical English by Ewer and Latorre (1969), Swales (1971) and Selinker and Trimble (1976).

New developments in educational psychology focused on the learners and their attitudes to learning. Thus, ELT (English Language Teaching) practitioners looked toward the individualisation and specialisation of course content. In this new approach, the learner is the centre of the teaching/learning process. Everything starts with him and goes back to him. He is involved in the planning, implementation and evolution of the curriculum so that his-interest and motivation increase.

In sum, all these three factors i.e. the expansion in scientific, technical and economic activity, the revolution in linguistics and the focus on the learner, combined together gave rise to ESP (English for Special Purposes).

## **1.2. Definition of ESP**

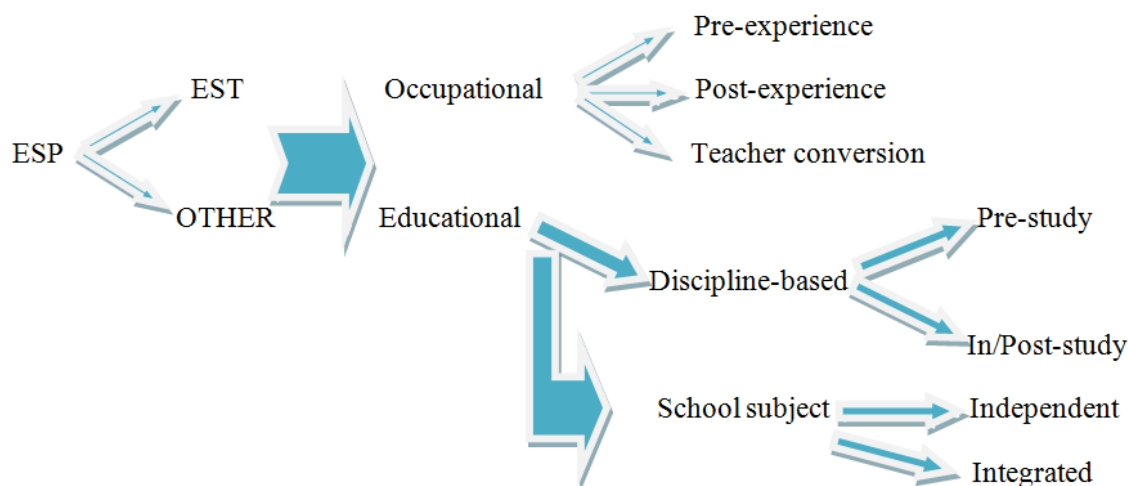
Since 1960, ESP has become a vital and innovative activity within the teaching of English as a foreign or second language movement. It has become a prominent area of EFL teaching. Its development is reflected in the uncountable ESP texts in use all over the world (Evans and St John 1999).

Applied linguists and researchers in ELT in general and ESP in particular have different definitions of the term ESP. For Mumby (1978), "ESP courses are those where the syllabus and materials are determined in all essentials by the prior analysis of the communication needs of the learner". Strevens (1980: 108-9) gives a more detailed definition of ESP. ESP entails the provision of EL instructions that are:

- Devised to meet the learner's particular needs.
- Related in themes and topics to designated occupations or areas of study.

- Selective (i. e. not general) as to the L context.
- When indicated, restricted as the L skills included.

Elsewhere, Strevens (1977: 92) draws the following diagram to show ESP and its branches.



**Figure 1:** Taxonomy of ESP (Strevens, 1977)

Some of the characteristic features of this diagram are as follows:

He attaches great importance to ESP by singling it out as an outstanding branch of ESP, indeed, EST was historically the first branch to be researched in detail both from the register analysis point of view as well as discourse (Barber 1962, Huddleston 1971, Ewer and Latorre 1967, Swales 1976, Widdowson 1978 and n 1979, and many others). He also implies that English as a school subject, i.e. the branch of teaching/learning called English as a foreign language (EFL), or English as a Second Language (ESL), otherwise general English (GE) is part of ESP. He does not further specify whether he treats it as English for social survival or English for literature.

A number of other writers would disagree with him on this point e.g. Hutchinson and Waters (1978:17) separate GE from ESP. Widdowson (1983) makes a distinction between GPE (General Purpose English) and ESP. In their extreme versions, the former develops a general capacity for communication and is a form of education (learner-centred, creative self

instruction) while the latter develops restricted competence and is a form of training (teacher-centred, narrowly defined learning). Widdowson concedes, however, that a properly balanced ESP course should have creative educational elements and should encourage the development of problem-solving procedural capacity. By implication, then, he would like to equalize the two frequently separated branches of English teaching (if they are properly planned and taught, that is):

...an essentially dependent activity, a parasite process and it follows that the pedagogy of ESP must be dependent too. It has no purposes of its own. It exists only to service those that have been specified elsewhere.  
(1983:109)

Hutchinson and Waters (1987:19) see ESP as an approach rather than a product, by which they mean that ESP does not involve a particular kind of language, teaching material or methodology. They suggest that “the foundation of ESP is the simple question, why does this learners need to learn foreign language” the answer to this question relates to the learners the language required and the learning contact, and thus establishes the primacy of needs in ESP.

If one reviews the above definitions carefully, some common features can be noted namely:

- ESP is treated as a tool to some other subject rather than an aim in itself.
- It is distinguished from other kinds of English teaching by a careful analysis of needs of the learner
- It is selective as to the development to partial competence of the learner relative to those needs.

### **1.3. Characteristics of ESP**

Strevens (1988) identified ESP characteristics as follows:

- ESP consists of English language teaching designed to meet specified needs of the learner.

-It is related in content to particular disciplines, occupations and activities.

- It contrasts with general English.

-It is not taught according to any pre-ordained method.

Evans and John (1998) modified Stevens' characteristics to form their own; they offered a modified definition as follows:

-ESP is defined to meet specific needs of the learner.

-ESP is centred on the language, skills, discourse, and genres appropriate to these activities.

-ESP may be related to or designed for specific disciplines.

-ESP may use a different methodology from that of general English.

-ESP is likely to be designed for adult learners either at a tertiary level institution or in a professional work situation. It could, however, be for learners at secondary school level.

-ESP is generally designed for intermediate or advanced students.

#### **1.4. Learner's Need**

Huchinson and Waters define the target situation analysis or needs analysis as a new approach to language teaching. Actually, it should be a major stage of any approach to ESP teaching, and, by focusing on needs teachers establish procedures for relating the language analysis more closely to learners' reasons for learning and their terminal behaviour.

Since ESP nowadays is the most dynamically developing branch of English teaching/learning, a lot of research has centred on the learner and his needs. But although this assumption is very closely bound with ESP, it is obviously not exclusive to ESP.

Older approaches to language teaching/learning tended to ignore the learner himself and served with structural or functional syllabuses which did not quite satisfy his demands. The analysis of needs is integral part of later approaches and it is said one of the most significant differences between general English and ESP.

We shall expose some views on the subject below:

Robinson (1991) asserts the primacy of needs analysis in defining ESP. Her definition is based on two key defining criteria and a number of characteristics that are generally found to be true of ESP:

Normally ‘goal-oriented’, and that ESP courses develop from a need analysis, which aims to specify as closely as possible what exactly it is that students have to do through the medium of English (Robinson, 1991:3).

Her characteristics are that ESP courses are generally constrained by a limited time period in which their objectives have to be achieved and are taught to adults in homogenous classes, terms of work or specialists studies that the students are involved in.

According to Bruce (2011) materials should be based on a thorough analysis of the learner’s needs. Randeau (1979) thinks that “Didactics is determined by a precise delimitation of a given group of learners in a given situation”. The learner centred curriculum has a utilitarian rational. Skills and knowledge are taught because the learner wishes to utilise them for some purpose beyond the learning environment itself. Mountford (1978) says that needs can be defined in at least four different ways: needs understood as aims, as the institution –felt needs, as remedial needs.

Hutchinson and Waters (1987) divide needs into target and learning needs.

a- The target needs can be:

- Necessities, which are what the learners should know to fulfil the demands of the target situation.
- Lacks, which are the gap that exists between what the learners actually know and what they should know.
- Wants, which are how the learners themselves perceive their purpose of learning.



b- Learning needs: they are the conditions of the learning situation, the learners' knowledge, skills and strategies and their motivation.

From a 'precise delimitation' of the learner's difficulties and needs the appropriateness of 'skills and knowledge' can be determined and congruency, (Cohen 1984) achieved in order to utilise the little time the learner has in the most economical way possible or at least so the theory goes.

For Mc Donough (1984: 39-40), information on the students' language needs is important in that it helps to establish a relevant course content. She divides needs into:

- Present goals: which are what the student actually does during the course: learning grammar, vocabulary, reading strategies, etc.
- Future goals: what he will have to do in his job or profession with the foreign language, in our case ESP biology: carrying out researches, publishing, attending international meetings and seminars.

In an ESP context, the character of needs may differ because of different situations where a foreign language is used. An analysis of these needs shows that they are frequently concerned with what the learners will have to do in their profession or job.

Widdowson refers to this as "a goal-oriented definition of needs which relates to terminal behaviours, the ends of learning". (As quoted by Mountford 1981: 27)

Richterich and Chancerel (1980) claim that needs analysis is an ongoing process which is not confined to the beginning of the course, because new needs may arise even after the course has been developed; they may also change while the learner is taking the language course. In our case, biology students may need to write: (though in many ESP courses it is believed that the students' primary need to develop an ability of reading with understanding). Master students of biology (University of Constantine 1) have to submit a dissertation as a partial fulfilment for the requirements of the degree of Master. They are required to write the

abstract of their dissertation in English besides Arabic and French. There may be a shift in the course from teaching linguistic aspects to the teaching of cognitive ones, acquainting students with learning strategies in general reading strategies in particular.

## **1.5. Approaches to Language Description**

### **1.5.1. Register Analysis**

The idea of ‘register analysis’ appeared in the late 1960’s with the work of Strevens (Halliday, McIntoch and Strevens 1964), Ewer (Ewer and Latorre 1969) and Swales (1971). The principle was that the language of each specialism is different from any other one and even from general English (for example, the language of physics is different from that of chemistry). Each language was considered as a specific ‘register’. Hence, the term ‘register’ is used to cover varieties of language. In this approach, lexical items and syntactic units are selected according to their frequency then taught. Widdowson (1984) says that ‘register analysis’ has been defined as being characterisation of texts. He quotes Hallyday, McIntoch and Stevens (1964: 88-9) as writing:

Register differ primarily in form..... The crucial criteria of a given register are to be found in its grammar and its lexis.... It is by their formal properties that registers are defined. If two samples of language activity from what, on non-linguistic grounds, could be considered different situation types show no difference in grammar or lexis, they are assigned to one and the same register...

For Halliday et al, “language varies as its functions vary, it differs in different situations. The name given to a variety of a language distinguished according to use is register”. However, Strevens (1977) posits that register is a variety related to a particular use of the language, a particular subject or occupation. One of the most known materials based on register analysis is the work of Ewer and Latorre (1969) that gives priority to some language

forms such as the present simple, the passive voice and nominal compounds that science students would meet in their studies. The material included in the course has mainly been selected on a frequency basis. Referring to register analysis Ewer and Latorre say:

This basis language is made up of sentence patterns, structural (functional) words and non-structural vocabulary which are common to all scientific disciplines and form essential frame work upon which the special vocabulary of each discipline is super imposed

In the same context, Ewer and Latorre make the point that there is no clearly definable 'English of science' because there are many, often different, sub-registers within science in English. In the field of register analysis, Cheong (1976) also divided register studies into two stages, namely the analysis of lexis based on frequency and the study of syntax.

In the early 1970's, Widdowson (1971) rejected the idea of varieties of English, he took the position that register-based ESP materials can serve only some of the needs for which they are intended. Making a distinction between the usage of language to exemplify linguistic categories dealing with the signification of a linguistic item, and the use of language in the business of social communication which deals with the communicative value, Widdowson (1979) argues that a register approach is concerned only with usage because if we analyse the grammatical and lexical features of samples of scientific English, we are treating those samples as exemplifications of the language system. Moreover, Widdowson characterises traditional register studies of lexis and structure as quantitative and asks for a new qualitative approach which would take into consideration communicative competence and role performance.

Finally, we can say that the registers investigated are those of scientific texts, thus register-based ESP work is mainly associated with EST. However, this approach cannot be used as the main basis for selection because there is not a great difference between the

language of science and any other kind of language. Moreover, it has been noticed that lexis is an area where students find little difficulty.

### **1.5.2. Discourse Analysis**

If register analysis focuses on sentence grammar, discourse analysis goes beyond this giving attention to understanding how sentences are combined in discourse to produce meaning.

Discourse analysis has been applied in many ways, namely:

- To refer to spoken interaction analysed in terms of meaning, organised into a hierarchy using terms such as act, move, exchange, transaction, etc.
- To refer to a stretch of spoken or written language analysed in terms of aspects of sentence connection or cohesion.
- To refer to the analysis of a text into its rhetorical features such as description, classification, definition, comparison, etc..., and to the understanding of how these functions are realised in language and how they are sequenced (Robinson, 1980).

As far as the second point is concerned, Widdowson (1979) proposes the term 'text' as opposed to 'discourse'. He makes a distinction between viewing a stretch of language as an exemplification of the structure of the language, especially of devices to indicate structuring above the level of the sentence (text), and viewing a stretch of language as a unique piece of communication (discourse) (Robinson 1980). As to 'cohesion', Swales (1985) define it as 'usually taken to refer to over structural links between sentences, such as the use of pronouns or sentence connectors'.

In this context, Robinson (1980) quoted Allen and Widdowson (1974) who made the following hypothesis:

We take the view that the difficulties which the students encounter arise not so much from a defective knowledge of the system of English, but

from an unfamiliarity with English use, and that consequently their needs cannot be met by a course which simply provides further practice in the composition of sentences but only by one which develops a knowledge of how sentences are used in the performance of different communicative acts.

That is exactly our feeling as the students we teach do possess knowledge of the system of English acquired during seven years of study, but when they come to use it to communicate they find themselves unable to do it.

On the whole, there is agreement that language learning and teaching must include the use of grammatical forms either written or spoken as the ability to match structures with communicative functions. On the other hand, language depends also on the ability to produce utterances which make sense within a given stretch of discourse, and the ability to interpret the meaning of utterances thus produced by others (Yalden 1987).

In this respect, Widdowson (1978) argues that normal linguistic behaviour, we do not separate utterances, but we use them for the creation of discourse; he writes:

We are generally required to use our knowledge of the language system in order to achieve some kind of communicative purpose; that is to say, we are generally called upon to produce instances of language use. We do not simply manifest the abstract system of the language (as instances of usage), we are at the same time realise it as meaningful communicative behaviour.

### 1.5.3. Description of EST Discourse

The question of discourse in EST has been submitted to a great debate but, we mainly distinguish two different new views, that of Trimble et al (1985) in the USA and that of Widdowson et al (1978: 79) in Great Britain. Both schools deal with reading and writing in science and technology.

Proposing a new approach to reading scientific and technical English, Trimble et al have indentified rhetorical functions and analysing the forms. Hence, scientific discourse for Trimble et al is a variety of discourse that performs some rhetorical functions to which they give great importance; they argue:

The basic rhetorical functions found most commonly in ESP discourse are fundamental elements in the organisation of the presentation of information (fact or hypothesis) and that a clear recognition and understanding of these functions and the grammar and lexis used to present them are necessary to a full comprehension of ESP discourse.

Taking the paragraph as the basic unit of their process, Trimble et al define it as a unit of discourse which presents a selected amount of information on a given topic. Moreover, they divide this paragraph into a 'physical one that refers to the arrangement of sentences on a page' and 'conceptual' one that they define as "a group of organisationally (rhetorical) related concepts which develop a given generalisation in such a way, as to form a coherent and complete unit of discourse" (reference?).

The conceptual paragraph, being the basic unit of discourse in scientific and technical English, it stresses important rhetorical features that Trimble et al divide into:

- Rhetorical functions such as definition, classification, description, instruction, etc.
- Rhetorical techniques used to relate the ides within or between conceptual paragraphs such as causality, comparison, time, order, space, order, analogy, etc.

Furthermore, Trimble et al put special emphasis on the most current rhetorical functions found in EST writing: definition, classification and description. They explain that when either of the modes of classification and definition is explicit most EST students find no difficulty with it, but when information is implicit most EST students find it difficult to grasp (Selinker 1976). Stressing particularly its rhetorical function of description, Trimble subdivides it into:

- A physical description which stresses the physical nature of a device such as shape, weight, volume, colour, etc.
- A function description that gives the general function of the device and stress how the parts of an object work individually or together.
- A process description which stresses the different steps of a process and how each step is linked to the preceding one.

We believe that Trimble et al are right to stress particularly the selected rhetorical functions cited above, and mainly that of description because they are used a lot in texts for biology, as in the following one which gives the definition ‘The pituitary gland’

The pituitary gland controls the other endocrine glands. If the pituitary gland is removed from a young, growth ceases and the animal does not develop sexually. In human, the pituitary gland is only 2 cm in diameter.

Note that the above text illustrates mainly the rhetorical function of definition; it also illustrates that of description. Finally, Trimble speaks about the ‘informational clues’ representing the relationships which represent the information that indicates how the ideas of the paragraph are related one to the other and sometimes to the main idea of the paragraph. These clues may be the key terms which explicitly indicate some rhetorical techniques such as causality, comparison, etc, for example: so that, while, or, by using the device of juxtaposition of ideas that implicitly states the cited rhetorical technique. ‘Informal clues’, in our sense, are

very important for the EST students to know as they find great difficulty in understanding them.

Opposing Trimble et al, Widdowson finds that the operational view, which believes that EST can be characterised and taught as a particular register, and the theoretical one, which holds the view that the effective design of EST programs depends on description of use based on a comprehensive model of discourse, are structurally based and rejects them. He makes two main assumptions. The first assumption deals with the universality of science. He writes:

What I am suggesting, then, is that fields of enquiry in the physical and applied science, as these are generally understood, are defined by their communicative systems, which exists as a kind of cognitive deep structure independently of individual realisation in different languages.

Thus, Widdowson (and other linguists) felt that what was needed for language education was a model of language use that accounted for the main features of the discourse process instead of simply atomising the user's behaviour into components of communicative competence (Yalden, 1987) to quote Widdowson:

The task for theory and description is to devise a model of interpretation which will capture its dynamic and extempore character and show how the static knowledge of rules is converted into communicative activity.

Consequently, Widdowson (1983) proposed his model in which the schema is central. For him, "Schemata can be defined as a cognitive constructs which allow for the organisation of information in long-term memory and which provide a basis for prediction". Hence, schemata can be thought in relation to the propositional content of discourse as frames of reference that would represent the speaker's linguistic competence and in relation to the illocutionary content as rhetorical routines that would



reflect the speaker's communicative competence. Both are established through negotiation because people have to put their schemata into contact with others through the procedures which have to be engaged to set a common frame of reference between interlocutors so that expressions are associated with their required indexical value, and coherence is achieved.

Widdowson's procedures are based on Grice's cooperative principle that provides conditions for the negotiation of agreed meaning through the frames of reference (how the language user draws on the resources available in the language system to relate different propositions) and routines (used to realise how linguistic signs in utterances are indexical or interpersonal schemata). Grice (1975) proposes four maxims:

Quality: makes your contribution as informative as possible. Do not be more informative than required.

Quantity: do not say what you believe to be false. Do not say that for which you lack adequate evidence.

Relation: be relevant.

Manner: Be perspicuous avoid obscurity and ambiguity. Be brief, orderly and polite.

Furthermore, Widdowson argues that what students of science need to know is how English is to realise the discourse of that level of scientific instruction they have arrived at. He assumes that these students have certain knowledge of the communicative systems of science through English or through their own language. He proposes that the non-verbal devices, such as graphs, charts, diagrams, etc, can serve as a point of reference for verbal realisations in the student's own language or in English. Widdowson suggests that it is important to involve students in communicative activity and not just teach them usage. Students need to be given problems to solve through the cognitive processes found in science teaching methodology.

We find Widdowson's idea of 'deep structure' interesting and relevant to us in the sense that most of the work in biology is based on the non-verbal devices of formulae, graphs, charts and diagrams. We think that these devices particularly help these students who have difficulties to express themselves with words either because they have a limited English background or because they are shy. Moreover, we agree that the student's knowledge in their first language, Arabic in our case must be taken into account to help them to acquire the new knowledge in the target situation. We believe that we should build on that knowledge the students bring with them to the class of EST.

## **1.6. Approaches to Course Design**

### **1.6.1. Functional/Notional Approach**

Language is viewed here in terms categories at higher level of abstraction called functions and notions. Functions are categories of social behaviour representing the social purpose of utterances such as e. g describing, advising, defining, threatening, etc. Notions express conceptual meanings such as time, frequency, duration, gender, number, location, quantity, etc. (Wilkins 1977: 21 ff).

These categories are realised in different languages by means of different structures or lexical patterns.

### **1.6.2. Skill-Centred Approach**

The skill-centred approach views ESP from the point of view of the thinking processes (i.e skills and strategies) that underlie language behaviour. The most important contribution to this approach came especially from Grellet (1981) and Nutall (1982).

This approach is based on the belief that the deep processes of interpreting and reasoning for example, are common to all languages and that what makes the difference between languages is only the surface structure. Emphasis should then be on these deep

strategies which enable the learner to guess the meaning from context and to determine types of texts by using visual layout to understand the surface forms and develop the reading skills.

### **1.6.3. Learning-Centred Approach**

Attention here is shifted from language use to language learning and teaching/learning is arranged in terms of learning sequences. Therefore, if we want to teach ESP successfully, we should first investigate what the psychological processes of language are.

This approach also attempts to view programs within the overall learning process by including the learner's motivation, learning style, needs and wants, (Hutchinson and Waters 1987).

Hutchinson and Waters further argue that the language centred approach ignores psychological considerations related to the language acquisition process used by the learner and recommend that these should be incorporated in the syllabus (Hutchinson and Waters 1987).

In sum, in designing a course or syllabus we are not obliged to adhere to one particular approach. Rather, we should give priority to the needs of particular groups of learners and use elements of different approaches (eclectic approach) as long as they are adaptable to those needs. We should give priority to the learner and his specific needs of particular groups of learners and combine between many approaches.

## **1.7. Course Design**

### **1.7.1. Topics and Texts**

One of the problems of course design widely discussed in the literature is an evaluation and selection of materials in the form of topics or texts. McDonough (1984: 75-76) gives the following list of possible sources of texts for ESP; they can be selected:

- From published materials: textbook, journals, magazines.
- From real speech events: lectures, broadcasts, seminars, conversations.

-Specially written materials.

-Simplified and adapted from published materials or instances of real speech.

Strevens (1977: 27) provides a list of criteria for the choice of materials. They need to be:

-Realistic: Capable of being used and learned.

-Relevant: To the particular point in the learner's progress to his aims and age-group.

-Interesting: varied on topics of interest to the learner.

-Encouraging: the learner should feel he is making progress, he is enjoying his learning.

-Compatible with the approach being followed with the teacher's attitude.

Another important criterion is the question of authenticity. Depending on the selected approach, authenticity is more or less needed. There is considerable discussion on this point. Widdowson distinguishes between genuine and authentic texts (cf. 1978: 79-81). Genuine are excerpts from real life discourse and authentic texts are conditioned by the audience to whom they are addressed. Thus, genuine texts are not necessarily authentic, and vice versa. For instance, a specially written text can be considered authentic if it corresponds to the level of proficiency, interests and needs of a given group of learners.

Allen and Widdowson (1978) justify the use of specially written texts, saying that a text should contain all the essential communicative features needed without being esoteric or idiosyncratic in style. Many others insist on authentic materials such as Phillips and Shettlesworth (1978) and Hutchinson and Waters (1980).

### **1.7.2. Skills in ESP**

Materials are also selected according to the skills they should provide practise in depending on the needs (institution and students), different possibilities are offered according to what goals have been previously determined. The materials can be used to:

-Cover all the skills.

-Focus on one skill, the others being subservient to it.

-Focus on one skill and ignore the others.

The majority of ESP materials are more concerned with the overlap of skills and not with their separation. In ESP, the main belief today is that successful teaching of foreign language can rather be accomplished through the integration of the four skills with all skills being taught simultaneously and being importance in terms of the amount of times and effort denoted to them (Ivan and St John, 1999).

A division of skill or a concentration on one macro skill would make the teaching boring and, as it is known, reading is multi faced, i.e. we answer questions through writing or speaking after having heard and read them. To quote McDonough (1984: 71) “.... the majority of ESP materials are more concerned with the integrated overlap of skills and not with their separation”.

### **1.7.3. Text in ESP**

The nature of material used in ESP has always been a sensitive issue and has given rise to extensive discussion by ESP practitioners, educationalists as well as course designers. According to Mc Donough (1984), ESP texts are selected from different sources:

- a) From published materials i.e. text books, journals, magazines and internet.
- b) From real speech events: lectures, broadcast, seminars and conversations.

Stevens (1977) on his part suggests that the materials be relevant to the aims of the learners and to their level of progress, they should also be of varied and motivating topics. Another important criterion widely discussed in the literature of ESP is the authenticity of materials. Widdowson (1978) makes a distinction between genuine (a quality of materials) and, authentic texts (a quality of interactions) said in other terms a genuine texts are excerpts from real life discourse and authentic texts are conditioned by the audience to whom they are addressed. Thus, genuine texts are not necessarily authentic and vice versa. For instance, a

specially written text can be considered authentic if it corresponds to the learner's normal communicative activities, i.e. his interests, his needs and his level of proficiency. What matters most for Widdowson is not whether texts are genuine or not but rather whether they are authentic to the learner's needs and relevant to his interest and above all motivating for him. Widdowson proposes, in relation to the reading skill, that the language must be such that the learner is willing and able to react authentically to it as an instance of discourse.

For Dickinson (1978), an ideal situation, in fact, would involve the learner learning to read genuine text as a piece of real work consider to be a value to for example the learner's employer and may be even doing this in their working environment. This implies degrees of self direction and autonomy. Hutchinson and Waters (1984) are opposed to the use of genuine materials in teaching because they frequently require a high level of specialised knowledge.

### **1.8. Methodology in ESP**

According to Widdowson (1983:85), "methodology has been generally neglected in ESP, the emphasis has been on what ought to be taught on content rather than on how should be taught".

To quote Evans and St John (1999: x), "we stress two aspects of ESP methodology; all ESP teaching should reflect the methodology of the disciplines and the professions it serves"; in more specific ESP teaching the nature of the interaction between the teacher and the learner may be very different from that in a general English class. This is what is meant by specific ESP teaching has its own methodology. A point of strength in ESP methodology is the way in which language learning and subject learning approaches can be integrated.

### **Conclusion**

In this chapter we have seen that ESP has generally been concerned with procedures, and practical outcomes. It has been the vanguard of the development in ELT. It moved from

grammatical, functional and notional syllabi to a more eclectic based approach. EST was the dominant movement for many years, but ESP's spectrum is much broader today as it is embracing more and more new disciplines.

We have also seen under this approach that the focus is on the learners and their specific needs. As for the materials to be exploited in teaching, the ESP practitioner is provided with a wide range of text books either simplified or authentic. Relevance of the materials and methodology will largely be determined by the learning conditions of the ESP context.

## Chapter Two

### Reading and Reading Comprehension

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## **Chapter Two**

### **Reading and Reading Comprehension**

#### **Introduction**

Reading is a very important skill. It helps people to learn and acquire knowledge and experience. It also opens up new worlds and opportunities enabling people to gain new knowledge enjoy literature and doing that are parts of modern life, such as reading newspapers, job listing, instruction manuals, maps and so on.

The focus on reading is a relatively new trend in teaching and is partly linked to the newly grown field of ESP, where as it has been remarked by many linguists, as the most important skill to teach.

Reading has been neglected in the grammar-translation method as well as in the direct method. If we look back at the history of reading, Kelly (1969: 128) points out that “From the renaissance on, it was usually conflated with the art of translation, achieving complete dependence only during the twentieth century”.

Reading was for a long time considered as a passive receptive language skill which requires no more than decoding the written language. Starting from the late sixties, however the understanding of reading has witnessed a revolution against traditional passive views in that it has no longer been considered as a passive language skill, but an active and even and interactive process which involves the use of various types of knowledge from the part of the reader.

The development of reading was mainly due to the invention of printing. Soon, reading has been seen as dealing with two abilities, the first one was interpreting symbols and the second the fluent handling of what was to be read.

## **2.1. Definition of Reading**

Defining reading is a difficult task, this is not only due to the diversity of views and trends in linguistics but also to the complex nature of reading itself; as we can deal with many aspects of reading.

## **2.2. Aspects of Reading**

### **2.2.1. Articulatory Aspect of Reading (The Reading Aloud)**

Carroll asserts that reading “is the activity of reconstructing a reasonable spoken message from a printed text, and making meaning responses to the reconstructed messages that would be made to the spoken messages” (1964: 62; in Allen and Corder, 1975: 157). According to Carroll reading is producing utterances; a best illustration of Carroll’s view is the reading aloud of the holy books. Carroll’s view is still credited in the form of phonemic awareness. The reader can figure out meaning by segregating and connecting sounds. However, it considers reading as an adjunct to oral skills and describes it as being a speech written down, it doesn’t guarantee a complete understanding and it is efficient only in early reading stages.

For Greenwood (1981) reading is a silent activity because the writer’s expectation was that the text would be read not heard. Reading aloud could then simply serve as a pronunciation practice and a foster of the oral fluency. One might ask the question is the reading aloud of Quran a foster of oral fluency or a quest of meaning.

### **2.2.2. Linguistic Aspect of Reading**

Fries (1962) made an essential distinction between the reading process and the thought process, the second one being considered not as part of the reading process itself.

In this case, reading can be described as a linguistic process comprising the deciphering of language, the recognition of vocabulary and syntax, i.e. a reader who knows

the alphabet and the code of a language can read successfully. Unfortunately, this does not necessarily mean that s/he understands what it s/he is reading.

### **2.2.3. Interactive Aspect of Reading**

The reader is no longer seen as a passive individual (as in the audio-lingual method) who reacts to different stimuli automatically, s/he is rather an active and thinking person who interacts with a text to construct meaning (Pennsylvania reading instructional handbook).

Beck and Margaret (2005) are of similar view; they describe reading as a complex process composed of a number of interacting sub-processes and abilities.

### **2.2.4. Mental and Cognitive Aspect of Reading**

For Davis (1995: 1) “Reading is a private mental process, which involves the reader in trying to follow up and respond to a message who is physically absent”. This means that the reader sails alone in an adventure for a search of meaning by deploying a range of strategies such as adjusting the reading speed, skimming, anticipating information to come, and considering titles, pictures, graphs, and so on. Generally these operations, start from sounds, to words, to syntax, to meta-cognition (Carrell and Grabe 2002).

### **2.2.5. Psychological Aspect of Reading**

Reading is a dynamic process in which the reader interacts with the text to construct meaning. Therefore, it is a complex process involving different types of mental activities which consist of:

- Recognising the words we meet in the print which is the first step since no meaning full reading can be done without it;
- Recognising the code, which takes place simultaneously thus, meaning is not conveyed until all the words of phrases of sentences are tied up together.
- Reading also involves psychological capacities such as interpreting the meaning inferring, guessing, etc.

According to Goodman (1988: 13):

Reading is a receptive language process, it is a psycholinguistic process in that it starts with a linguistic surface representation encoded by writer, and ends with meaning which the reader construct. Thus, there is an essential interaction between language and thought, the writer encodes thought as language and the reader decodes language to thought.

Grellet (1984:08) described it as “.... an active skill which involves guessing, predicting, checking and asking oneself questions (schematic knowledge)” by which the reader knows to guess the meaning of a passage and can reach comprehension.

Macmillan (1965) in Mackay and Mountford (1978: 112) gave a more detailed definition of reading:

Reading is not a single skill but a process, comprising a complex set of interrelated skills, these involve:

- 1- Word recognition and the mastery of basic vocabulary and sub-technical or specialised vocabulary as may from time to time be required.
- 2- The ability to see in the material the structures of the sentences, paragraphs, and longer passages that constitute the thought units.
- 3- The intelligence necessary to follow the thought development thus presented and makes any relevant deductions, inferences or critical assessments.
- 4- The ability to concentrate on the reading task

Reading is, therefore, a psycholinguistic process where language interacts with thought.

### **2.2.6. Social Aspect of Reading**

Reading has a social dimension too, since successful reading depends heavily on the cultural background knowledge; this element has gained paramount importance and many linguists and psychologists are devoting it great attention and interest.

For Nuttall (1982:28):

Reading is an interactive process that involves not just process strategies but also background knowledge, and that, for ESL studies, a lack of assumed cultural knowledge may be one important factor affecting their reading comprehension.

Carrell and Eisterhold (1983; in Sandra McKay 1987: 18) also argue the “efficient comprehension require the ability to relate the textual material to one’s own knowledge”.

Widdowson (1978: 63) states that “what happens when we read with understanding is that we actively work out what the discourse means as we go along, predicting what is to come by reference to what has preceded”. Smith (2004) argues that reading is not only reading passages of print; it is also “reading of the world”. This implies that the reader relates new experiences to previous ones.

To sum up, reading is a dynamic process in which the reader interacts with the text meaning. Inherent in constructing meaning is the reader’s ability to activate prior knowledge, use reading strategies and adapt to the reading situation (Marinac et al, 1997:02).

Stevens (1977:) thinks that:

The reader has to bring together vision, hearing memory and imagination in order to discover the meaning interpret it, and perhaps put it into action; and finally the language he has read is assimilated into his total experience thereby affecting in some degree all his subsequent reading.

These features all together constitute reading strategies.

## **2.3. Reading Models**

Reading models were mainly set to describe the way a reader uses to construct meaning from printed texts i.e. these models aim to find out how readers translate prints into meanings. This issue has led to the raise of three main models of reading process: bottom-up model, top-down model and interactive model.

### **2.3.1. Bottom-up Model**

It is a view, which assumes that a reader first decodes graphics symbols into sounds in order to build up a meaning, and a sense of texts. Furthermore, this model refers to view that reading is a process of building letters into words, words into sentences, phrases and then proceeds to the overall meaning.

Some researchers in psychology claim, that this model is described as being “data driven” and these data refer to letters and words, which are written on the page. Among those who stress on this model is Gough (1985) who claims that the bottom-up processing involves a series of steps the reader has to go through i.e., a series that involve moving from one step to another, departing from recognising the key features of every letter and then words, sentences until reaching the meaning of the text. Dechant (1991) in his words sees that the bottom-up models are those models which:

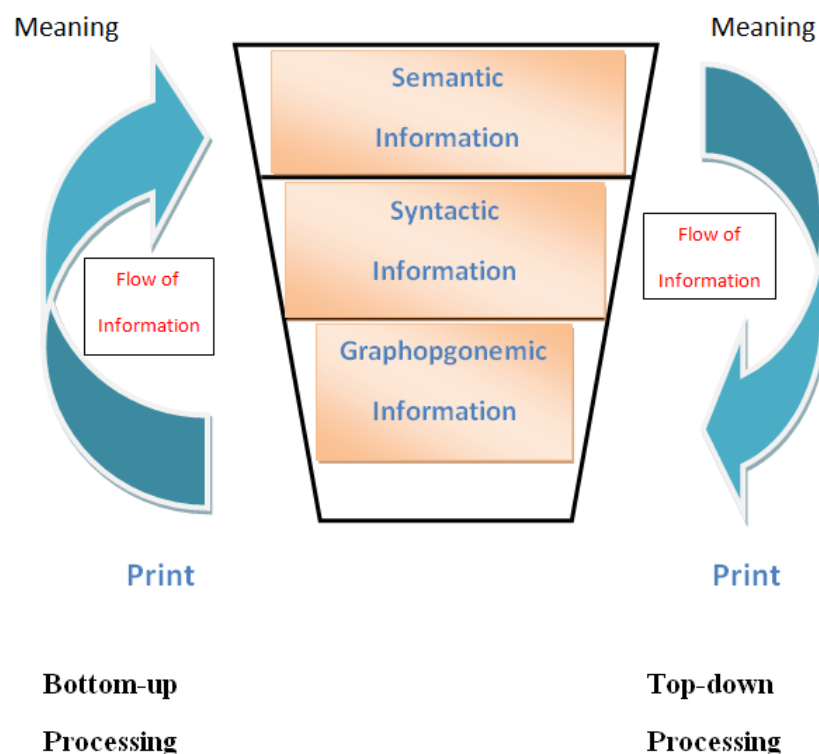
Operate on the principle that that the written text is hierarchically organised (i.e. on the graphophonics, phonemic, syllabic, morphemic, word and sentence levels) and that the reader first process the smallest linguistic unit, gradually compiling the smaller units to decipher and comprehend the higher units (e.g. sentence syntax)

### **2.3.2. Top-down Model**

A view of reading which is generally considered to be top down is that of Goodman “reading is a psycholinguistic guessing game his approach has been most influential in

research on the use of conceptual knowledge inference and background information in the reading process”. There are several interesting features to the top down model. The first is the explicit inclusion of a social element. It operates within a social linguistic context, language is social and it is through language that people mean things to each other. Reading, like all language, operates in a social context that includes readers and writers (Goodman 1988).

Top-down models are described to be ‘concept driven’. That is to say, ideas or concepts in the mind of a reader trigger information processing during reading. In Smith’s words, “the more you already know, the less you need to find out” (Smith 1985: 15). In other words, the more readers know in advance about the topic and the text to be read, the less they need to use graphic information on the page. This kind of processing is used to interpret assumptions and draw inferences. Readers make conscious use of it when they try to see the overall purpose of the text, or get a rough idea of the pattern of the writer’s argument, in order to make a reasonable guess at the text step ( Nutall, 1982).



**Figure 2:** Bottom-up and the Top-down Model Processing



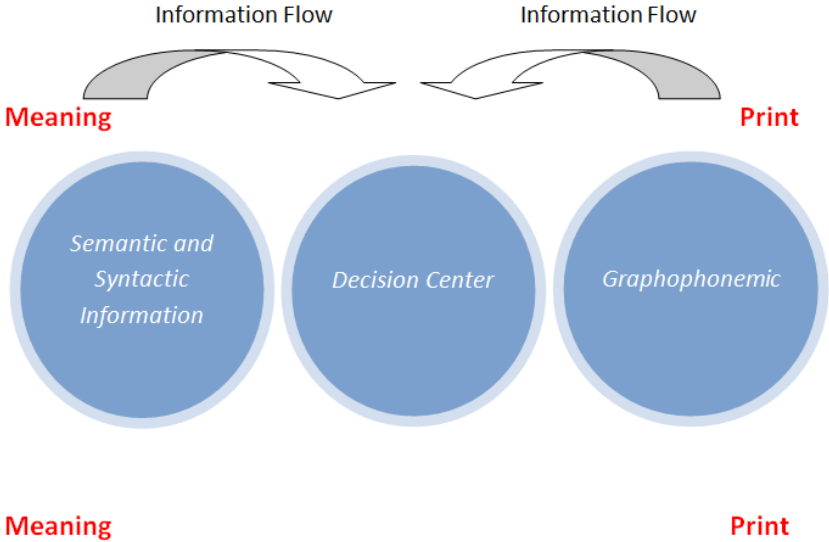
In our ESP context (biology students) readers and writers operate within the scientific discourse community, the context in which the reading is performed being mapped by the readers' purpose which in turn is shaped by the work in hand. A second feature is the degree to which the model is considered to be universal. What the model predicts for English reading must also work for any other language except for consideration of syntax and orthography that can be accommodated by the reading purpose (Goodman 1988).

### **2.3.3. Interactive Model**

The interactive model attempts to make the valid insights of bottom-up and top down models work together. It seeks the account for both of bottom-up and top-down processing. This model suggests that the reading process is initiated by formulating hypotheses about meaning and by decoding letters and words.

Rumelhart (1977) proposes a model in which information from all these sources interacts via various hypothetical constructs to provide a probable interpretation. The interactive compensatory model of Stanovich (1980) broadens the concept of interaction to include top down processing. According to Rumelhart, reading is an interactive process, which includes both perceptual and cognitive process. In other words, this process consists of interaction between a set of variety of orthographic, syntactic lexical, semantic and schematic information, until the meaning is reached. In addition to that, Kamil and Pearson (1979) assert that readers during reading, result passive or active reading depending on the strength of their hypotheses about the meaning of the reading texts, and topics. A key concept is that "a process at any level can compensate for deficiencies at any other level....." thus if there is a deficiency at an early print analysis stage, higher order knowledge structures will attempt to compensate" (Samuels and Kamil 1988 citing Stanovich 1980: 36). These higher order knowledge structures are relied upon for extracting meaning from the texts. This means that if readers bring a great deal of knowledge to the text, their hypotheses will be strong, and that

they will process the text actively. However, passive reading results when readers show a little experience and knowledge to the material. This occurs, because they depend much more on the print itself for information cues.



**Figure 3:** Interactive Model Processing

**2.4. Types of Reading**

A number of skills are practised in order to improve fluency in reading. How to read depends largely on why we are reading and on the level of proficiency of the reader.

**2.4.1. Intensive Reading**

An approximate definition of intensive reading is that it is “to take a text, study it line by line, referring at every moment to our dictionary and our grammar, comparing, analysing, translating, and retaining every expression that it contains” (Day and Bamford, 1998: 05). Most classrooms instructors would define intensive reading as reading carefully and thoroughly for maximum comprehension in which teachers provide direction and help before, sometimes, during and after reading followed by some exercises that require students to work on various types of texts:

- Intensive reading involves a number of language and communicative abilities for a close study of the text, a careful analysis of each sentence including the study of:
  - vocabulary, i.e. checking the meaning of a word in the dictionary, by word analysis, by reference to the context.
  - Syntax: recognition of punctuation clues, of cohesive elements, of connectors between sentences and paragraphs.
  - Discourse: paragraphs analysis: recognition of the topic, the main idea and its supporting details, using all the clues available including cohesion and rhetorical structures.
  - Interpretation of visuals: this is an important activity when dealing with scientific discourse.

#### **2.4.2. Extensive Reading**

Generally extensive reading is practiced for pleasure and by fluent readers in a relaxed manner. It is very useful for promoting the readers' vocabulary stock, automatic word identification and knowledge of the language and the world as a whole (Harmer, 1991).

Day (1993: 19) defined extensive reading in very basic terms; it is:

The teaching of reading through reading... there is no overt focus on teaching reading. Rather, it is assumed that the best way for students to learn to read is by reading a great deal of comprehensible material.

Palmer (1964) described extensive reading as "rapidly reading book after book". Also, he contrasted it explicitly with intensive reading or "to take a text and study it line by line" (cited in Day and Bamford, 1998: 05). The focus here is on the quantity of materials read and an overall meaning with readers' choice and the role in improving their ability of reading.

#### **2.5. Reading Comprehension**

When we talk about the term comprehension in here, we are talking about an important part of the everyday life; this means that one every minute is making sense of his world. According to Mikulecky and Jefferies (2004), "the brain could be compared to very

complicated computer information is constantly coming in about what you see, hear, smell, touch, or taste” (2004: 16). The brain receives all the pieces of information, interprets, sorts and saves them. When our brains notice new information, it will automatically look for connection to that information that we have already in our brains. If it finds connection the new information becomes part of network, in this case, it becomes part of our long-term memory. In the case of unconnected information in the brain, this information is usually forgotten because as we said only connected information becomes part of the long-term memory.

Until recently, however reading comprehension processes were largely a mystery and it is only within the last two decades that the art of reading has been elucidated enough to allow for the development of insightful reading comprehension instructions. Various definitions are yielded to reading comprehension.

Comprehension means building up from words; it is the central both to academic and lifelong learning. According to Snow (2002: 07) reading comprehension is:

The process of simultaneously extracting and constructing meaning through interaction and involvement with written language it consists of three elements: the reader, the text and the activity or purpose for reading.

Comprehension is a process in which readers filter understanding through the lenses of their motivation, knowledge, cognitive abilities and experiences. Effective readers have a purpose for reading, and use their background knowledge and experiences to relate to the text: readers do not comprehend unless they draw connections between what they read and their background knowledge (Tankersley, 2003).

Pang (2003) also describes reading comprehension as an active process a reader makes to construct meaning from a text. This process which consists of using an interaction between a prior knowledge, and drawing inferences from the different words and expressions the

writer uses, in order to comprehend information, ideas and viewpoints. We draw connections between this kind of knowledge when information is important or interesting to us, but on other times, it is not difficult to do this especially if the text we read may seem a mass of information with no meaning that will stick. In this case, the reader can learn how to make sense of things he reads, by selecting some strategies to remember them to be able to talk, or write about what he has already read.

However, a number of linguists believe that the best strategy to teach reading is to teach language first. Among these linguists, Yorio (1971:110) thinks that the reading problems in the foreign language are largely due to imperfect knowledge of the language. Following their researches on reading, Alderson, Basten and Mandreazo (1977:05) suggest that:

...a student's knowledge of the foreign language is more important to the comprehension of foreign language texts than is reading ability in the first language...the best prediction of reading ability in a foreign language was not reading ability in the mother tongue, but rather proficiency in the foreign language.

The implications of Clarke's work (1979) are that there is no direct transfer of ability or strategies across languages, and that foreign language competence is required before transfer can occur. For Coady (1979), "It is obvious that the ESL student is going to be deficient in process strategies which involve substantial knowledge on the target language". Gonzalez and Borgman (1977) are of a similar opinion when they discuss the teaching of reading. It consists of three steps. The first step concentrates on language skills, the second on the inter-sentential relationships, and the third one on reading itself as acquiring information through the reading skills mentioned above, i.e. skimming, scanning, critical reading, etc. In their teaching/learning process, they follow a bottom-up order, moving from elements to

wholes. Widdowson believes in a discourse approach when reading foreign languages. Information is here processed from top to bottom, moving from the functions of language to its systemic elements.

Strictly speaking, in order to be able to interpret a given discourse one should be able to grasp its cognitive, communicative, and linguistic content. Specialists in the field (see Brown and Yule 1983) distinguish two basic ways of discourse processing or models of reading: already mentioned in details above i.e. the top-down and bottom-up models.

a- Top down: this consists of engaging the most general and abstract context first and going down to the linguistic analysis of discourse, i.e. processing discourse from the general to the particular.

b- Bottom-up: This consists of first processing grammatical units and then further engaging higher-level context, i.e. processing from the particular to the general.

Widdowson (1978:63) states that:

Reading as the understanding of discourse does not simply involve the recognition of what words and sentences mean, but also the recognition of the value they take on in association with each other as elements in discourse...what happens when we read with understanding is that we actively work out what the discourse means as we go along, predicting what is to come by reference to what has preceded.

Another strategy, based on language universals, has been advocated by other linguists.

Among them is Jolly (in Alderson and Urquhart 1978:02) who claims that:

Success in reading a foreign language depends crucially upon one's first language reading ability rather than upon the student level of English if this is identifiable ....reading in a foreign language requires the transference of old skills, not the learning of new ones.

This view is shared by Coady (1979) for whom “foreign language is a reading problem and not a language problem”. For Goodman (1973) the reading process is much the same for all languages.

All these linguists agree on the fact that F.L. reading problems come from lack of efficient reading strategies rather from limited knowledge in the foreign language and that readers share language universals especially when dealing with rhetorical structures. These structures are the main constituents of scientific discourse (e.g. our main concern which is biology discourse); we also think that teaching reading should use the previous knowledge of the students and bring attention to the structures they already know from their native language or any other language known before teaching.

## **2.6. Schemata (Schema) One Strategy for Reading Scientific Text**

Widdowson (????) defines it as “..... a cognitive construct, which allows for the organisation of information in a long term memory and which provides a basis for prediction”. This means that within one’s competence, to use a language, one stocks different stereotypic patterns of language use in one’s memory which corresponds to various situations and each one is engaged in a discourse process.

## **2.7. Reading Scientific Texts in ESP**

### **2.7.1. Purpose of Reading**

One of the most important contributions to the approach of reading in ESP was the shift from Text as a Linguistic Object (TALO) to Text as a Vehicle of Information (TAVI) (John and Davis, 1983). These two encapsulated the key principles for ESP learners, extracting information accurately and quickly is more significant than language details that understanding the macro structure comes before the language study, and that application of the information in the text is of paramount importance. The reader first processes language and then links the ideas to what is already known.

### **2.7.2. Balance between Skills and Language**

Another significant contribution to teaching/reading in ESP causes the recognition that good reading requires language and skills. Feld (1977) had shown that less successful foreign language learners had a fragmented approach to text, while successful learners went for overall meaning, guessing or skipping language and information. Alderson (1984) tested several hypotheses about the role of language and skills and showed that poor reading in a foreign language is due in part to poor reading in the L1 together with an inadequate knowledge of the foreign language. He showed that learners need to reach a threshold level of language knowledge before they are able to transfer any L1 skills to their L2 reading tasks.

The reading component of an ESP course thus requires a balance between skills and language development. Some of the key skills to be learnt or transferred into the new language are:

- 1) Selecting what is relevant for the current purpose;
- 2) Using all the features of the context such as headings, layout, typeface;
- 3) Skimming for content and meanings;
- 4) Scanning for specifics;
- 5) Identifying organisational patterns;
- 6) Understanding relations within a sentence and between sentences;
- 7) Using cohesive and discourse markers;
- 8) Predicting, inferring and guessing;
- 9) Identifying main ideas, supporting ideas and examples;
- 10) Processing and evaluating the information during reading;
- 11) Transferring or using the information while or after reading.

Skimming and scanning are useful first stages for determining whether to read a document or which parts to read carefully. Once a document has been identified as



relevant, then ESP readers need to read carefully, extract meaning and consider the author's attitude. Author's attitude is particularly important; it is another misconception that scientific discourse is attitude-free (Dudley Evans and St John, 1998).

### **2.7.3. Designing and Teaching a Reading Course**

Where the balance between skills and language development lies in a reading course depends on the present situation analysis of the learners. The reading material will (i) be used for a given purpose-preferably some application or transfer of information (ii) be designed to encourage the use (or teaching) of good skills; and (iii) have follow-up language work that concentrates on what is transferable (strategies). Before all this, there must be a suitable text to process.

### **Conclusion**

Reading is an important multi-faced skill that has been the object of focus by various linguistic, psychological and social studies, and has gained over the last thirty years a high prestige in teaching.

Reading a cooperative task between a writer and reader via a text, the writer encodes and the reader decodes. The reader activates his prior knowledge to extract and construct meaning from the text that is he links what he knows with the information he finds. That is why some linguists say:

What a reader brings to a text is more than what he gains from it, this is called top-down processing is based on linguistic input is named bottom-up processing. Both processes are instances of strategies among the many (strategies) a proficient a reader has to deploy to achieve comprehension in reading, including ESP reading which are characterized by specific schemata. We also suggested some features for the teaching of reading in ESP, like setting the purpose of reading, creating the balance between

skills and language, designing and teaching reading courses and selecting texts.

## Chapter Three

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## **Chapter Three**

### **Reading Strategies in ESP Context**

#### **Introduction**

This chapter will outline the major reading strategies that are used in ESP context. It will cover the attitude of the main schools of language learning and language teaching towards such strategies.

#### **3.1. Approaches to Language Learning/Teaching and their Relevance in ESP**

According to Waters (1987), "the strategy point for all language teaching should be an understanding of how people learn". But, learning factors have been particularly neglected in ESP. As we saw in chapter one, the emphasis in ESP research and materials has been on language analysis. Learning factors, if considered at all, are incorporated only after the language base has been analyzed and systematized (Mumby 1978, 217). "Language can only be properly understood as a reflection of human thought processes language learning is conditioned by the way which the mind observes, organizes and stores information" (Waters and Hutchinson 1987: 39). The key to successful language learning and teaching lies not in the analysis of the nature language but in understanding the structure and processes of the mind.

For many years language teaching had been teacher centered and was essentially teaching grammar but no coherent theory of learning emerged until psychology was established as a respectable subject of scientific enquiring. We can identify five main strategies of development since then, which are of relevance to the modern language teacher (Littlewood, 1984).

##### **3.1.1. Behaviourist View**

In 1957 Skinner came with the idea that learning was achieved through habit

formation and proceeds by means of the frequent reinforcement of stimulus response sequences. According to Skinner, the native language comprises habits that a second language learner must overcome by forging new habits through repetition, pattern drills and a reinforcement from the part of the teacher who corrects immediately errors to prevent the establishment of bad habits. Translation is not allowed under this theory. Hence the main goal of the behaviourists was over learning which leads to automaticity.

The basic exercise technique of a behaviourist's methodology is pattern practice drills. Such drills are still widely used in ESP, e.g.:

- The liquid was heated when the temperature reached 100 °C the heating was stopped.
- The liquid was heated temperature reached (Donovan, 1978).

Pattern practice exercises may have a useful role to play in modern methodology. But, it must not be seen as the only kind of activity required for learning (Stenich 1982). "Learning is much more complex than just an imitative habit formation" (Waters 1987: 42).

### **3.1.2. Mentalist View**

The first successful assault on the behaviourist theory came from Chomsky (1964). Chomsky rejected the behaviourist belief that language is a habit formation and that the mind is able to transfer what is learnt in one stimulus response sequence to other novel situations. To Chomsky, the behaviourist view could not account for creativity of human beings who could create and comprehend utterances they could not have encountered in the language that was spoken to them. For Chomsky, thinking must be rule governed this means that a finite set of rules enables the mind to deal with the potentially infinite range of experiences it may encounter. Therefore, learning consists not of forming habits but of acquiring rules (Hutchinson and Waters 1987).

Chomsky (1965) made a distinction between 'linguistic competence' which refers to what the speaker knows and to what the linguist should be concerned with and linguistic

'performance' which is what the speaker says or writes and with which the linguist should not be concerned. For Chomsky, 'linguistic competence' means that the rules of grammar are internalized in the head of the speaker and provide the basis for the speaker's understanding of linguistic relations. The mentalist view of the mind as a rule-seeker led naturally to the next important stage. The cognitive theory of learning views the learner as an active processor of information. "Learning and using a rule require to think that is to apply their mental powers in order to distill a workable generative rule from the mass of data presented".

The main teaching technique used in the cognitive approach is the problem solving task that we especially find in ESP courses (Example, Adamson and Bates, 1976).

The cognitive view of learning has had an important impact on ESP, especially concerning the development of reading strategies. Indeed many projects have been elaborated to make students aware of their reading strategies so that they can apply them to understand texts in a foreign language Alderson (1980). Said in other terms, the cognitive theory treats learners as thinking being and puts them in the centre of the learning process. It focuses on the fact that once the matter to be learnt is meaningful to the learners learning will take place.

### **3.1.3. Affective View**

Learners think and interpret things but they also have feelings i.e. they act in a logical and sensible manner. They like a particular part of speech and dislike another they have fears and weaknesses.

"Learning a language is an emotional experience and the feeling that the learning process evokes will have a crucial bearing on the success or failure of the learning" (Staick, 1976)

When the cognitive view states that learners will learn when they actively think about what they are learning, the affective factor of motivation is presupposed. Before learners can actively think about something, they have to want to think about it (Hutchinson and waters,

1987). Hence, the cognitive factor and the affective one are complementary and their relationship determines the success or failure of a language learning experience. This brings us to deal with a factor that was basic to the development of ESP.

Gardener and Lambert (1972), state that there are two types of motivation, instrumental motivation and integrative motivation. Instrumental motivation is the reflection of an external need; the learners are learning a language because they need to. The need may vary, but the motivation is external. Integrative motivation derives from a desire on the part of the learners to be members of the speech community that uses a particular language.

Gardener and Lambert argue that both forms of motivation are probably present in all learners but each exercises a varying influence depending on age, experience and changing occupational or social needs. ESP, as much as any good teaching, needs to be intrinsically motivating, students should get satisfaction from the actual experience of learning, not just from the prospect of eventually using what they have learnt.

#### **3.1.4. Communicative Approach**

The social linguist Hymes (1971) makes a distinction between linguistic competence and communicative competence. The first one refers to unconscious knowledge of language structure of the ideal speaker-listener, and the second, and the second one is the knowledge of how to use language appropriately in given social situation. Moreover, Hymes pointed the way towards the study of notions and functions and insisted on teaching or “use” rather than “usage” in order to develop the learners’ communicative competence. Hymes argues that Chomsky’s competence (in his dichotomy competence/perforce) is not a sufficient basis for communication as it does not provide for language use and performance includes only psychological constrains and ignores all aspects of social interaction.

For Widdowson (1983) two components are involved in a speaker’s competence. These are namely the knowledge of rules of use in particular social situations which deals



with how to recognize and how to use sentences to perform rhetorical acts such as defining, classifying, promising, etc, and the knowledge of the rules of grammar. The first component represent the speaker`s communicative competence and the second one the speaker`s grammatical competence (Mumby 1978).

Savignon (1984) on his part argues that communicative competence has to do with social interaction, with real speaker listener who interpret, express and negotiate meaning in many different settings. How to achieve communicative competence is still submitted to a great discussion. It must be noted that both 'use' and 'usage' are found to be necessary for successful effective communication.

In this respect, Widdowson writes:

Usage is one aspect of performance that aspect which makes evident the extent to which the language user demonstrates his knowledge of linguistic rules. Use is another aspect of performance which makes evident the extent to which the language user demonstrates his ability to use his knowledge of linguistic rules for effective communication (Widdowson 1979: 3)

To sum up how do people learn is not totally uncovered. We still do not know much about it, what happens in the mind of the learner when there is problem e.g. which techniques or behaviours a learner adopts to solve given linguistic problem or to understand the meaning on an unknown word.

### **3.1.5. Learning Centred Approach**

Henri Holec (1981:03) argues that language learners take charge of their learning in all respects, during determining the objectives, defining the content and progressions, selecting methods and techniques to be used, monitoring the procedures (rhythm time, place, etc) and evaluating what has been learned. Teachers can help learners take their responsibility,

according to Holec, but the ultimate responsibility lies with the learners themselves.

Hutchinson and Waters (1987) chose the term learning-centred instead of learner-centred. They argue that in learner-centred approach learners play the role of decision makers i.e. learning is totally determined by the learners. Teachers can influence what they teach, but what learners learn is determined by the learners alone. Learning is conceived a process in which learners what they know and the skills (technique strategies) to understand extract and construct meaning of the novel information and relate it to the precious data “Learning therefore, is an internal process, which is crucially dependent upon the knowledge the learners already have and their ability and motivation to use it”. But learning takes place in a context, it is not just a mental process, it is a process of negotiation between individual and society. In the case of biology ESP decision makers at the University of Constantine have set the target and the concerned individuals have to accomplish their duty to achieve the target. The learner is one factor to consider in the learning process but not the only one (Hutchinson and Waters,1987).

According to Oxford (1991), learners are conditioned by the culture and the educational system to which they belong. Many language students are passive, accustomed as they are to be spoon fed (Knowles, 1976). They like to be assisted and guided by their teachers on every step, and their unique goal is getting good grades. Developing useful skills and strategies is the last thing they think about.

### **3.1.6. Learning and Acquisition (Dichotomy or Continuum?)**

The distinction between learning and acquisition has always been subject to great debate. Learning is conscious knowledge of language rules, does not typically lead to conversational fluency and is derived from formal instruction. Acquisition, on the other hand, occurs unconsciously and spontaneously, does lead to conversational fluency, and arises from naturalistic language use (Krashen,1982). Some specialists even suggest that learning cannot

contribute to acquisition, i.e. that 'conscious' gains in knowledge cannot influence 'subconscious' development of language. However, this distinction seems too rigid. It is likely that learning and acquisition are not mutually exclusive but are rather parts of a potentially integrated range of experience our knowledge about what is conscious and subconscious is too vague for us, to use the (learning-acquisition) distinction reliably (Littlewood,1984, Oxford,1991). Moreover some elements of language use are at first conscious and then become unconscious or automatic through practice. Many language experts believe that both aspects acquisition and learning are necessary for communicative competence. For these reasons, a learning acquisition continuum is more accurate than a dichotomy in describing how language abilities are developed (Brown, 1984).

According to Oxford (1991:04), “Language learning contributes to all parts of the learning acquisition continuum, and it is only for ease of expression that the term learning strategies is used to refer to strategies which enhance any part of the learning acquisition continuum.”

### **3.2. Language Learning Strategies**

The interest in language learning strategies is relatively new it emerged in the research literature twenty years ago. The notion that special learner techniques or strategies might assist second language acquisition and is still at the heart of research, and the suggestion that the “good learner” might be doing something special or different that we could all learn from was first introduced by Rubin (1975) and Stern (1975). This notion refutes the idea that some people just have an “ear” for language or that some individuals are gifted for language learning (Maley and Chamot 1990).

Researchers in the domain try to define learning strategies, how information about learning strategies is stored in memory, how strategies are learned, and why the influence learning in a positive manner, there was also the suggestion that this strategies are not the

preserve of highly capable individuals, that could be learned by others who hadn't discover them on their own (Maley and Chamot 1990). This early work anticipated what cognitive psychologists were realising independently that competent individuals are effective because of special ways of processing information finding from this studies generally indicated that strategy training is effective in improving the performance of students on a wide range of reading comprehension and problem solving tasks (Brown 1983 and Cheapman and Segal 1985).

## **2.1. Definition of Language Learning Strategies**

The Oxford Advanced Learner's Dictionary (2000: 13-36) ascribes the following definition to strategy; "a plan that is intended to achieve a particular purpose". This purpose can be linked to life in general e.g. strategies adopted for attack or defence by force or negotiating diplomatically. In Greek 'strategia' is a general ship of the art of war. Strategy involves the optimal management of troops or air craft in a planned campaign; another related work is tactics which are tools to achieve the success of strategies. "The two expressions share some basic implied characteristics: planning, competition, conscious manipulation and movement towards a goal, many people use these two terms interchangeably" (Von Clausewitz, cited in James 1984:15). The concept of strategy has been borrowed and adopted by educators however it is used peacefully for the noble goals of acquisition of knowledge.

(Rubin 1978:19) was among the first researchers to identify language learning strategies. She states that "strategies are any set of operations, steps, plane routines used by the learners to facilitate the obtaining, storage, retrieval and the use information".

Canale and Swain (1980) proposed a theoretical framework in which communicative competence has three major components:

-The first is grammatical competence or accuracy, which includes vocabulary and pronunciation as well as grammatical structures and word forms.

-The second is socio-linguistic competence, which is made up of socio-cultural rules for using language appropriately and discourse rules for linking parts of a language test coherently and cohesively.

-The third component is strategic competence which is the ability to use strategies like jesters or 'talking around' to compensate for breakdowns in communication to overcome limitations due to insufficient linguistic competence.

O' Malley and Chamot (1990) on their part define learning strategies as the special thoughts and behaviours that individuals use to help them comprehend, learn, or retain new information.

Oxford (1991:08) expanded the previous definitions by writing that "language learning strategies are specific actions taken by the learner to make learning easier, faster, more enjoyable, more self directed, more effective and more transferrable to new situations"

She further clarifies that language learning strategies are tools; they are used because there is a problem to solve, a task to accomplish, an objective to meet, or a goal to attain. Among the goals to achieve is the development of communicative competence.

### **3.2.2. Importance of Language Learning Strategies**

Learning strategies have always been used by people in general and learners in particular for performing varied tasks whether simple or complex, manual or mental, in naturalistic or learning areas.

It is only recently that researchers identified, named and classified language learning strategies. Now and for the first time learning strategies are expending in education powerfully under various names; such as learning skills, learning to learn skills, thinking skills, and problem solving skills. Whatever the names they are given, learning strategies are steps taken by students to enhance their own learning. "Strategies are especially important for language learning because they are tools for active, self directed involvement which is

essential for developing communicative competence” (Oxford1991:01). Learning language strategies are now drawing great number of teachers and educators around workshops, and a thick literature on the subject has been accumulating. Most encouraging of all, increasing numbers of language learners is recognising the importance of their own strategies.

### **3.3. Classification of Strategies**

It is the quest of the characteristics of effective learners that led to the emergence of literature on learning strategies in general learning language in particular. Research efforts based on 'good language learner' had identified strategies reported by students or observed in language learning situations. These strategies proved to contribute effectively to learning, these efforts demonstrated that students do apply learning strategies while learning a second language and that these strategies can be described and classified (Naiman et al 1978, Rubin 1975).

In the past there were several proposes for categorising and classifying categories. Rubin (1975) suggested two categories: a. A first primary category, consisting of strategies that directly affect learning, includes classification, verification, monitoring, memorisation, guessing/inductive reasoning, deductive reasoning and practice. b. A second primary category, consisting of strategies that contribute indirectly to learning, includes creating practice opportunities and using production tricks such as communication strategies. The following table shows Rubin’s categorization along with that of Naiman et al.

Author	Primary Strategy Classification	Representative Secondary Strategies	Representative Examples
<b>Rubin (1981)</b>	Strategies that directly affect	Clarification/verification	Asks for an example of how to use a word expression
		Monitoring	Correct errors in own/other's pronunciation, vocabulary, spelling, grammar, style
		Memorisation	Takes note of new items, pronounces out loud, finds a mnemonic, writes items repeatedly
		Guessing/inductive inference	Guesses meaning from key words, structure, pictures, context, etc...
		Deductive reasoning	Compares native/ other language to target
			Groups words
	Looks for rules of co-occurrence		
	Processes that contribute indirectly to learning	Practice	Experiments with new sounds
			Repeats sentences until pronounced easily
			Listens carefully and tries to imitate
	Creates opportunities for practice	Creates situation with native speaker	
		Initiates conversation with fellow students	
	Spends time in language lab, listening to TV, etc...		

		Production tricks	Uses circumlocutions, synonyms, or cognates
			Uses formulaic interaction
			Contextualises to clarify meaning
<b>Naiman et al. (1978)</b>	Active task approach	Responds positively to learning opportunity or seeks and exploits learning environments	Students acknowledges need for a structured learning environment and takes course prior to immersing him/herself in target language
		Adds related language learning activities to regular classroom program	Reads additional items Listens to tapes
		Practice	Writes down words to memorise Look at speakers' mouth and repeat
	Realisation language as a system	Analyses individual problems	Reads alone to hear sounds
		Makes L1/L2 comparisons	Uses cognates Using what is already known
		Analyses target language to make inferences	Uses rules to generate possibilities
		Makes use of fact that language is a system	Relates new dictionary words to others in same category
	Realisation of language as a means of communication and interaction	Emphasises fluency over accuracy	Does not hesitate to speak Uses circumlocutions



		Seeks communicative situations with L2 Speakers	Communicates whenever possible
			Establishes close personal contact with L2 native speakers
			Writes to pen pals
	Management of affective demands	Finds socio-cultural meanings copes with affective demands in learning	Memorises courtesies and phrases
			Overcomes inhibition to speak
			Is able to laugh at own mistakes
			Is prepared for difficulties
	Monitoring L2 performance	Constantly revises L2 system by testing inferences and asking L2 native speakers for feedback	Generates sentences and looks for reactions
			Looks for ways to improve so as not to repeat mistakes

**Table 1: Classification of Learning Strategies in Second Language Acquisition**

All good learners use the primary strategies according to the interviews of Rubin whereas secondary strategies were used only by some of them. The primary classification includes an active task approach realisation of language as a system, realisation of language as a means of communication and interaction management and monitoring of second language performance. Naiman *et al* referred to this classification as “techniques” for second language which differed from strategies scheme. Naiman’s groups use techniques with specific aspects of language learning:

- Sound acquisition: repeating aloud after a teacher, a native speaker, or a tape.
- Grammar: inferring grammar rules from texts.

- Vocabulary: learning words in context.
- Listening comprehension: listening to the radio, records, TV...
- Learning to talk: not being afraid to make mistakes.
- Learning to write: having pen pals, writing frequently
- Learning to read: reading something everyday

Among the various techniques associated with vocabulary learning Naiman`s group identified those which were used most frequently. This is very significant and reveals that learners in general either have difficulty in identifying what techniques they use to learn or have few strategic processes for doing so (Kupper and Russo).

### **3.3.1. Cognitive Classification**

Many studies have identified the role of cognition and strategic processing in second language acquisition. Bialystok (1978) is one of the theorists who included an articulated cognitive component. She identified four categories of learning strategies in her model: inferencing, monitoring, formal practicing and functional practicing. For Bialystok the type of strategy used by the learner depends on the type of knowledge required for a given task. She further distinguishes three types of knowledge: explicit linguistic knowledge and implicit linguistic knowledge, and general knowledge of the world. She states that inferencing may be used with implicit linguistic knowledge of the world. Monitoring, formal, formal practicing (such as verbal drills) and functional practicing (such as completing a transaction at a store) constitute both the explicit and the implicit linguistic knowledge. In other terms, strategies introduced explicitly in classrooms contribute to implicit linguistic knowledge and, therefore, to students` ability to comprehend and produce spontaneous language.

### **3.3.2. Strategies Viewed by Cognitive Psychology**

Language is a complex cognitive skill that can be described within cognitive psychology (Shuel 1986).

### **3.3.3. Strategy Training**

Cognitive psychology studies focused on the effects of strategy training in second language acquisition on varied tasks and learners. The results obtained revealed the effectiveness of strategy training; the performance of the students improved on a wide range of reading comprehension and problem-solving tasks (Dansereau,1983).

### **3.3.4. Information-Processing Theoretical Model (IPTM)**

The second outcome of psychological studies was the formulation of learning strategies in an (IPTM). This model contains an executive or meta-cognitive function besides an operative or cognitive processing function. (Chipman, Glaser 1985)

The distinction between meta-cognitive and cognitive functions has been described as difficult to circumscribe with precise boundaries (Brown et al 1983).

### **3.3.5. Meta-Cognitive Strategies**

These involve thinking about the learning process, planning or predicting for learning, monitoring or testing of comprehension or production while it is taking place, and self evaluation after the learning activity has been completed. It is thinking about own thoughts. Meta-cognitive knowledge reflect the awareness of one-self as a learner (Paris et al: 1991)

### **3.3.6. Cognitive Strategies**

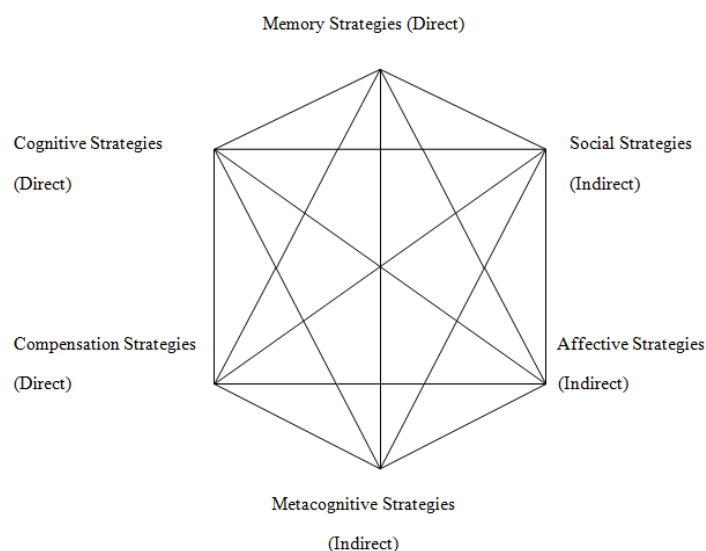
Cognitive strategies are more directly related to the individual learning tasks and require direct manipulation or transformation of the learning materials. In the process of reading, cognitive strategies activate and aid the reader in acquiring, comprehending, storing and using knowledge. The thoughts involved in cognitive activities are referred to as 'mental processes'. Knowledge of conditions is labelled as 'self appraisal'. It designates all that an individual knows, how s/he comes to know it, and why and when this knowledge can be submitted to application.

### 3.3.7. Social Strategies

A third type of learning language strategies are social strategies and their influence in proving learning. The linguistic interaction among learners is very beneficial. It creates a feeling of self confidence and mutual support. Peer interaction e.g: group work or asking for clarification are instances of cooperative learning (Danserau *et al* 1983, Slavin 1980).

### 3.3.8. Affective Strategies

Another type of learning strategy identified in cognitive psychology concerns the affect and its inevitable interference while learning. Affective strategies are represented in the exercise of 'self-talk', the redirecting of negative thoughts, and the regaining of self-confidence, that is one's belief in one's ability to perform or achieve a task. (Danserau *et al.*1983).



**Figure 4:** Interrelationships between Direct and Indirect Strategies and Among the Six Strategy Groups (Oxford 1991)

### 3.4. Features of Language Learning Strategies

All appropriate language learning strategies are directed towards the broad goal of communicative competence whether for spoken or written language, and all four language skills. Communicative competence requires realistic interaction among learners using

meaningful contextualized language. Learning strategies help learners to communicate actively. Such strategies operate in both general and specific ways to encourage the development of communicative competence Oxford (1991).

Some Features of Language Learning Strategies:

- Contribute to the main goal, communicative competence.
- Allow learners to become more self-directed.
- Expend the role of teachers.
- Are problem-oriented.
- Are specific actions taken by the learner`s.
- Involve many aspects of the learner, not just the cognitive.
- Support learning both directly and indirectly.
- Are not always observable.
- Are often conscious.
- Can be thought.
- Are flexible.
- Are influenced by a variety of factors

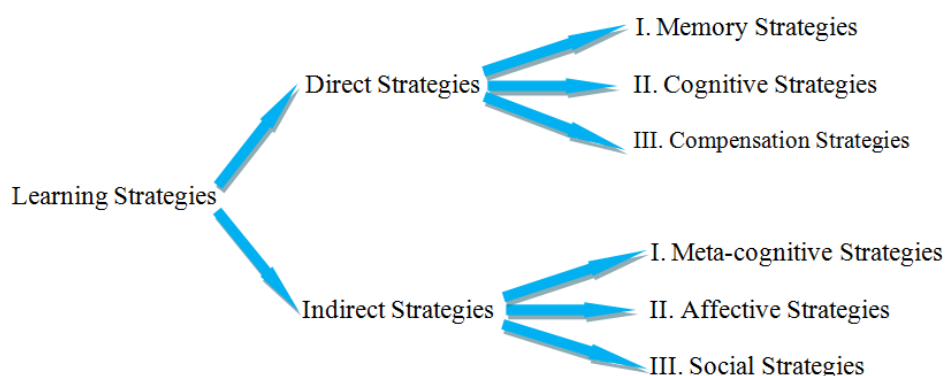
We shall now expose some of these features with strategy action in general and particular.

### **3.4.1. Communicative Competence as a Goal and Strategy Action in General**

For instance:

- Meta-cognitive (beyond the cognitive) strategies help learners to regulate their own cognition
- Affective strategies: Develop self confidence.
- Social strategies: Provide increased interaction.
- Cognitive strategies: Such as analyzing, and particular memory strategies, like
- The key word technique for memorizing.

- Compensation strategies: They help learners overcome limitation in language knowledge.
- Strategy action in specific ways.



**Figure 5:** Diagram of the Strategy System: Overview (Oxford 1991)

As the learners` competence grows, strategies can act in specific ways to foster particular aspects of that competence: grammatical, socio-linguistic, discourse, and strategic elements. For instance, memory strategies, such as visual memory and structured review, and cognitive strategies, such as reasoning deductively and using constructive analysis, strengthen grammatical accuracy. Social Strategies are cooperating with native speakers .and becoming aware of sociolinguistic conventions, sociolinguistic competence. Strategic competence, involve compensation strategies (e.g., Oxford 1991; Rubin 1981; Naiman et al. 1971)

### 3.4.2. Greater Self Direction for Learners

LLS enable learners to take the responsibility of their own learning. Self direction is particularly important for language learners` especially naturalistic environment where the teacher is not present (Dickinson, 1987).

Many adult learners such as immigrants, businessmen or students have to struggle for language survival, and consequently become self directed learners. Learners` self directed learning is a prerequisite for communicative competence achievement, and it is acquired increasingly (Oxford 1991; Wenden, 1983).

### **3.4.3. Expansion of the Role of Teachers**

Traditionally viewed as authorities, instructors and leaders that can lead learners to the desired destinations of learning without involving the learners` effective and responsible for their own learning. With LLS, Teachers roles change; they become more like consultants, advisers or coordinators. New teaching capacities are required. They include identifying learning strategies, conducting training on learning strategies and helping learners become independent (Wenden, 1985; Holec, 1981).

### **3.4.4. Direct and Indirect Support of Learning**

- a) Direct strategies: Involve direct learning and use of the subject matter, in this case a new language.
- b) Indirect strategies: Meta-cognitive, affective, and social strategies are also involved indirectly but powerfully to learning (Oxford, 1991).

### **3.4.5. Level of Consciousness**

Some researchers believe that learning strategies use is always conscious, and it is only after practice, and training that they can become automatic and unconscious. “Learning strategies are intentional on the part of the learner” (Chamot, 1987).

3.4.6. Degree of Observability of LLS

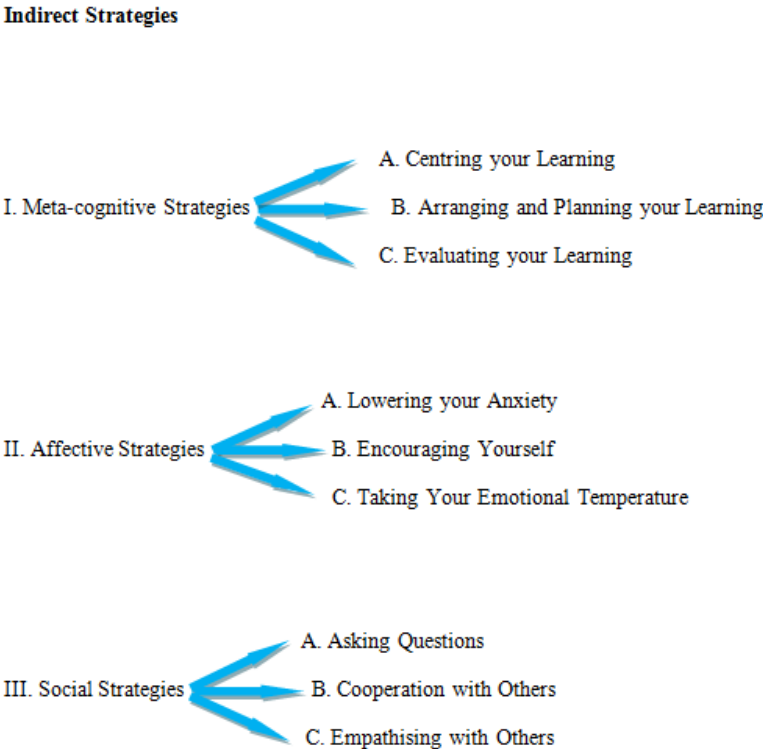
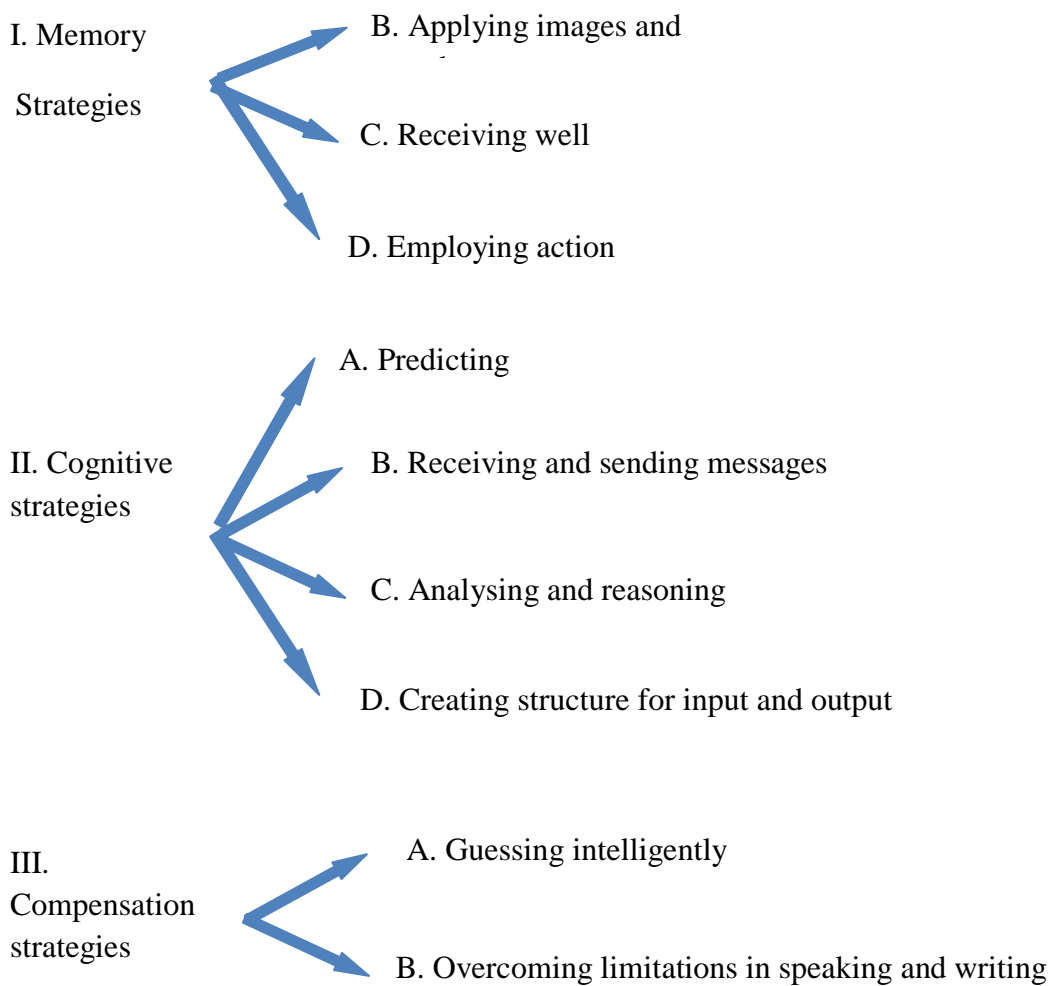


Figure 6: Diagram of the Strategy System Showing Two Classes, Six groups, (Oxford 1991)





**Figure 7:** Cognitive and Compensation Strategies

Not all LLS are readily observable. It is often hard for teachers to know clearly what strategies are being used by their students for different tasks. For details see (reading strategies in ESP part).

### **3.4.7. Teaching Ability**

Strategy training is most effective when students learn to use specific strategies appropriately to achieve teachers` expectations. These features, and other features like flexibility and factors influencing strategy choice, will be discussed in ESP reading strategies.

Oxford's classification (1991) of the strategy system differs in several ways from earlier attempts. It is more comprehensive and detailed; it links individual strategies as well as strategy groups with each of the four language skills, and it uses less technical terminology (see different figures).

Figure 1.1 presents a general overview of the system of LLS. Strategies are divided into two major classes: direct and indirect strategies. These two classes are subdivided into a total of six groups (memory, cognitive, and compensation under the direct class; meta-cognitive, affective, and social under the indirect class). This figure indicates that direct and indirect strategies support each other, and each strategy group is capable of connecting with and assisting every other strategy group.

Figure 1.2 shows a different view of the same strategy system.

To sum up, LLS are actions and behaviours deliberately taken by learners to enhance their learning and make it more profitable and enjoyable. Different classifications have been yielded, but perhaps the most comprehensive and detailed one has been presented by Oxford (1991). However it is of great importance to remember that any current understanding of LLS is necessarily in its infancy, and that all the systems of classifications that have been suggested till now remain just proposals that can be subject to testing through classroom use.

Research in LLS is steadily advancing and no classification can pretend to be completely categorised and demarcated as such. Strategy conflicts in classifying and labelling different strategies are understandable and inevitable, given the early stage of their investigation (Oxford,1990).

### **3.5. Reading Strategies Used in the ESP Context**

We have previously discussed learning language strategies in details yielding different definitions, classifications and categorisations and how they can be applied to all four skills of

language. In this section we shall identify some reading strategies and how we can apply them in the teaching/learning context of biology.

### **3.5.1. Definition of Reading Strategies**

Various views in the area of FL and L2 have defined reading strategies depending on different perspectives. Some base their views on identifying typical reading strategies used by various groups of readers and their different purposes. Others describe them according to the findings they have obtained through theoretical or empirical research. Barnett defines reading strategies as “the mental operations involved when readers purposefully approach a text to move sense of what they used”. In fact, the interest in reading strategies stems in part from an interest in characterising the process of reading rather than the product of reading. Smith (1988) asserts that comprehending is not the end product of reading; it is at the basis of reading.

Reading strategies indicate how readers conceive a task what textual cues they attend to and how they make sense of what they read and what mental processes are involved (cognitive or meta cognitive) when comprehension breaks down (Block,1996). For Mcnamara (2007: 6), “reading strategies refer to the different cognitive and behavioural actions readers use for achieving reading comprehension”. Good readers adopt a variety of strategies that range from getting the idea (previewing, skimming, scanning), fix up strategies (simple rereading of difficult statement) guessing the meaning of unknown words from context to more comprehensive strategies such as summarizing and back ground knowledge. Silberstein (1987) points to the feature of mutual support and combination of strategies; he states “the reader is an active planning decision making individual who coordinates a number of skills and strategies that facilitate comprehension”. Recent classifications included affective and social strategies which are powerfully gaining ground in teaching.

### **3.5.2. Some Reading Strategies**

Olshovsky (1976-1977) was among the first researchers to identify the reading strategies. He listed nine of them: personal identification, use of context, synonym substitution, stated failure to understand a word or a clause, rereading, inference, addition of information, hypothesis and use of information about the story. Olshovsky claims that readers with higher interest and higher level of proficiency used strategies more often than readers with lower interest and lower proficiency.

#### **3.5.2.1. Predicting**

Research on strategy use gave much focus and consideration to predicting. It is regarded as being basic, recursive and mostly omnipresent in the reading process. Readers in general never cease to use prediction throughout their reading materials. Smith (1988) conceives it as the core of reading comprehension because it is central to the top-down model of the reading process as it orientates any reading act.

Prediction or anticipation refers to foreseeing what is to be read ahead. It is a mental activity that requires prior activation of background knowledge or 'knowledge of the world' as Smith (1988) calls it and relating it to the materials found in the text (Greenall and Swan, 1986). In addition to prior knowledge, the title, the introduction list of contents, abstracts of articles, diagrams, tables all together assist readers to using predictive thinking. These features are common in scientific writings. The top-down model stresses the importance of prediction (c f reading models in chapter II). Goodman (1967, 1971, and 1973) brought new insights to reading. His definition of reading attributes paramount importance to prediction. He states “reading is a psycholinguistic game in which the reader contributes as best as he can a message which has been encoded by a writer as a graphic display” (quoted in M. Eskey et al 1974). Readers draw hypotheses about what they are reading and what is coming next; they do not have to read all the sentences and all the words. That is why it is possible for them to

renew their hypotheses if the previous ones are not confirmed. Goodman (1988: 13) explains this in cognitive terms which are that the brain employs four strategies in reading:

**a) Recognition Initiation:** The brain must recognise a graphic display in the visual field as written language and initiates reading.

**b) Prediction:** The brain is always anticipating and predicting as it seeks order and significance in sensory inputs.

**c) Confirmation:** If the brain predicts, it must also seek to verify its prediction. So it monitors to confirm or disconfirm with subsequent input what is expected.

**d) Correction:** The brain processes when it finds inconsistencies or its predictions are disconfirmed.

### **3.5.2.2. Getting the Idea Quickly (Skimming & Scanning)**

This is an important first simple and quick strategy which helps readers predict meaning and exactly what they need or want to understand, and it allows them to disregard the rest or use it as background information only. Two techniques constitute this strategy, and it is appropriately used with informational texts with illustration. The previewing/surveying activity includes reaching the title, the heading and subheading, examining the visual aids such as charts maps, graphs illustrations as well as any words in italics and bold face print. It also requires a quick reading of any introductory and concluding paragraphs by which the reader makes a kind of general survey about the material in hand. Two preliminary strategies are used in this activity; they are namely skimming and scanning.

Skimming and scanning are two specific speed, reading techniques, which enable covering a vast amount of material very rapidly. These are similar in process but different in purpose. 'Quickly looking' over the text or an article is neither skimming nor scanning. Both require specific steps to be followed. Mastering the art of skimming and scanning effectively requires that you use them as frequently as possible.

### **3.5.2.3. Skimming**

Skimming means “glancing rapidly through a text to determine its gist” (Baudoin et al 1997: 70). It involves searching for the main ideas by reading the first and the last paragraphs, nothing other organisational cues such as summaries used by the author. By skimming a particular material a person can decide whether it is relevant to this purpose or not, therefore, s/he can save much of the time which otherwise would have been in reading useless texts or passages (Baudoin et. Al 1997:70).

### **3.5.2.4. Scanning**

When scanning, we only try to locate specific information and often we do not even follow the linearity of the passage to do so. We simply let our eyes wander over the text until we find what we are looking for, whether it is name, a date, or a less specific piece of information (Grellet 1996: 19).

Scanning is a quick unfocused reading where the reader searches for a particular detail such as a name, a date, a number...etc (Wallace, 1980:27). Some researchers advise to follow some steps when scanning a text for a specific bit of information:

- The reader limits the targeted datum clearly, before starting looking for it.
- The reader uses the appropriate source.
- The reader lets his eyes run over the print, skipping all unnecessary words and he stops only at the information needed and picks it up without going beyond.

### **3.5.2.5. Inferring**

Knowing how to make inferences is very important, very valued and indispensable in reading. Inferring requires actively interacting with the words in a sentence, and among sentences (Kristin *et al*, 2009). They suggested that inferring includes such sub-skills as:

- (1) Pronoun reference (knowing what a pronoun in a sentence refers back to)
- (2) Forming hypothesis about what is coming next in the text
- (3) Guessing the meanings of unknown

words or phrases (4) Forming impressions about character motives and behaviours across multiple locations in text (5) Knowing the subtle connections of words as they are used in particular contexts (6) Understanding cause-effect relationships of events mentioned at different times in a text (7) Drawing upon background knowledge in to fill in gaps within a text.

### **3.5.2.6. Guessing Word Meaning**

Early research on training SL learners to use RS was restricted to application with vocabulary tasks (Cohen and Aphec, 1980, 1981). This suggests that unknown words create obstacle to learners, and their comprehension breaks- down totally. Guessing the meaning of unknown words, and memorizing them later have always been overwhelming tasks for students. Guessing the word meaning is never don randomly as “active reading constantly involves guessing, predicting, checking and asking one-self questions” (Grellet, 1984:08).

It is a rather educated strategy based on drawing inferences from the rest of the text rather than looking it up in a dictionary (Smith, 1971).

1- Guessing word meaning from context: it is the words and ideas that surround a particular word or a phrase to help express its meaning.

2- Reducing anxiety when attending difficult words by simply skipping them. The reader while progressing in reading overcomes the obstacle by using anaphoric and cataphoric techniques that are the reader should examine the sentences which surround the vocabulary item for hints that may help him understand what it means. Guessing word meaning from its morphology the reader has to examine the parts forming up the targeted words (roots, stem, affixes) by breaking down affixes from stems (Baudoin et. Al 1997: 09).

### **3.5.2.7. Self-Monitoring**

It refers to the awareness of using strategies when encountering with some written materials. Self-monitoring implies the learners self directing and taking the charge of their

learning especially when the teacher is not around guiding them. This promotes the ability of reading (Kern 1988).

### **3.6. Biology Students and Reading Strategies**

#### **3.6.1. Factors Influencing Strategy Choice**

Many factors affect the choice of strategies, degree of awareness stage of learning, task requirement, teacher expectations, age, sex, nationality, ethnicity, general learning style, personality traits, motivation level and purpose for learning the language. Learners who are more aware and more advanced seem to use better strategies. Older learners may use somewhat different strategies than younger learners. Recent studies indicate that female may use a much wider or at least a very different range of strategies than males for language learning. Nationality and ethnicity influences strategy use. More highly motivated learners use a significantly greater range of appropriate strategies than do less motivated learners. Motivation is related to language learning purpose.

Now we shall describe the teaching/learning situation of ESP Biology and how its components can influence and determine strategy choice, experience and observation as a teacher of ESP at the department of Biology.

#### **3.6.2 Setting a Purpose for Reading**

We can assume that Biology students are highly motivated. They have an urgent need for manipulating English to have access to scientific literature (books and articles) relevant to their subject of research, knowing in advance that they will have to submit a dissertation by the end of the academic year.

Taking this factor into account, we assume that directly or indirectly students will be engaged in reading by deploying a range of strategies (cognitive, meta-cognitive and memory strategies).



### **3.6.3. Nationality and Ethnicity**

Different ethnic groups use different strategies. For instance, Hispanic groups make use of lot of social strategies like doing cooperative work and empathising with others. Social strategies are widely used by Algerian learners in general and Biology students in particular. As an ESP teacher, I had observed many instances of cooperative learning among students: pair work student/student or teacher/student or teacher ESP/ teacher subject specialists. In this last pair work case, some subject specialist teachers know English because they post-graduated in an English speaking country. Students and even teachers (me included) had recourse to them for help and clarification about subject content and sometimes about linguistic features that are properly used in Biology genre. Biology texts require discipline and specific schemata.

#### **3.6.3.1. Strategy Flexibility**

Teachers cannot always predict what strategies their students adopt when performing tasks, and at different stages of learning. There is a great deal of individuality in the ways learners choose combine and sequence strategies. On the other hand, similarity in strategy use is recursive. Learners do combine strategies in a predictable way. For instance “in reading a passage, learners often preview the material by skimming or scanning, then they read it more closely while using guessing and predicting to fill in any gaps” (Oxford, 1991:13).

I observed students using these strategies while reading scientific texts or articles.

#### **3.6.3.2. Learning Conditions**

The teaching/learning time and place are of great importance for an affective education; they will influence both the teacher and learner.

##### **a) Learners and Learning Factors**

Usually the teaching of ESP takes place in amphitheatres that are over-crowded. These areas are in our opinion not suitable at all for teaching languages, neither the teacher nor the

student enjoy or benefit from the course. Besides this, the teacher will feel obliged to direct the teaching due to these negative factors. Therefore, messages are not transmitted adequately and goals are not achieved (noise disturbance, no mutual understanding and no linguistic interaction).

#### **b) Time Factor**

The time allotted to the module of English is ninety minutes per week, which is very meagre for going throughout the outlined syllabus.

All together, these drawbacks negative as they are will give birth to self-monitoring and, the final aim behind teaching language learning strategies is to enable ESP learners to take the responsibility of their learning and to be aware of the use of the reading strategies. Learners take risks and challenges while learning and evaluate themselves.

If learners' self monitoring implies self direction and autonomy in learning, it does not imply auto sufficiency or substituting the teacher. The teacher becomes rather like a consultant, a guide or a maestro that directs the orchestra without playing any instruments. But autonomy and self sufficiency are to be acquired and learned through explicit instruction. Before starting the instructions, let us consolidate our hypotheses with a questionnaire.

#### **Conclusion**

In this chapter we have first exposed some of the major approaches that influenced teaching namely the behaviourist view that sees language as a habit formation, mentalism advocated by Chomsky which sees thinking as rule governed behaviour using the knowledge of the language system in a creative way according to the novel situation, then the cognitive approach that considers the learner as an active processor of information. We also showed how the affective approach takes into consideration the affect of the learners as an element that had been missing in previous approaches.

As for how knowledge about language is acquired or learned, this is no more seen as a contrast, but rather as a continuum. Features of LLS that contribute to the goal of communicative competence were also mentioned. We also defined language learning strategies and exposed their different classification and categorisation according to different researches. Finally, we defined reading strategies and identified those used by Biology students namely skimming, scanning, guessing word meaning and predicting by undertaking a close description and analysis of the ESP setting.

## Chapter Four

### Field Work

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## **Chapter Four**

### **Field Work**

#### **Introduction**

In the light of the theory about reading and reading strategies previously outlined, we shall use a questionnaire to answer the questions asked in the beginning of this research work and test our hypothesis.

#### **4.1. Needs Analysis**

##### **4.1.1. Population**

According to Mc Donough (1984; 39-40), "Information on the students language needs is important in that it helps to establish a relevant course content". The participants in the present study were selected out from the faculty of Biology at University of Constantine 1 during the academic year (2010-2011). The sample consists of 100 Animal Biology master 2 students. 72 are females and 28 males. They belonged to the same group ranging from 22 to 28 and shared approximately the same educational background i.e. they all had studied English for at least 7 years. Some of them study Biology in French and others in Arabic. They were chosen because they were the students taught by the author of this research. She taught them ESP, a module that helps them largely to have access to the scientific information they need for carrying out their research (dissertation for the degree of master). We think that master 2 students are more likely to respond and grasp better because they are very motivated, though we believe that reading strategies should be implemented at third year BA just when the module of English is resumed.

##### **4.1.2. Aims of the Questionnaire**

The questionnaire aims at gathering information about student`s comprehension abilities in English. It also diagnoses the reading strategies used by Master 2 Biology students.

The results obtained will enable us to develop model lessons by using explicit instruction as a method for raising student`s awareness about reading strategies in ESP.

#### **4.1.3. Administration of the Questionnaire**

In a regular class meeting, the researcher administered the questionnaire to the sample population. The questionnaire was written in English and enough time was given to the students for careful reading of the questions. The writer explained to the students what they had to do and stated the purpose of the questionnaire. She drew their attention to the importance of answering as frankly as possible since they were not going to be rated for correct or incorrect responses. All the questionnaires were completed in the presence of the researcher who dealt with the questions one by one with students.

#### **4.1.4. Description of the Questionnaire**

The questionnaire consists of closed and open questions. Closed questions require yes no questions or multiple choice questions. Open questions on the other hand require personal answers. The questionnaire contains 13 questions:

**a) The learner`s Needs in English (Questions 1 to 4):** This part is about the student`s needs in English .Questions 1,2, and 3 are about the four skills (listening, speaking, reading, and writing), but each one presents a different focus (purpose, aptitudes, and gathering of the skills), the other difference between the three questions lies in the order, the presentation of the skills, the aim behind this is to arrive as closely as possible, to the students` basic needs. The idea is that the more aware the student is about his needs, the more likely s/he will select the same skill in each of the three questions. In question 4, the students are asked about their opinion concerning the English documentation related to their speciality. The students being all in Master 2 and were required to submit a dissertation related to their field of study at the end of the year. Part of the literature they have to read is written in English and the students to be able to judge its importance in relation to their field of study.



**b) Reading Habits (Question 5 to 6):** This section is concerned with the reading habits i.e. whether or not the students read in English (question 5) and the contents of what they read (question 6). A student conscious about the necessity of the English language is one who actually reads in English and more specifically reads the specialized literature directly related to his speciality and to the topic of his dissertation.

c) Reading Strategies (Question 7 to 9): This section aims at identifying the different strategies the students follow in order to extract information from a text (question 7) to deal with sentence meaning (question 8), and to understand the unfamiliar words they may encounter while reading (question 9). The three questions offer a wide range of strategies which range from the most general (at the text level) to the least general (at the word level) the students have to opt for.

d) Reading Comprehension Problems (Questions 10 to 12): This section assesses information about the degree of difficulty with which the students read in English in general (question 10), whether they have difficulties of understanding in their field of study (question 11), and the areas in which they face problems when they read (question 12). In question 12, the students offered several specific language areas where they could meet problems, and they had to locate the one they have problems in.

e) Knowledge and Use of Reading Strategies (Question 13 to 14): This section is concerned with the knowledge and use of reading strategies by Biology students; the reason behind asking question 13 is to know if students have an idea about what the reading strategies are, and how often, if ever, they adopt some of them when comprehension breaks down (question 14).

Part One (For what specific purposes do you need English?)

-Question one: For what specific purposes do you need English?

a. Understanding lectures on Biology English

- b. Taking part in oral discussion in English
- c. Answers to examinations questions in English

The following represents the results obtained:

<b>Answer</b>	<b>Total</b>
a	23
b	08
c	65
d	02
No answer	02
	100

**Table 2: Learning Needs in English**

As could be seen from table one, 65 students answered that their specific needs in English is “reading books of Biology in English “ (c) the second major purpose is “ understanding lectures on Biology in English (a) which obtained 23 answers , followed with eight answers for taking part in oral discussion in English “. “d” the fourth alternative “writing answers to examination questions” obtained 02 answers only. This shows that reading is the skill students need most.

-Question two: what are the aptitudes in English you think are most useful to you?

- a. To read and understand
- b. To listen and understand
- c. To speak
- d. To write

Answer	Total
a	81
b	07
c	09
d	02
No answer	01
	100

**Table 3: Aptitudes Needs in English**

Here 81 students said that the aptitude they need most in English is “to read and understand” (a) followed with 09 answers for “speaking” (c), 07 answers for “listening and understanding” (b), and 02 answers for writing (d) once more, reading has been felt the most required aptitude needed.

**-Question three:** Grade the following skill from the most important to the least important.

a) Speaking b) Listening c) Reading d) Writing

Answers	Total
a	07
b	23
c	58
d	07
No answer	05
	100

**Table 4: Students’ Grading of the Four Skills**

With the 58 answers obtained the reading skill is in the first position, then comes the listening skill with 23 answers, in the third position, we have both the speaking and writings skills with 07 answers each.

Since the three questions of this section are centred around the same idea i.e. the most important skill needed by biology students, a comparison needs to be made between the results obtained in these questions. In question 1, 65% which is the highest percentage is given to the reading skill, in question 2, 81% was obtained by the reading skill and in question 3, 58% of the students graded reading in the first position in relation to the rest of the skills.

<b>Answers</b>	<b>Highest %</b>
Reading is the Most important Skill	58%
To Read and Understand	81%
Reading Books of Biology in English	65%

**Table 5: Reading Skill**

Two conclusions need to be made here. The first one is that the results obtained in the three questions seem to validate the view that the skill the ESP students mostly required is reading. The second one is related to some contradicting answers given by some of the students (54% who opted for one skill in question 1), another skill in question 2 and a third different skill in question 3. It seems that these students are not aware about their real needs, or they are giving answers by chance. A third possibility is that all the skills are necessary for them.

**-Question Four:** What is the degree of importance of English references to your dissertation for the degree of Master?

a- Vital b- Very important c- Of little importance

The results obtained show that English references are a very important part of their bibliography; the following table summarizes this importance of English references for the dissertation of the degree of Master.

<b>Answers</b>	<b>Total</b>
a	26
b	67
c	06
No Answers	01
	100

**Table 6: Importance of English References**

The quasi-totality of the students (93) considers English references to be vital (a) and very important (b). This is an indication of the importance of the reading skill.

## **Section 2: Reading Habits**

**-Question five:**

**Do you read in English?**

-Yes

-no

The majority of the students (52) answered that they read in English; 47 answered that they do not read and 1 student did not answer. This confirms the response for question 3 where 98 students said that English is necessary for them. This is an indication that

the English language is a vehicle by means of which the students get access to the information they require in their studies.

**Question six:**

If the answer is yes, what do you read?

(a) Basic texts (b) Professional journals (c) Theses, dissertations (d) Others, please specific

<b>Answers</b>	<b>Total</b>
a	35
b	06
c	06
d	02
No Answer	03
	52

**Table 7: Reading Material**

As can be seen from the results, the majority of the students read materials which are directly linked to their specific needs (basic texts) (a) books of science in general, animal biology, genetics, this explains their need to read in English either for their present studies or future research.

**Section 3: Reading Strategies**

**-Question seven: While reading, which of the following ways do you adopt in order to get information?**

(a) Read the whole text to get a general idea. (b) Go quickly throughout the text to get the information needed. (c) Read the introduction and the conclusion only. (d) Try to understand the text relying on schemes, graphs, and pictures. (e) Use previous information having some relation with your text. (f) See a colleague to give you an explanation. (g) Others, please specify.

<b>Answers</b>	<b>Total</b>
a	34
b	10
c	02
d	24
e	19
f	08
No answer	03
	100

**Table 8: Reading Procedure**

The procedure the students said they most frequently follow when they read is as follows:

- 1/ “Read the whole text to yet a general idea” (a) 34 students.
- 2/ “Understand the text relying on schemes, graphs, and pictures” (d) 24 students.
- 3/ “Use previous information having some relation with your text” (e) 19 students.
- 4/ “Go quickly throughout the text to get the information needed” (b) 10 students.
- 5/ “See a colleague to give you an explanation” (f) 8 students.
- 6/ “ the introduction and the conclusion only” (c) 25 students.

The results seen quite revealing as far as the process used by this group of ESP students; most students use these types of information for the understanding of the written text which are:

- 1/ Skimming and scanning
- 2/ Relying on the visual information offered by schemes graphs and pictures.
- 3/ Using previous information or prior knowledge i. e prediction (top down model).

The results are also helpful for modelling and monitoring lessons that will help ESP students to be aware about the appropriate use of the different reading strategies.

**-Question Eight:** Which of the following ways do you adopt to get the meaning of a sentence?

- (a) Read the sentence many times until you understand it.
- (b) Relate the sentence to previous ones.
- (c) Deal with the sentence word by word.
- (d) Others, please specify.

The results obtained are represented in the following table:

<b>Answers</b>	<b>Total</b>
a	37
b	13
c	42
No answers	08
	100

**Table 9: Reading Ways**

**-Question nine: To get the meaning of a word, which of these following ways do you adopt?**

- (a) Try to guess its meaning from the context.
- (b) Look it up in a dictionary
- (c) Translate it into Arabic or French.
- (d) Others, please specify.

Here are the results obtained for this question:



Answers	Total
a	17
b	40
c	41
No answer	02
	100

**Table 10: Strategies for Word Meaning**

Considering the results of this question, one notices that strategies (c) “Translate it into Arabic or French” and (b) “Look it up in a dictionary” are almost equally used by the students; no students favour to look up the meaning of the difficult word in a dictionary, whereas n1 students translate it into Arabic or French.

The results of the three questions (Q7/Q8/Q9) when related to one another reveal that when reading the students (34) read the whole text to yet a general idea, then if they encounter difficulties in understanding sentences, they (42) would deal with them word by word. For the unfamiliar words which they are likely to encounter, they would favour to translate them into Arabic or French.

	To read the whole text to get a general idea	Deal with the sentence word by word	To translate the word into Arabic or French
Highest %	34%	42%	40%

**Table 11: Reading Strategies**

#### **Section four: Reading Comprehension Problems**

##### **-Question Ten: How to read in English?**

a) Fluently b) With little difficulty c) With some difficulty d) With great difficulty

<b>Answers</b>	<b>Total</b>
a	03
b	25
c	50
d	21
No answer	01
	100

**Table 12: Reading Abilities**

The results of this question are quite interesting. They are an indication of the level of the students which we believe to be “intermediate” levels for the 50 students who said that they read with some difficulty (c). As for the quarter of the students who said that they read with “little difficulty” (b), one might refer to them as having a “pre- advanced” level, concerning the important number of students (21) who read with “great difficulty” (d), they might be considered “low” level students. Finally the three students who claimed that they read “fluently” can be considered “advanced” so, one might notice, as expected the heterogeneity in the level of the students in English.

**-Question 11: do you have difficulties in understanding the text in English in your field**

This question relates to the student`s reading abilities in English in their specific field of study. The 87 students answered positively, 12 students answered negatively and one student did not give any answer. This shows that the students face problems when they read in English in their field of study. A careful analysis of these problems needs then to be made in order to help them overcome these difficulties.

-Question Twelve: If the answer is yes, do you think that your problems are due to;

- a) Vocabulary
- b) Grammatical structure
- c) Paragraph organisation

d) Methods of teaching

e) Other please specify

The following answers were gathered:

Answers	Total
a	48
b	10
c	18
d	19
No answer	01
	100

**Table 13: Areas of Difficulty**

The difficulty, as might be noticed from the above table, has to do essentially with vocabulary; 48 students said that they struggle in order to find out the meaning of “unknown words” that is why they have recourse to the dictionary (a) 19 students think that their reading problem are due to the defectiveness of the “teaching methods” (d).18 students believe that the difficulty lies basically in “the paragraph organisation” (c) . For the 10 remaining students, the problem is rather related to the difficulty of the understanding “the grammatical structure” of the English language”.

**-Question thirteen: to overcome your reading difficulties do you make use of reading strategies?**

98 answered negatively. The majority of the students have no idea about reading strategies. Only 2 students answered positively. One student said that before reading a scientific print, he first looks at the layout (diagrams and graphs of the document). The second student replied that he reads the introduction and the conclusion of the scientific article then have a quick glance at the text.

This question reveals that the majority of students have no idea about reading strategies.

#### **4.1.5. Discussion of the Findings**

In chapter three we have described the teaching/learning situation at the Faculty of Biology as chaotic, low time density, large population, inconvenient areas for teaching a foreign language, an absence of programs, and no trained teaching staff in ESP. In addition to that the module of English is resumed in the third year BA after two years break. All together these drawbacks will definitely influence the teaching/learning situation in a number of ways.

On the one hand the above drawbacks will direct somehow Biology student in the choice of techniques or strategies when reading scientific text. In fact ESP students do not display a high awareness about RS strategies. The notion of strategy is rather vague to them. Nevertheless they describe what actions they adopt to overcome their reading problems. When reading a text the majority of learners report to proceed by reading the whole text to get a general idea instead of previewing it by using the strategy of skimming and then that of scanning (cf chapter three).

Students also report to use previous knowledge having relation with the passage in hand unconsciously. This is a top down reading or prediction. Graphs, diagrams and pictures are also features that help students predict what text is about.

When encountering difficult words (non technical words) which impede reading comprehension, Biology students rarely deploy any strategies to guess word meaning from context and word analysis by breaking the affixes surrounding the words to see clearly the stems. Affixes generally hinder the stems and confuse the learners. Students rely heavily on the dictionary the “paracetamol” for finding the meaning of the targeted words either in Arabic or French.

Cooperative strategies i.e. peer work, are also used to this end. (cf chapter 3: social strategies). Asking another person about the meaning of an unknown word or for clarifying a difficult point are common techniques adopted by learners in general to overcome their reading difficulties.

These behaviours, Biology students have recourse to, are not so negative as might be thought by some educators and teachers, they are rather constructive actions adopted by the Biology students for “language survival” or rather “scientific survival”. “It is no longer sinful to use the student’s native or second language as a resource” (Betcher, 1988).

It is the duty of the instructors to raise the learners’ awareness about the effective use of other strategies that will assist them better in becoming more self directed and autonomous readers, knowing that their exposure to the English language is very limited.

On the other hand the teaching/learning drawbacks of the ESP context will urge the teacher to opt for new directions in teaching. The researcher in here is reporting her own experience and observations as she was the only ESP teacher when she carried out her research. Having a great interest in ESP she has always attempted to apply the ESP principles in her teaching (c f chapter one), but she realised in the long run (after having taught English to Biology students for five years) that the ESP principles would not fulfil on their own all the teaching assignments, that is the development of the reading skill in ESP. Therefore, other elements among those constituting the reading act (text and task) should be focused. These elements are the reading strategies.

The behaviours adopted by the readers when they “short circuit” while reading (Goodman 1988) have become central to linguistic and psychological studies. “Language is a complex cognitive skill that can be described within cognitive psychology” (O’Malley and Chamot, 1990).

In view of the previous considerations of the teaching/learning constraints and the findings of the questionnaire, some conclusions are possible to be drawn:

- ESP students rely on outside sources other than their own abilities, e. g: consulting the dictionary, a peer, the internet, or translating “these are omnipresent survival strategies”.
- The majority of the informants are unaware about the use of RS and how they can assist them in improving their reading comprehension.
- Comprehension strategies like guessing word meaning from contextual and or morphological clues, skimming and scanning are not deployed properly by many students. This implies that they need some training in how to use them. Concerning the predicting strategies, ESP students put it somehow into action by relying on the lay out (pictures and diagrams).
- To improve the teaching/learning situation at the department of Biology, the teaching of reading strategies should be implemented in the ESP program. Therefore, a strategy training course is anticipated comprising strategy training in skimming and scanning, guessing word meaning.
- There is a mutual support of strategies: a large overlap mutually exists among the strategy groups. For instance, the meta-cognitive category helps students regulate their own cognition by assessing how they are learning and by planning for future language tasks, but meta-cognitive self assessment and planning often require reasoning, which is itself a cognitive strategy. Likewise, the compensation strategy of guessing, clearly used to make up for missing knowledge, also requires reasoning (which explains why some specialists call guessing a cognitive strategy) as well as involving social cultural sensitivity typically gained through social strategies Oxford (1990).

- Besides using “survival strategies”, ESP students will be trained to deploy the following strategies;
  - Skimming and scanning properly.
  - Guessing intelligently word meaning.
  - Predicting.

## **4.2. An Outline for Strategy Training**

### **4.2.1. Need of Strategy Training**

Learners need to learn how to learn, and teachers need to learn how to facilitate the process. Learning is part of human condition, conscious skill in self directed learning and in strategy use must be sharpened through training (Holec,1981). Strategy training is necessary in second and foreign languages. It requires active self direction on the part of the learners. Otherwise, they will not reach an acceptable level of communicative competence.

Research has shown that learners who receive strategy training generally learn better than those who do not, and that certain techniques for such training are more beneficial than others (Wenden, 1987).

The goals behind such training are to help make language learning more meaningful, to encourage a collaborative spirit between learners and teacher to learn about options for language learning and to learn and practice strategies that facilitate self reliance (Oxford, 1986). The strategy training should be highly practical and useful to students.

### **4.2.2. Scope of Strategy Training**

Besides teaching LLS, strategy training takes into consideration the beliefs and feeling about taking on more responsibility and about the role change implied by the use of learning strategies. Unless learners alter some of their old beliefs about learning, they will not be able to take advantage of the strategies they acquire in strategy training (Wenden,1987).

In addition, strategy training can include some kinds of language functions used inside and outside the classroom, the importance of group work, individual efforts in language learning, learning versus acquisition and ways in which language learning differs from learning other subjects (Crookall,1983).

#### **4.2.3. Learners and the Time Available**

The initial step in the training programs is to consider the needs of the learners and determine the amount of time necessary for the activity.

Factors such as: who the learners are, what their levels in language proficiency are, what their strengths and weaknesses are, how much time is available for strategy training... Whether the teacher is pressed or not for time... In our case of study, the ESP Master II Biology students need to develop aptitudes in reading scientific texts in English within a limited time scheduled for that purpose.

#### **4.2.4. Selection of Strategies**

If strong biases exist, the teacher might need to choose strategies that do not completely contradict what the learners are already doing. The new strategies should be introduced gradually. They should be diverse, supporting each other, beneficial to most learners and transferable to a variety of language situation and task (Oxford, 1991:205).

In our case of study, we shall build on what Biology students are already using of strategies that is translating cooperative learning strategies... and introduce new strategies like skimming and scanning, guessing word meaning. These new strategies require self reliance and engage ESP students in directing learning.

In fact, teachers have to think of the training process not just as teaching meta-cognitive or cognitive strategies. Strategy training should be conceived as a whole where all kinds of strategies are important.



A combination approach to training might be the most suitable solution: the teacher presents many strategies and strategy groups (broad focus), and learners are asked to rate subjectively the use of different strategies of strategy groups. Then, given these ratings, specific strategies are selected for more focused training (narrow focus) (Dansereau, 1985). This approach to strategy training gives the learner a “big picture” at first, and then moves into specific strategies.

#### **4.2.5. One Time Strategy Training Versus Long term Strategy Training**

Here a number of strategies are practiced with actual language tasks, usually those found in language learning programs. One time strategy training provides the learner with information on the value of the strategy, when it can be used, how to use it and how to evaluate the success of the strategy. One time training is appropriate for learners who have a need of particular targeted strategies that can be taught in one or just few sessions. However, long term training is more beneficial as it is more prolonged and includes a greater number of strategies (Oxford, 1991:203).

#### **4.2.6. Strategy Training and Motivation**

When outlining a training program, we have to take into consideration the learner's motivation. The learners may be motivated to learn strategies for the sake of becoming effective learners or and we will decide to give grades or partial course credit for attainment of new strategies. A combination of both motivations will work. Another way to increase motivation is to involve students in selecting the language activities or tasks they will use, or to let them choose the strategies they will learn.

The instructor has also to consider learning styles that is if learners are brought up or their lives to prefer particular learning strategies, like analyzing grammar, text study (text study is very common in language learning at all levels of education in Algeria), or

memorizing world list. The instructor will have to introduce gradually and gently the desired strategies so as to avoid their reluctance (Jones *and al*, 1987:57).

Paris agrees that informed training in the use of strategies is not sufficient, but that motivational training component needs to be added to learning strategy instructional programs. He identifies the following four instructional techniques that lend themselves to the integration of motivational and cognitive strategy instruction:

- . Modelling: in which the expert (the teacher) demonstrates to the novice (the students) how to use the strategy, often by thinking aloud about the goals and mental processes involved
- . Direct Explanation: in which the teacher provides a persuasive rationale and benefits expected from use of strategies, so that students become convinced of their own potential success.
- . Scaffolding instruction: in which the teacher provides temporary support to students as they try out the new strategies (e.g., as in reciprocal teaching).
- . Cooperative learning: in which heterogeneous student teams work together to solve a problem or complete a task. (Paris, 1988; in O'malley and Chamot 1990:61)

#### **4.2.7. Materials and Activities**

The material used for instruction will double well for strategy training. In addition the teacher might develop some hand outs on when and how to use the targeted strategies. He might even develop a handbook for learners to use at home and in class. Better yet the learners can develop a strategy hand book themselves under the guidance of their teacher; they can construct incrementally, as they learn new strategies that prove successful for them. The material and language activities should be interesting and motivating to the learners. In the case of our ESP Biology students, the material should be related to their specialism, the activities should be easy to perform and go through and not much time consuming (given the limited time of teaching). Students should be involved in the choice of the materials and

language activities. This will create a good interaction between teachers and learners O'Malley and Chamot (1988).

#### **4.2.8. Informing the Trainees**

The learners must be made aware and informed as completely as possible about the importance of the reading strategies, and how they can be used in new situations. Research has shown that strategy training which fully informs the learner (by indicating why the strategy is useful, how it can be transferred to tasks, and how learners can evaluate the success of the strategy) is more successful than training that does not (Pressley *and al*, 1998:46).

#### **4.2.9. Model for Strategy Training**

. First students try a language task without any training in the target strategy, and then they comment on the strategies spontaneously used to the task.

. Second the teacher explains and demonstrates the new strategy via think aloud explanation. Then he builds on what the learners said they were doing in the first step and show how they might either improve use of their current strategies or employ an entirely new strategy. This is called the guided practice.

. Third, learners apply the new strategy to the same language task as before, or a similar one depending on the nature of the strategy, it is possible to get pairs of learners to work together to practise the strategy, with one student, using the strategy and the other prompting; then they change roles (Dancereau, 1985).

#### **4.2.10. Evaluating Strategy Training**

Discussion of the strategy use or the interaction between the learners and the teacher are part of the training it -self. These self assessments provide practice with the strategies of self monitoring and self evaluating, and they offer meaningful data to the teacher. The instructor's observations, during and after the training, are useful for evaluating the success of strategy training. Possible criteria for evaluating training are task improvement, general skill

improvement, maintenance of the new strategy over time, transfer of strategy to other relevant task, and improvement in learner's attitudes (Underwood,1985).

#### **4.2.11. Strategy Training Feedback**

Evaluation suggests revisions of the materials on the part of the teacher, and more practice of the strategy task where students have failed or did not grasp well the strategy implementation "Error is a good aspect of learning". This leads us to a reconsideration of the characteristics and needs of the learners in light of the cycle of strategy training. But it is not necessary to start from scratch with each step (Oxford 1991, Dickon and al, 1998:329).

#### **4.2.12. Reading Strategies Instruction in ESP**

Knowledge of strategies is important because the greater awareness the learner has of what he is doing, and then learning will be more effective.

Instruction in LLS raised a great debate about the ways instruction should be injected to learners. Some researchers argue that instruction should focus only on learning strategy instruction. Others think that it should be integrated in classroom instruction in the language or content.

#### **4.2.13. Advocates of Separate Training Programs**

Claim that strategies are generally able to many contexts (Danny and Murphy 1986, Jones et al 1987). According to this view students will learn strategies better when they focus all their attention on developing strategic processing skills rather than to try to content at the same time (Jones et al. 1987).

#### **4.2.14. Advocates of Integrated Strategy Programs**

They think that learning in context is more effective than learning separates skills. The regard application of skills is not always evident to the learners (Wendon1987). More over practicing strategies on authentic academic and language tasks facilitates the transfer of

strategies to similar tasks encountered in other classes (Campione and Armbruster 1985, Chamot and Omalley 1987).

Other researchers are for developing and implementing both separate and integrated instruction in LLS (Weinstein and Underwood 1985). The separate training is a special university course designed for teaching student how to learn strategies effectively. Practice of these strategies is applied to student`s other courses, the integrated training on the other hand focused on teaching content teachers how to include learning strategy instruction into their regular classrooms.

These conflicting views about separate and integrated instruction raised another question should the instruction be director embedded?

**a) Direct Instruction**

Students are made conscious about the value and purpose of strategy use.

**b) Embedded Instruction**

Under this method students are not informed about the reasons of the kind of approach being learning. They are rather proceeded with tasks and materials designed to elicit the strategies being taught.

Strategy training using the embedded approach showed a little transfer of training to new tasks (Brown and Baker, 1986). However, research has proved (Wenden, 1987) that students who are not aware of the strategies they are using do not develop independent learning strategies and will probably not become autonomous learners (Wenden, 1987). Therefore, most of researchers recommend that instruction in learning strategies should be better direct (Danny and Murphy 1986).

**4.2.15. Explicit Strategy Instruction**

Refers to the instruction of reading strategies in an explicit way .According to (Beckman 2002) every teacher is involved to describe to the learner the strategy and its

purpose, of modelling its use and explains how to perform it, giving feedback, promoting the students` ability to use the strategy and encouraging the continuity of its use in different situation.

### **4.3. An overall Strategy Training Course to ESP Students**

Before conducting any strategy training, the teacher first familiarises the learners with the concept of strategy use (in general and in particular) and how the knowledge of strategies can promote reading comprehension. The reading act is surely silent yet very dynamic. The reading strategies are generally unobservable, they take place mentally, and help the learners overcome their reading problems.

#### **4.3.1. Modelling**

Via think aloud explanation, the teacher demonstrates how understanding materialises from the text, and talk aloud to show how various comprehension-enhancing actions, such as raising questions, as wearing them, and generating prediction can be initiated (Coda 2005: 268).

#### **4.3.2. Immediate Strategy Instruction in ESP**

Reading comprehensively is a problem for Biology students; the adoption of some techniques and strategies will alleviate, among others the following problems:

- 1- Interpreting the meaning of words.
- 2- Comprehending sentences.
- 3- Comprehending paragraphs.
- 4- Interpreting illustration.

#### **Vocabulary-Interpretation Techniques**

In reading any kind of material in English, students face a crucial problem: they do not know the meaning of the words. This prevents them from understanding what they are reading. To help them overcome this problem, we teach our students three helpful techniques.

### *1. Check the meaning of the word in a dictionary*

This simple technique (used by ESP students) is in one sense the best solution, since it gives the students an accurate meaning for the word. Therefore, we teach our students how to use the dictionary effectively so that they can use can choose the correct meaning of unfamiliar word. A disadvantage of this technique is that it greatly disrupts the continuity of the reading.

### *2. Interpret the meaning of the word by word-analysis*

We teach our students to break down words into small elements stem, prefix, and suffix. They also learn the meaning of commonly used stems and affixes. We show them how to determine the meaning of unfamiliar word by breaking it down into these elements, and then interpreting the meaning of each element in order to obtain a possible meaning for the entire word.

#### *Example*

The reports contradicted each other.

To interpret the meaning of the word ‘contradict’, the student must break down the word into parts and look at the meaning of each part:

Contradict = contra + dict

Contra = a prefix meaning “against, opposite”

Dict = a stem meaning “say, speak”

Therefore, the word ‘contradict’ means “speak against” or “say the opposite”.

### *3. Guess the meaning of a word from the context by using context clues.*

We teach the students to find the clues, which may be a word or words, phrases, or punctuation marks around the unfamiliar words. Context clues are of many kinds. Here are some of them:

a. *Definition.* A term may be formally defined, or the sentences may contain sufficient explanation to make the meaning apparent.

*Examples:*

Typhoons are cyclones, storms with strong winds rotating around a low pressure centre.

Cyclones means “storms with strong winds rotating around a low pressure centre”.

Clue: The punctuation (,) after cyclones.

Kinetic energy is the energy of moving particles.

Kinetic energy means “the energy of moving particles”.

Clue: definition structure.

They dug a deep hole and gently lowered the body into the grave.

Grave means “deep hole for the body”.

Clues: a deep hole and lowered the body.

b. *Experience.* Either the students` s experiences or imagination makes the meaning of a word clear.

*Example:*

The cat came quickly through the grass towards the birds. When it was just a few feet from the victim, it gathered its legs under itself, and pounced.

Pounce means “attack suddenly”.

Clue: The reader knows from experience that when a cat sees a bird, it will gather its legs under itself and then attack suddenly.

c. *Contrast.* When two terms are contrasted, if the meaning of one of them is known, this helps to clarify or explain the other term.

*Examples:*

The question was important to the child, but it appeared trivial to the teacher.

Trivial means “not important”.



Clues: important, but.

The term “sea” usually implies that waters are saline but the sea of Galilee is not salty.

Saline means “salty”.

Clues: but, not salty.

d. *Inference*. Sufficient clues are available to make an educated guess at the meaning.

*Example:*

The secret of making silk was first discovered in China and was jealously guarded for thousands of years.

Jealously means “watchfully”.

Clues: secret, discovered, guarded, thousands of years.

Of the three techniques used to interpret the meanings of words, the students are encouraged to use word analysis and context clues to derive the meanings of unfamiliar words, since these two techniques do not interrupt the flow of reading. If they are not successful in obtaining the meaning in either of these ways, they will need to use a dictionary.

### **Sentence-Comprehension Techniques**

When a student reads a textbook, an article, other material in English, it frequently happens that he knows every word in a sentences, yet is unable to comprehend what the sentence means, especially when it is long and complicated. Therefore, he cannot comprehend long, complicated sentence, we have them practice these four techniques:

- 1- Sentence analysis.
- 2- Recognition of punctuation clues.
- 3- Recognition of the reference terms.
- 4- Recognition of signal words

#### *1. Sentence Analysis*

Whenever a student does not understand a sentence, he should analyse it by breaking it down into parts. In order to do this properly, the student should be taught to recognise various sentence patterns. Then, when he encounters a complicated sentence, he should analyse it by looking for the main verb, then the head subject (only the subject itself, excluding its modifiers) or the head complement. The last thing to look at the modifiers.


*Example*

Mod. S V D.O.  Mod.

Our blood has the appearance (of a red liquid) but (under the microscope) it is seen

Mod.  S V  Mod.

(as a pale straw-coloured liquid) in which thousands of tiny disc-shaped cells, the corpuscles, float).

 Mod.

*2. Recognition of punctuation clues*

Like words punctuation marks help to convey the writer`s ideas to the reader. Therefore, it is essential that a student be aware of the meaning and usage of these marks, and we train our students to employ this knowledge in determining the meaning of words and sentences.

*Example*

The sand provides the silica; the soda ash, the soda.

The semicolon (;) after the word silica is used to replace and.

The comma (,) after the word soda ash is used to replace the verb provides.

Therefore, the sentence means: the sand provides the silica, and the soda ash provides the soda.

### 3. *Recognition of Reference Terms*

Scientific writers use reference terms frequently, in order to avoid repeating the same word over and over. These reference terms include personal pronouns, e.g; it, they, he, etc, demonstrative pronouns, e.g; this, that, these, those, relative pronouns e.g; which, that, who, whom, and nouns e.g.; the method, the technique, the process, etc.

Failure to recognise these reference terms will hinder the student's comprehension of the reading matter. Therefore, he should be trained to determine what each reference term in the reading matter refers to.

#### *Example*

When they are dissolved in water, some kinds of molecules do, and some do not, remain intact. Those that do not remain intact break up into ions.

They = molecules

Some = some kinds of molecules

Those = some kinds of molecules

### 4. *Recognition of signal words*

A signal word is a word or phrase that functions as a connector in a sentence, between sentences, or between paragraphs. In general, foreign students reading English materials do not realise the importance of these words, and as a consequence of the reading materials is lessened. Therefore, the students are taught to pay attention to signal words and to try to interpret what they signify or indicate.

The most familiar and frequently used signal words are:

a. Words signifying *addition*: and, as well as, and also, besides, apart from, in addition to, moreover, furthermore.

- b. Words signifying *cause-effect relationship*: accordingly, hence, due to, as a result, so, therefore, thus, as a consequence, consequence, so that, with the result that, because of, owing to, in view of, on account of, etc.
- c. Words signifying *condition*: if, when, unless, provided.
- d. Words signifying *contrast*: but, though, although, still, yet, despite, even though, in contrast.
- e. Words signifying *comparison*: Like, unlike, likewise, in the same way, in the same manner, similarly.
- f. Words signifying *doubt or hypothesis*: possibly, probably, perhaps.
- g. Words, signifying *emphasis*: Above all, really, in effect, particularly, especially, in particular.
- h. Words signifying *sequence or order of events*: in the beginning, first, later, then, next, later on, eventually, ultimately, after a short time, etc.
- i. Words signifying *examples and restatements*: for example, that is, namely, such as.

### **Paragraph Analysis**

Sometimes a student understands all the sentences in the reading material, but still does not understand what it is saying as a whole. This is because he does not know how the material is organised. He should therefore be taught to recognise the organisation and presentation of information in the passage. To enable our students to understand each paragraph thoroughly, we teach them to:

1. Find the topic.
2. Find the main idea.
3. Find major supporting details.
4. Find minor supporting details.

1. *Find the topic*

Our students are trained to discover what the paragraph is about—that is, what the topic is. The topic must be precise—not too specific and not too general.

*Example*

Animals produce a wide variety of sounds. Birds, whistle, porpoises click, wolves howl, and gorillas produce a drum-like sound as they beat their chests. The list is almost endless.

“Animal sounds” is the topic of the above paragraph, and it is a precise topic, i.e.; the paragraph is about animal sounds.

*2. Find the Main Idea*

After finding the topic, the student is to look for the main idea, which can be a definition, a classification, a purpose, or an explanation of the topic. He can often find the main idea in the topic sentence. If the paragraph has no topic sentence, the student should make up his own topic sentence by drawing the requisite information from the paragraph.

*Example 1*

Latex is collected from trees by tapping. Workers cut a narrow slanting groove about half way around the trunk. It is just deep enough to pierce the living layers of cells beneath the bark. At the bottom of the cut metal spout is attached, and below it, a cup. The milky white latex oozes from the cut and drips into the cup.

Topic: How to collect latex\*

Main Idea: the first sentence, which is the topic sentence.

*Example 2*

The largest icebergs in the north are one-half to one mile in length and may show 300 feet of ice above the water. Since only about one-ninth of the total iceberg is visible above water, such icebergs actually may attain heights of up to 2700 feet. The greatest of all icebergs are those that are broken off the Antarctic glaciers. Some of these icebergs are over

forty miles in length and thousand feet thick. They are usually flat at the top and bottom, and are described as tubular.

Topic: The Size of Large Icebergs

Main Idea: Large icebergs are very long and very thick.

### 3. *Find Major Supporting Details*

The students should be trained to find the major supporting details that modify the main ideas. They should also know the functions of these details, which are of many types.

a. Details that define. This type of detail supports the main idea by giving a definition of something presented in the main idea. To locate this type of detail quickly, the students should be taught definition patterns.

b. Details that define. This type of detail expands the main idea by classifying something presented on the main idea. The students should be taught the classification patterns, and also the signal words that help to locate this type of detail: as follows, furthermore, moreover, also, and, either..... Or, neither.....nor, in addition, first second, next, the other, another, etc.

c. Details that explain. This type of detail expands the main idea by explaining/describing something. In general, it is used in explaining/describing process, measurements, forms, properties and functions.

d. Details that compare/contrast. This type expands the main idea by illustrative examples. Students should know the signal words that are helpful in locating this type of detail: i.e that is for example, e.g.; for instance, such as, include.

e. Details that compare/contrast. This type expands the main idea by comparing similarities and differences of objects or concepts. Students should know some of the signal words that are helpful in locating this type of detail: like, unlike, similarly, in the same way, in the same manner, likewise, etc.

f. Details that show cause-effect relationship. This type expands the main idea by showing cause-and-effect relationships. The following signal words are helpful in locating this type of detail: if, in consequence, consequently, so, as a result, therefore, thereby, yield, for this reason, thus, since, because, accordingly, hence, the cause, the effect, the results that is why, etc.

g. Details that restate. This type of detail restates the main idea by repeating it in another way, or by concluding it. The following signal words may be helpful in locating this type of detail: in other words, that is, i.e, in conclusion, in brief, in short, etc.

### *Example*

(1) Many scientists believe that life on earth will eventually end. (2) The Oxygen supply in our atmosphere, for example, has been gradually decreasing and will be used up in a billion years. (3) Other fates may overtake us before that time. (4) The sun may explode, as other stars occasionally do, destroying life in an instant. (5) Or another star may pass so close as to disrupt the gravitational pull between the sun and the earth and shift the earth closer to the sun, where it will face destruction from the intense heat.

Topic: The End of Life on Earth

Main Idea: Many scientists believe that life on earth will eventually end.

The major supporting details expand the main idea by illustrating examples of how life on earth will eventually end.

There are three examples of how life on earth will eventually end.

The first example is shown in sentence 2.

The second example is shown in sentence 4.

The third example is shown in sentence 5.

#### *4. Find minor supporting details*

Students are also trained to locate minor details that support major details

### *Example*

(1) The purification of water is basically a two-step or three-step process carried out under the strict supervision of public health scientists and engineers. (2) As the first step, natural water from the least contaminated source is allowed to stand in large reservoirs, where most of the mud, silt, and clay settle out; is called “sedimentation”. (3) Often, in water with high mud content, iron and aluminium sulphate is added to the water in the settling reservoirs. (4) these chemicals react in water to form aluminium hydroxide, which settles slowly and carries much of the suspended material, including most of the bacteria to the bottom of the reservoirs. (5) As the second step, the water is filtered through beds of sand and gravel, which remove other impurities and chemicals in it. (6) During or after filtration, antibiotic chemicals are ordinarily added to the water to kill any remaining harmful bacteria. (7) Chlorine is one of the most common chemicals used for this purpose. (8) A third step taken by some municipalities is adding to the water other beneficial chemicals such as fluoride to make tooth enamel hard, and soda ash to make the water itself soft. (9) The water purification process, carried out with little variation from one large city to another, is perhaps the biggest factor in the prevention of major outbreaks of disease.

Topic: The Purification of Water

Main Idea: The purification of water is basically a two-step or three-step process carried out under the strict supervision of public health scientists and engineers

Major supporting details: sentence 2, 5, and 8, which describe this process, and sentence 9, which restates the main idea.

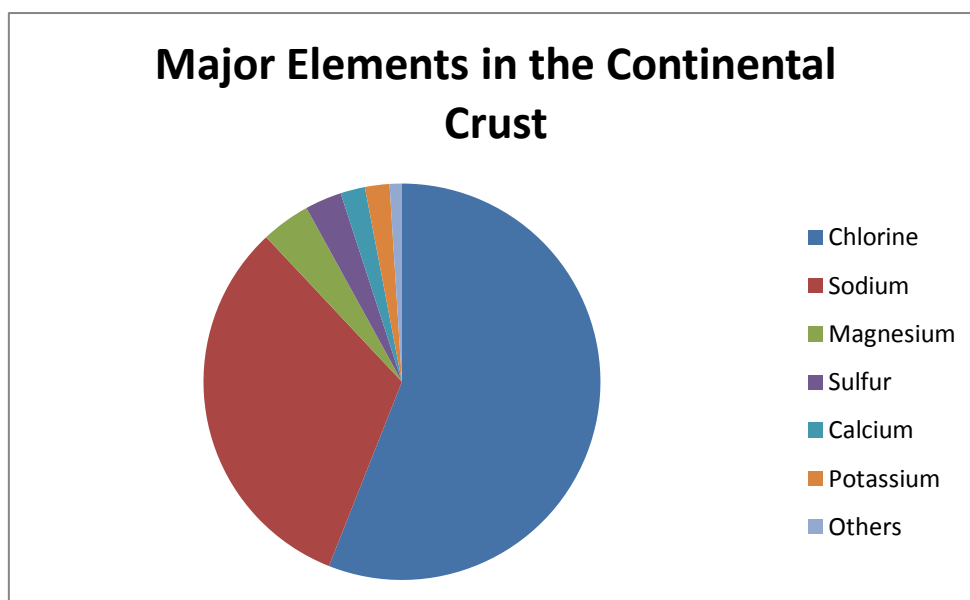
Minor supporting details: sentence 3 and 4, which explain the first major supporting detail; sentence 6, which explains the second major detail; and sentence 7 which illustrates sentence 6.



## Interpretation of Illustrations

Most scientific textbooks and materials are accompanied by illustrations to help the reader better understand the ideas presented, e.g, explanations or descriptions of processes, measurements, and presentations of facts. Illustrations that are frequently used are line drawings, graphs, tables, block diagrams, and photographs. The students have learned about these illustrations from other subjects; therefore, we only provide them with exercises to practice interpreting illustrations quickly and accurately by means of scanning.

*Example*



1. The title of this graph is \_\_\_\_\_.
2. The major elements in the crust are \_\_\_\_\_.
3. The element that is found in the largest amount is \_\_\_\_\_.
4. \_\_\_\_\_ is found in the second largest amount.
5. \_\_\_\_\_ is found in the smallest amount. The crust contains only \_\_\_\_\_ % of it.
6. \_\_\_\_\_ and \_\_\_\_\_ are found in equal amounts.
7. Rank the major elements in the continental crust, from the one found in the largest amount to the one in the smallest amount.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_

#### **4.4. Specific Strategies Instruction Course (Appendix B)**

##### Introduction

The teaching methods of reading strategies have been extensively discussed (Chamot and O'Malley 1994). In terms of teaching reading strategies in L1, there have been certain successful examples such as the method by Brown and Palinscar (1989).

A rather interesting approach to explicit teaching of reading strategies has been put forward by (Jansen 2002). In a study of teaching strategies of reading, she presented a procedure for explicit teaching of reading strategies which consists of five stages:

- General strategy discussion.
- Teacher modelling.
- Students' reading
- Analysis of strategies used by both teachers and/or students when thinking aloud.
- Explanation/discussion of individual strategies.

The procedure for injecting explicitly the different strategies, range in this order, modelling by the instructor.

1- A preliminary introduction of the related reading strategies.

2- The learner is provided with knowledge about the typical strategy and its full description and the way to be used (Pressley et al, 1998).

3- Ways and techniques of strategy use:

Here the instructor

#### **4.4.1. Teacher Modelling (Guided Practice) (Appendix B)**

##### **Sample lesson**

*Example one:*

Let see what the topic is about Ok, the title seems familiar to me. It is about vitamin B12. I'd better skim the first paragraph and look for the main idea either at the onset or the end of it since most of the time they appear here, oh yes I'm right here it is; "a complex water soluble organic compound that is essential to a number of micro organisms and animals including humans".

*Example two:*

After such a big statement, the passage must normally proceed to talk about details. Yes here it gives examples of multiple involvements of vitamin B12 e.g; "vitamin B12 is involved in cellular metabolism into active coenzyme forms".

*Example three:*

There is a word here I do not know exactly its meaning "degeneration" this is contrasted with generation which means producing, raising, creating, so I guess the meaning of degeneration means an evidence of decline.

Considering parts of the word: de/generation, the prefix /de/ bears the meaning contrary to the stem it accompanies that is generation which itself derived from the verb to generate which means to create, produce...

*Example four*

What does the word impaired mean. It has been repeated several times in the passage. If I apply word analysis I will obtain /im/ and /paired/. Oh I've found it the word pair means two things going together so I guess the word impaired is a contrary of the word impaired.

*Example five*

“Because Vitamin B12 is found in animal not vegetable food, strict vegetarians who do not eat dairy products...”... the meaning of the word dairy is deduce from the context, thanks to the vegetarian I predict the sentence means vitamin B12 is found only in animal products so dairy must mean containing proteins.

**4.4.2. Reading by Students**

After my reading and over using the reading strategies, the students were asked to follow suit and apply similar strategies while reading the remaining part of the passage. Students were encouraged to take greater risk and become volunteers in reading the passage and try using these strategies themselves. The following are examples of students reading:

-Do I know the passage is talking about?

Let me first examine the main idea of the passage which is usually presented either in the start or the end of the paragraph.

-This must be the main sentence of the paragraph “a complex water soluble vitamin” compound that is essential to a number of micro organisms and animals including humans.

Here is a word “dietary”, I’m guessing its meaning, I proceed by word analysis it might derive from “diet” which means a kind food that a person habitually eats.

#### 4.4.3. Explanation and Discussion about Strategies Used

At the end of reading tasks the strategies used by both teacher and students were explicitly explained in detail through indication of the types of strategies used. For instance they were reminded of the fact that the teacher started the reading simply by a quick survey of the text topic and identifying the main idea. It was mentioned for example that based on the type of presentation of material the student could see that the text started from general ideas and proceeded to specific subject and vice-versa. Finally, in order to summaries and give a clear picture of what has been done in that session, a review of the strategies was presented in the form of the following tables:

#### Strategies focused on in the first week

Strategy	Purpose	Know-how
Previewing	Identify the topic & see whether you are familiar with it or not	By quickly looking at the text, finding out the main idea & the organisation of the text
Identifying paragraph structure	Whether the paragraph follows a deductive or inductive pattern	Focusing on the organisational structure of the paragraph & find out if the main idea has been stated either in the beginning or end of the paragraph

**Table 14: Strategies Instruction Planning**

## Strategies Worked in the Second Week

Connecting/using background knowledge	Relate new idea presented with what you already know about it	By asking question about the topic: Do I know anything about it. How much can I relate it to what I have in mind about this subject
Guessing the meaning	Find out the meaning of new words	By considering the word in context. Focusing on the sentences before or after those particular sentences in which the new word is used. By considering parts of the word, e.g. prefixes suffixes and stems.

**Table 15: Strategy Instruction Planning**

In view of the teaching/learning constraints of ESP at the department of Biology, that is limited time, the training course lasts two weeks but can be prolonged if the teacher judges it necessary. Although it is estimated that it takes several years for FL readers to develop as strategic readers.

### 4.4.4. Training Tasks in the Selected Strategies

Materials and activities have been selected according to the learner`s specialism, needs in strategy and the time available. The low time density has been compensated by a type of activities and exercises that will speed-up the training e.g: using MCQ, true/false, and close procedures exercises will help the instructor progress through his outline syllabus.

The activities and exercises aim at developing and fostering the desired behaviours in Biology student`s e.g: skimming and scanning, guessing the word meaning, and predicting.

A course may contain training tasks on several strategies because students do combine strategies, strategy over-lap is unavoidable (c f chapter 3). Therefore students are free to respond with the task in hand by deploying the strategies they think are the most appropriate. Guessing is an educated strategy a learner adopts intelligently to problem solve a reading task Oxford (1990)

#### **4.4.5. Model Lessons**

##### Model Lesson 1

Immunity to a disease indicates that a given individual or population has an increased resistance to an infectious agent No individual is “impervious” to a disease, because if a large enough dose of an infectious agent is administered in an appropriate fashion, it can overcome the defences of even the most resistant individual.

The human population possesses different kinds of immunity innate immunity is inborn resistance to disease possessed by a given population or race. Acquired immunity occurs when the host is treated in a manner that establishes a specific immune state within the host`s body. This type of immunity can be acquired in four different ways.

Naturally acquired active immunity develops during a sub-lethal case of infectious disease, for example measles. The host makes specific antibodies against the virus following infection. Naturally acquired passive immunity is the resistance to disease passed from mothers to their newborns or infant. Passive means that the host did not form the antibodies.

Individuals can be artificially immunized in two distinct ways to prevent an individual from contracting a specific disease, the person can be immunized with a vaccine or a toxoid. Individuals immunized with these commercial preparations develop artificially acquired active immunity. This is an active process because the patient is the animal that produces the antibodies. When a patient is diagnosed as having disease to which he/she has no immunity, the physician can passively immunize the patient by administering antibodies formed in another organism results in artificially acquired passive immunity. Artificially acquired passive immunity is always of short duration (a few months), whereas artificially acquired active immunity can last an individual's lifetime.

Antibodies are proteins produced by the animal body in response to foreign substance (antigen). Antibodies are found either attached to animal cells, in animal blood, or in secretions of the exocrine tissues. Humoral antibodies are present in animal serum; the study of these antibodies is termed serology. Anti-genes are substances that specifically react with an antibody to form a stable complex. Most antigens are large proteins or polysaccharides that are foreign to the animal.

a/ Reading Skills Exercises

Selected Vocabulary

Antibodies

Antigenes

Serum

Vaccine

Bacteria



These items are written on the blackboard, and students are asked what they know about each item and try to guess the name of the science that treats those items i.e immunology.

### General Comprehension Questions and Discussion

1. What is immunology?
2. What roles do findings about immunology play in relation to disease such as dyphteria, plague, tuberculosis and smallpox?
3. Do you know any names of immunity?
4. Do you know any names of biologists who made some discoveries immunity?

### Reading

- First reading

Skim the text quickly (no more than minute) and write down the main theme of the text (use more one minute) and write down the main theme of the text (use more than 20 words).

- Second reading

Now read the selection a second time. Ask yourselves these questions as you read:

1. Describe the two main types of immunity
2. What is the difference between an artificially-acquired active and artificially acquired passive immunity.
3. Where do we find antibodies?
4. What is an antigen?

### b/ Language Skills Exercises

#### Vocabulary

1. Referring to the text, give the opposite of the following words:

Active

Innate

Artificial

2. How would you divide up the following words?

Immunology

Serology

Microbiology

Antibodies

Antigens

. Explain what is meant by every constituent?

. Can you think of other words of the same form?

Organisation of the Text and Grammar

What relationship is expressed by “if” in the second sentence, paragraph one?

What is the function of the second sentence in the second paragraph and the first sentence, last paragraph?

What does “because” express (sentences 4, paragraph 4)?

What does “whereas” in the last sentence, paragraph 4 express?

Complete each of the following statements:

- A person is said to be..... if he cannot construct a specific disease.
- An..... is a substance built up in the blood after a siege of a specific disease, to help combat a subsequent attack.
- Vaccination provides..... immunity against a specific disease.
- To prevent diphtheria, a doctor injects..... in 3 doses into children about four months of age.

- The harmful poisons given by some pathogenic bacteria are known as.....

Note: Answer to exercise “5”

Immune

Antibody

Acquired

Diphtheria toxin

Toxins

Model Lesson 2

Respiration

All living things require oxygen with which to burn food (oxidation) to produce energy needed to carry on life functions.

Breathing is the process by which oxygen is taken in and the waste gas carbon dioxide is given off.

All animals are adapted structurally for this process. Recall that a simple, like Amoeba, absorbs oxygen directly through its cell membrane from air dissolved in the water of its environment. An earthworm absorbs oxygen through its moist skin. Air containing oxygen enters the body in branching tubes called trachea. A fish possesses gills in which the blood extracts oxygen from the water that passes over these organs. All land-living vertebrate animals, including man, are adapted with lungs into which they breathe air containing the necessary oxygen.

The process of respiration and circulation are closely related in man. It is the red corpuscles in the blood which are responsible for transporting oxygen from air in the lungs to the individual cells of the body.

The term breathing refers to the mechanical act of taking to the lungs and releasing air from them. The breathing organs of man that make up the respiratory system are the nose and mouth, trachea, two bronchi or bronchial tubes (main branches of the trachea, one leading to each lung), bronchioles (branches of bronchi) and finally air sacs (pouch-like ends of smallest bronchioles).

Inspiration (intake of air) takes place when the diaphragm contracts and moves downward, expanding the chest cavity from top to bottom. The muscles between the ribs pull the ribs upward and outward, expanding the chest cavity from front to back. This series of automatic actions creates a lowered air pressure in the lungs and the air actually rushes in and fills the lungs.

As the diaphragm and rib muscles relax, and size of the chest cavity is reduced out of the lungs in the act of expiration.

The average normal rate of breathing is about eighteen times per minutes. This increases with increased physical activity, it also decreases with age, being very rapid in the babies but slow in old people.

#### a/ Reading Skills Exercises

- i) Read the title of the text and predict at least five key word which you expect to see in the text.
- ii) Using previous knowledge, typographical indications and repeated words skim the text quickly to identify the key words.
- iii) Write down the main theme of the text, using no more than 15 words.
- iv) Read the text as often as necessary to give the main idea for each paragraph, using only one sentence for each main idea.

#### b/ Language Skills Exercises

i) Vocabulary Building:

1. Complete the following statements.

- The organs of respiration in a man are the.....
- The actual exchange of gases takes place in the.....
- When a supply of oxygen is cut off from an individual results.....
- A lung disease, which can now be almost completely controlled, is.....

Note: answer to exercises “1”

- Lungs
- Air sacs
- Asphyxiation
- Tuberculosis

2. Which term in each of the following set of words includes the other three

- Tissue-bone-muscles-cartilage.
- Bone-skull-ribs-vertebra
- Secretion-chemical regulations-hormones- enzymes
- Adrenalin-secretion-insulin-hormone

Note: answer to exercise “2”

- Tissue
- Bone
- Secretion
- Hormone

ii) Organisation of the Text

“As the diaphragm and rib muscles relax and the size of the chest cavity is reduced, air is forced out of the lungs in the act of expiration”.

Answer the following questions:

-How many parts does this sentence consist of?

-What relation exists between them?

-What does “as” express in the sentence?

-Write down two sentences with the same form as the above?

2) “Suffocation occurs when the tracheal opening is closed by gas, by water or by other obstacles thus preventing normal breathing”

-What does “thus” express?

-What function is expressed by the sentence?

(Ketchum, P, A (1984) Microbiology. John Wiley and Sons pp 234-235)

#### **4.5. Experimentation**

In this part, we present our study that aims to determine reading comprehension through explicit strategies instruction on ESP students of the department of biology university of Constantine 1 Algeria. We aim to see the effect of explicit strategies instruction on learners’ achievement in comprehending scientific written text.

Our investigation will be designed using an experiment that consists of; group one, group two and group three. Group one participants will be designed as the control group that receive no treatment, whereas group two and three participant will play the role of experimental groups and receive further instruction and information from the part of the instructor about the text used in the experiment. All the participants of the three groups are tested to investigate their reading comprehension through using a multiple choice formats. In other to discuss the results obtained from the groups we use t.test

for independent group design this test is very useful for conducting the obtained scores of the groups together as well as to confirm our hypotheses or reject it.

#### **4.5.2. Participants**

This study, consist of 30 Master I learners of Biology chosen to be a sample. These participants are selected at random from different groups. The selected participants are divided into three main groups; groupe1 groupe2 and groupe3. Every group includes 10 learners randomly assigned.

These participants were asked to read a text quickly and then answer some questions about the text using multiple-choice formats.

#### **4.5.3. Material**

We have selected a text from a web site specialized on reading strategies exercises (See appendix 1 entitled “immunology”). It consists of three paragraphs. It is an informative/ expository text, in which it reports some facts about body self defence.

All the groups are given the same text but, they encounter three different multiple-choice questions. All the group exercises state “select the answer you think is correct” followed by three MCQs in which experimental group 1 participants have to find quickly the main idea of each paragraph, and experimental group 2 participants are required to select one answer from 4 suggested once to answer the 3 questions. The control group participants are provided with one question selected from experimental group 1 exercise and two questions from experimental group 2 exercises.

#### **4.5.4. Procedure**

Our experiment has taken place in the department of Biology as it mentioned before. In this experiment, we will test the effect of skimming and scanning strategies on the Master II learners. Biology learners are given a text to follow by comprehension

questions namely, multiple-choice questions (Appendix 1). We will apply skimming strategy on the experimental group1 and scanning strategy on experimental group 2.

Each group is provided with 3 questions to answer, and they are asked to select the right answer in the three given questions choosing from 4 suggested statements in each question.

All the groups work on the same text with different questions and we have set 5 points for every question i.e. 15 points for all the questions.

We ask the experimental group 1 to enter the class in which they are required to answer the questions as quickly as possible selecting from four options and we set the time they start working on the test and we adjust the time it took them to accomplish the test.

Concerning experimental group 2 participants, we ask them to enter after experimental group 1 gets out the class, and order them to answer the three questions as quick as possible choosing from 4 options, and adjust the time it them to accomplish the test.

After experimental group 2 gets out the class, we ask the control group to get on the glass. Every participant has to answer the three questions always from 3 suggested statements, then we order them to start doing the as quickly as possible with no treatment and no guidance from us.

#### **4.5.5. Treatment**

We suggest skimming and scanning strategies as a treatment to be applied in our study.

The first strategy “skimming” will be applied on experimental group 1 and “scanning “ strategy, will be applied on experimental group 2.



Members of experimental group 1 are asked to read as quickly as possible the given text and then answer the 3 questions using skimming skill. This is done after they receive efficient information about this skill and the purpose of using it. The time we see that they have really understood everything about this skill, we ask them to start reading the text and answer the questions as quick as possible “the purpose of skimming”.

Skimming questions are marked on 15 points, 5 points for every question. We record the time every participant takes to complete the test.

After they receive efficient information about scanning skill and the purpose of using it, and after we see that they have really understood everything about this skill, experimental group 2 is asked too to read as quick as possible the text “ the purpose of scanning” and then answer the 3 questions using scanning skill. Like skimming, scanning questions are marked on 15 points ie; 5points for every question. We record the time every participant takes to complete the test. The control group receives a text followed by 3 multiple-choice questions to be answered, selecting from 4 suggested statements.

The first question is selected from experimental group 1 questions ie; “skimming”, whereas the two other questions are selected from experimental group 2 questions i.e.; “scanning”.

Participants in each group have to read one common text and answer the MCQs.

Understanding the text will be reflected on what readers achieve of correct answers in a very short time because, the purpose to use skimming and scanning is to achieve reading comprehension in a very short time. So, participants’ reading speed is very important.

#### 4.5.6. Data Analysis

The following table includes the data of three groups. These data are the scores marked on 15 points, and the recorded time every participant in each group has taken to finish the multiple choice questions.

Control group	Scores	Timing per/mnt	Exp group1	Scores	Timing per/mnt	Exp group2	Scores	Timing per/mnt
1	5	4.05	1	10	3.20	1	15	2.05
2	5	4.18	2	5	3.25	2	15	2.08
3	10	4.29	3	15	3.40	3	10	2.16
4	5	4.49	4	10	3.55	4	15	2.22
5	5	4.56	5	15	4.01	5	10	2.36
6	10	5.18	6	15	4.05	6	5	2.37
7	5	5.29	7	5	4.12	7	10	2.45
8	5	6.03	8	15	4.20	8	15	3.02
9	10	6.45	9	10	4.49	9	15	3.10
10	5	7.13	10	15	5.06	10	10	3.11

**Table 16: Experimental Group and Control Group Timing and Scores**

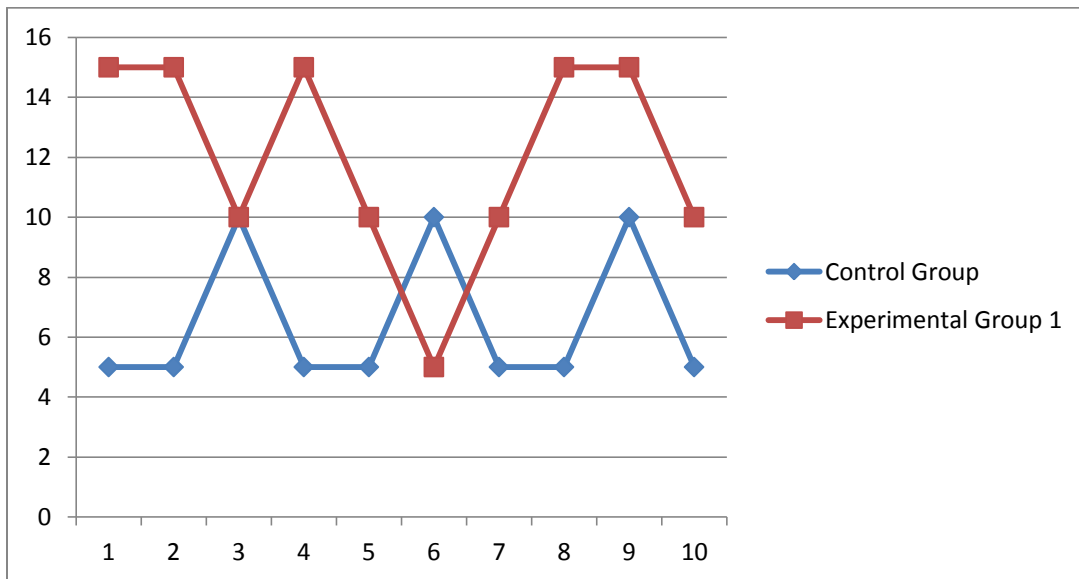
Table 1 presents participants' scores and timing in the skimming and scanning test (see appendix 1). We aim to test readers' comprehension through the multiple-choice questions given to every group. As it is mentioned in the above table

The highest mark « score » achieved by the control group is 10/15, and the lowest one is 5/15. For both two experimental group 1 and 2 the highest mark is 15/15, and the lowest mark is 5/15. Also, what concerns us, is that most participants of experimental group 1 and 2 answered more than two questions correctly in a less time rather than the

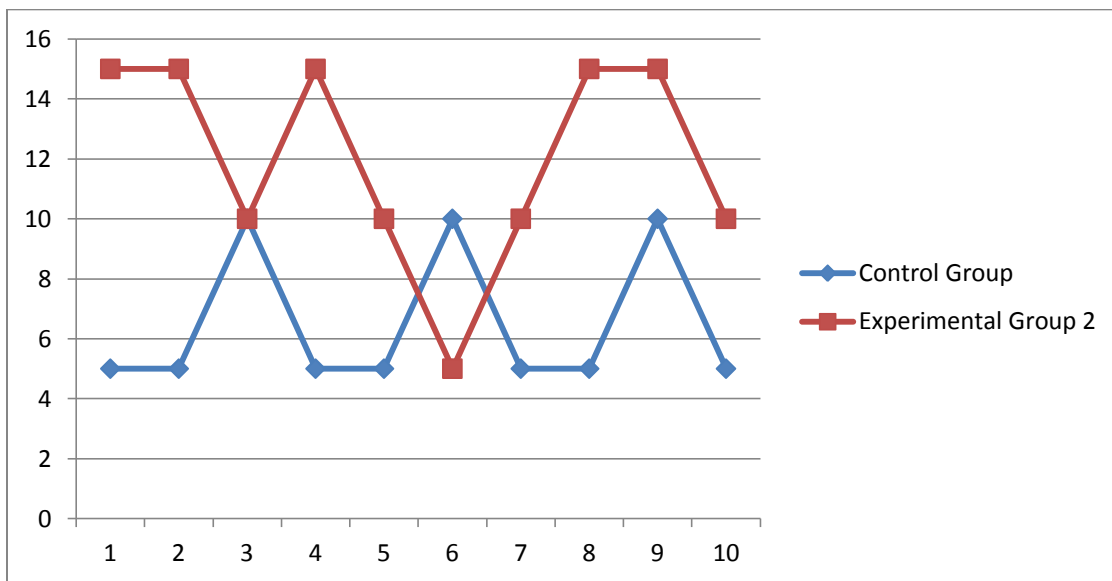
control group, which most of its participants have achieved only one question in much more.

This indicates, that the two experimental groups when received more information about skimming« experimental group 1 », and scanning « experimental group 2 » skills, they showed more ability to comprehend the written texts. To make our data more clear, the following graphs are designed to show the scores of the participants in each group:

In order to show the difference between the obtained scores of all the participants of the groups calculating the mean of the groups' scores will show to us more clearly the difference among the groups.



**Figure 8:** The Experimental Group 1 and the Control Group Scores  
In the Skimming Test



**Figure 9:** The Experimental Group 2 and the Control Group' Scores  
In the Scanning Test

#### 4.5.7. Mean

To show the difference between the control group and the experimental groups' obtained scores, we have suggested calculating the mean of every group because it is seen as the easiest way to make that. The mean refers to the average obtained from the sum of a set of scores, divided by the number of these scores. All the groups have the same number of the scores ie; 10 scores. The following tables illustrate the means of the three groups.

	<b>Control group</b>	<b>Exp. Group 1</b>	<b>Exp. Group 2</b>
<b>Total of the scores</b>	<b>65</b>	<b>115</b>	<b>120</b>
<b>Mean of the groups</b>	<b>6.5</b>	<b>11.5</b>	<b>12</b>

**Table 17: Means of the Control Group and of the Two Experimental Groups' Scores**

	<b>Control group</b>	<b>Exp. Group 1</b>	<b>Exp. Group 2</b>
<b>Total of the time</b>	<b>51.56</b>	<b>39.33</b>	<b>24.92</b>
<b>Mean of the groups</b>	<b>5.15</b>	<b>3.93</b>	<b>2.49</b>

**Table 18: Means of the Control Group and of the Two Experimental Groups' Time**

The above mentioned means indicate that the mean of experimental group 1 which is 11.5 and the mean of the experimental group 2 is 12 are higher than that of control group which is 6.5 (table 2) . Therefore, we can say that the scores of the experimental group's participants are much higher than those of the controls.

A close inspection of the mean reaction time of the experimental and the controls shows that the experimental have performed much better the task at hand than the controls. Mean reaction time of the controls is 5.15 whereas the experimental group 1's mean is 3.93 and the experimental group 2's mean is 2.49 (table 3). Thus, the obtained results are accepted in such way.

#### 4.5.8. The T-Test

To check whether our hypothesis stated at the beginning of this study is plausible in terms of statistical significance, we selected the t-test to be our statistical test because it is a powerful one. This test is used to draw statistical inferences from an experiment's data. This test also, gives us a formula for computing the value of the observed t. The formula of this test is as follows:

$$t(n_1-n_2-2) = \frac{(x_1-x_2)\sqrt{(n_1-n_2-2)n_1 n_2}}{\sqrt{(n_1s_1^2+n_2s_2^2)(n_1 n_2)}}$$

Where:

$n_1$  means the number of the subjects in the control group ; Gr1.

$n_2$  means the number of subjects in the experimental group ; Gr2 & Gr3.

$x_1$  refers to the mean of the control group; Gr1.

$x_2$  refers to the mean of the experimental group; Gr2 & Gr3.

$S_1^2$  refers to the variance of the control group; Gr1 scores.

$S_2^2$  refers to the variance of the experimental group; Gr2 & Gr3 scores.

##### 4.5.8.1. Observed T Computation

Depending on the control group and the two experimental groups' obtained results of the "timing", we suggest using the t-test so that we confirm the significance or non significance of our findings.

#### 4.5.8.2. Skimming

Control Group	Timing/minute	Experimental Group 1	Timing/minute
1	4.05	1	3.20
2	4.18	2	3.25
3	4.29	3	3.40
4	4.49	4	3.55
5	4.56	5	4.01
6	5.18	6	4.05
7	5.29	7	4.12
8	6.03	8	4.20
9	6.45	9	4.49
10	7.13	10	5.06

**Table 19: Timing of the Control Group and Experimental Group 1 in Skimming Test**

1. The two means of the control group  $\bar{x}_1$  and  $\bar{x}_2$  are calculated using the

following formula  $\bar{x} = \frac{\sum}{n}$

When we make the substitution, we find:

$$\bar{x}_1 = 5.165 \text{ and } \bar{x}_2 = 3.933$$

2.  $S_1^2$  and  $S_2^2$  are calculated by using the formula  $S^2 = \frac{\sum x^2}{n} - \bar{x}^2$

If we substituted, we find:

$$S_1^2 = 1.06 \text{ and } S_2^2 = 0.34$$

3. When we substituted the values of  $\bar{x}_1$ ,  $\bar{x}_2$ ,  $S_1^2$ ,  $S_2^2$ ,  $n_1$ ,  $n_2$  in the formula of the t-test we find :

$$t(n_1 + n_2 - 2) = \frac{(5.16 - 3.93)\sqrt{(10 + 10 - 2)10 \times 10}}{\sqrt{(10 \times 1.06 + 10 \times 0.34)(10 \times 10)}}$$

$$t(n_1 + n_2 - 2) = 3.11$$

4. Our critical value here, is 1.81 and the obtained value from the t-test is

$$t(n_1 + n_2 - 2) = 3.1$$

In other words the t-test result is higher than the critical value

#### 4.5.8.3. Scanning

Control Group	Timing/Minute	Experimental Group 1	Timing/Minute
1	4.05	1	2.05
2	4.18	2	2.08
3	4.29	3	2.16
4	4.49	4	2.22
5	4.56	5	2.36
6	5.18	6	2.37
7	5.29	7	2.45
8	6.03	8	3.02
9	6.45	9	3.10
10	7.13	10	3.11

**Table 20: Timing of the Control Group and Experimental Group1 in Scanning Test**

1. Calculating the means of  $\bar{x}_1$  and  $\bar{x}_2$  using the following formula  $\bar{x} = \frac{\sum}{n}$

Making the substitution, we find  $\bar{x}_1 = 5.165$  and  $\bar{x}_2 = 3.933$

2. Calculating  $s_1^2$  and  $s_2^2$  using the formula  $s^2 = \frac{\sum x^2}{n} - \bar{x}^2$

If we substituted, we find  $s_1^2 = 1.06$  and  $s_2^2 = 0.65$



3. By making the substitution of  $\bar{x}_1, \bar{x}_2, s_1^2, s_2^2, n_1, n_2$  in the formula of the t-test we find :

$$t(n_1 + n_2 - 2) = 5.83$$

4. Our critical value here, is 1.85 and obtained value from the t-test is  $t(18) = 5.83$ .

In other words the t-test result is higher than the critical value of 1.81, which means that the result is in the directions of our hypothesis. This means that learners, who are accustomed to receiving further information explicitly, can deploy more efficient strategies to comprehend and understand concepts and words of the written texts.

Additionally, the value obtained during scanning experiment is  $t(n_1 + n_2 - 2) = 5.83$  which means that our hypothesis is very significant and the more ESP learners receive explicit reading strategies instruction, the more they comprehend written texts.

The reaction time of the participants was found much quicker than the one of the controls. It is for this reason that, they comprehend better what we gave them of information and explanation about the two skills. So, this shows that they comprehend purpose of both skills, i.e. to read quickly the text in order to find general idea “skimming”, and to look for specific information “scanning”.

Finally, the observed t in both skimming and scanning test were found greater than the critical value. That is to say, the observed  $t \ 3.11 > 1.81$  and  $5.83 > 1.81$ . Thus, we can say that the predictions of the present research have been found to be true.

The results of the experiment revealed that explicit strategy instruction can be used as an effective method in helping Biology students develop strategic reading. However, research outcomes in human sciences including linguistics are characterised by relativity, that is: providing students with explicit strategy instruction, conducting intensive training, and carrying out experiments, do not guarantee students' adoption of

the targeted strategies in the future, this matter will be subjected to students' choice (Koda 2005). Nevertheless, during the strategy training, the researcher observed a great enthusiasm and interaction among the students.

#### **4.6 Pedagogical Implications**

This humble study has tried to shed light on ESP, an approach to language teaching still undeveloped at the University of Constantine 1. Students at all levels and teachers carrying out researches in many departments, constantly ask for help in order to read articles in English, translate passages of books, write research papers and publish them in international journals. Others want to present their communications orally in international seminars but feel handicap to do so. These are the common needs expressed by the members of different scientific communities where the researcher has been teaching for eight years e.g. at the Departments of Psychology, physics, chemistry, and Biology so several pedagogical implication can be anticipated.

First related principle related to the teaching of ESP is the “status” the module of English bears at the University of Constantine 1. It seems that the module of English is taught with no specific purpose in mind except perhaps to pass examination. The consequences of such attitude are predictable; students neglect the module of English or even give-up the learning.

In fact such behaviours are justified. Students and all the members of the Biology community do like and do want to learn English, but they are handicapped to do so. The question one might ask is: what are the reasons behind such attitudes? , some of the reasons, due to teaching/learning constraints have already been exposed previously.

These disadvantages besides others do impede the teaching learning situation:

. Ninety minutes of English per week are not sufficient for going through any outlined syllabus.

. Unqualified teachers in ESP:

Usually any teacher with no specific training in ESP is engaged in this type of teaching

. Time schedule:

English is the last module the authorities Department of Biology think about. The module of English is generally scheduled early in the morning or late in the afternoon; a time where students tempted by vacation. This explains the absence of many students the day we carried out the experiment.

#### **4.7. Suggestions for Future Research**

Considering the afore disadvantages, some possible solutions are to be suggested

. The English module should bear more interest and consideration on the part of the decision makers, since it is perceived as a urgent linguistic need to all the members of the Biology community.

. An ESP centre should be created at the department of English, it will take in charge the needs and the teaching/learning problems ESP students encounter.

. Teacher training in ESP

When the teacher of English is an ELT one, Most of the time he even has no great experience in EFL. We believe that in an ESP course, the teacher should be an experienced EFL teacher who already has basic knowledge of the principles and practises of teaching. It is more suitable of course, to have a trained EFL teacher who in addition to experience will have a theoretical component on which he can build his teaching.

Houghton says: The language adviser will make use of learning and pedagogic theories in his contributions to the solution to problems. Thus he must be a competent teacher with an interest in education and learning theory as well as ESP (Hughton, 1980, in Slimani 1995).

Besides this, the ESP teacher should receive intensive training so as to be familiarised with the workings of science. “An important distinction should be made here between the specialist language; Biology and less specialised languages, a salient feature of Biology is the requirement for efficiency of communication” (Swales.1990: 71).

Regular seminars must be organized to allow fruitful interaction between ESP teachers and subject specialist teachers either at the department of English or that of Biology: In tutorials, group works and workshops, the future ESP teacher will have to learn much and profit from other peers about the art of teaching ESP. Concerning the time allotted to the teaching of English, this advantage can be alleviated by increasing the time density or resuming the module of English starting from first year University until master two year. In fact the limited time has been an important factor for the researcher in determining the learner`s needs, the materials contents, and the teaching methods, that is the researcher had to adhere to the teaching of the reading strategies in ESP. Therefore we suggest that the ESP teacher will have a further training in how to teach reading strategies because very little attention has been given to training in which teachers are familiarised with techniques for learning strategy instruction. Virtually all learning strategy training in both first and second language context has been conducted by researchers (Derry and Murphy, 1986).

A recent synthesis of research found that effective teacher training should include both presentation of theory and demonstration of the new approach, followed by

immediate practice and feedback in the training setting. Developing a basic level of knowledge and skills with the new approach is necessary to achieve successful training even if it is time consuming. Teachers participate in training activities that extend over one or more school years and include frequent workshops, collaborative planning, and classroom observation with a peer (Joyce and showers, 1987).

## **Conclusion**

In this chapter, we have administered a questionnaire in order to identify the ESP students' needs, difficulties and the reading strategies they adopt to overcome the reading problems.

On the basis of the findings of the questionnaire, we have decided to introduce an explicit strategy instruction in skimming and scanning, guessing word meaning and predicting. Intensive strategy training has been conducted in order to develop and foster the targeted strategies.

Model lessons are presented, where the teacher via think aloud and demonstration, initiates the learners to strategy use. Then, the students engage in the free strategy practice by self directing their own learning.

To test if explicit strategy instruction would have significance in enhancing reading comprehension, an experimental study has been designed for testing the strategies of skimming and scanning.

In the light of the results obtained, some pedagogical implications are presented.

## **General Conclusion**

Reading is a vital skill that has gained recently a high status in ELT. It is bearing thick literature from researchers not only for the numerous merits a reader can gain from the act of reading, but also for the considerable outcomes, theoretical and experimental research in both linguistics and cognitive psychology offer to ELT and to education in general.

Knowing how to read is an art that many people are not aware about. Reading in an effective way, means deploying a range of strategies that are cognitive, meta-cognitive, social.....so as to achieve reading comprehension. However many learners are not conscious about the use of reading strategies. It is the duty of instructors to initiate the learners to their use. The teaching of strategies in an explicit way has proved to be a fruitful method that can assist students effectively by enhancing the reading comprehension. This is the main concern of our humble research.

Our dissertation is a study in ESP that is the type of teaching /learning in which English is not a goal in itself but a means to a goal, and by basing the research on our previous experience as an ESP teacher in Biology and on the specific conditions of the teaching/learning, we have decided to conduct the teaching on reading strategies by adopting a direct explicit instruction. The teaching project proved to be useful not only because it was good as such but because of the teaching/learning constraints i.e very large classes, absence of materials, and the irregularity of teaching the module in English at the faculty of Biology. (Some sections in certain semesters do not study the English module at all). Actually the idea of teaching reading strategies in the ESP context derives from

the above problems on the one hand and on the other one from a an interest in teaching reading strategies in ESP context.

The introduction of the teaching of language learning strategies in ESP at university level will be of a great benefit to students. It will intervene as an immediate problem solving project and an efficient didactic remedy to the present disadvantages teaching/learning situation. To this end, we have based our study on some theories on linguistic and psychological. Here, on these foundations reading is seen as an interactive process where language interacts with thoughts in the mind of the reader. A proficient reader relies on two kinds of knowledge to achieve comprehension:

- 1) The bottom-up or text based processing, which is based on the linguistic input from the text.
- 2) The top-down or knowledge based processing, which is based on the reader`s prior knowledge.

This paired process has as a targeted aim the extraction and construction of meaning. A conscious knowledge about the use of the appropriate reading strategies will reduce ESP readers` endless struggle for meaning when reading scientific texts. Providing ESP Biology students with the knowledge of different strategies will be a great time saving (as far as the ESP setting is concerned) will be a great time saving and an initiation to students to be more responsible of their learning besides that a great interaction occurs between teacher and learners.

These goals are to be achieved only through an explicit and direct training of ESP students of Biology about the appropriate use of the different strategies. The instruction should be provided under the direction and the guidance of the instructor until learners are enough acquainted with the targeted strategies. Later the duty is put into the hands of

the learners. The ultimate goal lying behind is training learners to be independent and responsible for their learning.

Therefore a strategy training course is anticipated it comprises strategy training in previewing (skimming and scanning), identifying paragraph structure, connecting/relating back ground knowledge, guessing word meaning from contextual and morphological clues, detecting main ideas and finding details, however the experimentation included only the effect of strategy training in skimming and scanning only, because in enhancing reading comprehension, ESP Biology students rely heavily on skimming and scanning when approaching scientific texts. The relative findings of both works the experimental and the instructional one reveal that the explicit strategy instruction has enhanced ESP students` performance in reading comprehension.

In the light of what our humble study has revealed, several directions for future teaching in ESP are anticipated.

We hope that the present research will contribute in a way or another to foster changes in the ESP courses currently implemented at the universities of Constantine. This will encourage students to adopt a more versatile approach to reading scientific texts. We also hope that through explicit training how to use reading strategies, awareness about the strategies involved in the study is adopted in such a way that could, in turn, facilitate the transfer of strategies to new tasks.

So we suggest that greater importance should be attached to the constructive role of strategy training which seems to be totally missing in majority of ESP contexts at the university of Constantine if not all the universities in Algeria.



We also suggest that reading strategies should be incorporated within the normal syllabus and as part of the pre-reading tasks. Teachers should pay more attention to these strategies and try to overtly teach readers how to apply them.

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## **Appendices**

### **Appendix A: Reading Comprehension Test**

#### **The Immune System Text**

An immune system is of a biological structures and processes within an organism that protects against disease. In order to function properly, an immune system must detect a wide variety of agents, from viruses to parasitic worms, and distinguish them from the organism's own healthy tissue.

Pathogens can rapidly evolve and adapt to avoid detection and destruction by the immune system. As a result, multiple defense mechanisms have also evolved to recognize and neutralize pathogens. Even simple unicellular organisms, such as bacteria possess a rudimentary immune system, in the form of enzymes which protect against bacteriophage infections .Other basic immune mechanisms evolved in ancient eukaryotes and remain in thier modern descendants, such as plants and insects. These mechanisms include phagocytosis\*, antimicrobial peptides called defensins, and the complement system. Jawed vertebrates, including humans, have even more sophisticated defense mechanisms , including the ability to adapt over time to recognize specific pathogens more efficiently . Adaptive (or acquired) immunity creates immunological memory after an initial response to a specific pathogen leading to an enhanced response to subsequent encounters with that same pathogen . This process of acquired immunity is the basis of vaccination.

Disorders of the immune system can result in autoimmune diseases, inflammatory diseases and cancer. Immunodeficiency occurs when the immune system is less active than normal resulting in recurring and life-threatening infections. In humans,

immunodeficiency, or acquired conditions such as HAV/AIDS or the use of immunosuppressive medication.

**The Reading Comprehension Test:**

**1. Experimental Group 1**

**A-Say whether the following statements are true or false:**

1- In order to function properly, an immune system must detect a wide variety of agents, from viruses to parasitic worms, and distinguish them from the organism's own healthy tissue.

2- Pathogens cannot rapidly evolve and adapt to avoid detection and destruction by the immune system

3- Multiple defence mechanisms have also developed to recognize and neutralize pathogens

**B-Select the answer you think is correct**

1-An immune system is a system of biological structures within an organism that projects diseases.

2- An immune system is a system of biological structures that regulates glands

3- An immune system is a system of biological structures and processes within an organism that protects against disease

**Control Group:**

**A -Say whether the following statements are true or false:**

1-Humans and some animals have even more sophisticated defense mechanism

2- Immunodeficiency is the result of diabetes or AIDS

3- An immune system is a system of biological structures that regulates glands

## Appendix B: Specific Strategy Instruction Course

### Vitamin B<sub>12</sub>

A complex water-soluble organic compound that is essential to a number of microorganisms and animals, including humans. Vitamin B<sub>12</sub> aids in the development of blood cells in higher animals. The vitamin, which is unique in that it contains a metallic ion, cobalt, has a complex chemical structure.

Vitamin B<sub>12</sub> occurs in several forms, called cobalamins; cyanocobalamin is the principle one used in vitamin supplements and pharmaceuticals. Vitamin B<sub>12</sub> was first isolated in 1948 by American chemist Karl Folkers and British chemist Baron Alexander Todd.

Vitamin B<sub>12</sub> is involved in cellular metabolism in two active coenzyme forms, methylcobalamin and 5-deoxyadenosylcobalamin. Vitamin B<sub>12</sub> cooperates with folic acid (folate) in the synthesis of deoxyribonucleic acid (DNA). A deficiency of either compound leads to disordered production of DNA and, hence, to the impaired production of red blood cells. Vitamin B<sub>12</sub> also has a separate biochemical role, unrelated to folic acid, in the synthesis of fatty acids in the myelin sheath nerve cells. (See table of vitamins).

Vitamin B<sub>12</sub> is synthesized by microorganisms that occur in the rumen (the first stomach chamber) of cows and sheep, from the rumen it is transferred to the muscle and other tissues, which other animals and humans eat. Good dietary sources of vitamin B<sub>12</sub> are eggs, meat, and dairy products. Several kinds of bacteria unable to make the substance require minute amounts for growth.

In humans a lack of the vitamin results in defective formation of the papillae (small projections) of the tongue, giving appearance of abnormal smoothens. A deficiency of vitamin B<sub>12</sub> often causes defective function of the intestine, resulting in indigestion and sometimes constipation or diarrhoea. A very serious effect is degeneration of certain motor and sensory tracts of the spinal cord; if the degeneration continues for some time, treatment with vitamin B<sub>12</sub> may not correct it. Initial numbness and tingling of teenagers or toes may, without treatment, progress to instability of gait paralysis.

Because vitamin B<sub>12</sub> is found in animal but not vegetable foods, strict vegetarians (vegans) who do not eat dairy products, meats, fish, eggs or vitamin B<sub>12</sub>-fortified foods may develop a deficiency if they do not receive supplements of the vitamin. Deficiency may also result from competition for vitamin B<sub>12</sub> by the broad tapeworm or by intestinal bacteria growing in cul-de-sacs or above partial obstructions in the digestive tract. Additional nutritional deficiencies such as those of folic acid or iron are likely to develop in such cases, as in primary intestinal diseases such as celiac diseases, tropical sprue, or regional enteritis, all of which affect the absorptive capacity of the small bowel. Pernicious anemia, a disease characterised by the impaired production of red blood cells, is caused by the lack of intrinsic factor, a substance that is normally produced by the stomach and binds with vitamin B<sub>12</sub>, allowing it to be absorbed and used by the stomach and binds with vitamin B<sub>12</sub>, allowing it to be absorbed and used by the body; treatment involves the administration of intramuscular injections of the vitamin.



## **The Guided Practice Text about Vitamins**

Example one:

Let see what the topic is about Ok, the title seems familiar to me. It is about vitamin B12 aids in the development of red blood cells in higher animals.

Example two:

After such a big statement, the passage must normally proceed to talk about details. Yes here it gives examples for “vitamin B12 is involved in cellular metabolism into active coenzyme forms”.

Example three:

There is a word here i do not know exactly its meaning “degeneration” this is contrasted with generation which means producing, raising, creating, so i guess the meaning of degeneration means an evidence of decline.

Example four:

It has been repeated several times in the passage. I must look through the passage and see why it has been repeated so many times. Oh I was right it means lack of sufficiency.

Example five:

I guess the word “dietary” means the kind of food that a person habitually eats.

### **Reading by Students**

After my reading and over using the reading strategies, the students were asked to follow suit and apply similar strategies while reading the remaining part of the passage.

Students were encouraged to take greater risk and become volunteers in reading the passage and try using these strategies themselves. The following are examples of students reading:

-Do I know the passage is talking about?

Let me first examine the main idea of the passage which is usually presented either in the start of end of the paragraph.

-This must be the main sentence of the paragraph

## **Appendix C: Training Tasks in Skimming and Scanning. (Text about Vitamins).**

### **Vitamin B<sub>12</sub>**

A complex water-soluble organic compound that is essential to a number of microorganisms and animals, including humans. Vitamin B<sub>12</sub> aids in the development of blood cells in higher animals. The vitamin, which is unique in that it contains a metallic ion, cobalt, has a complex chemical structure.

Vitamin B<sub>12</sub> occurs in several forms, called cobalamins; cyanocobalamin is the principle one used in vitamin supplements and pharmaceuticals. Vitamin B<sub>12</sub> was first isolated in 1948 by American chemist Karl Folkers and British chemist Baron Alexander Todd.

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Vitamin B<sub>12</sub> is synthesized by microorganisms that occur in the rumen (the first stomach chamber) of cows and sheep, from the rumen it is transferred to the muscle and other tissues, which other animals and humans eat. Good dietary sources of vitamin B<sub>12</sub> are eggs, meat, and dairy products. Several kinds of bacteria unable to make the substance require minute amounts for growth.

In humans a lack of the vitamin results in defective formation of the papillae (small projections) of the tongue, giving appearance of abnormal smoothens. A deficiency of vitamin B<sub>12</sub> often causes defective function of the intestine, resulting in indigestion and sometimes constipation or diarrhoea. A very serious effect is degeneration of certain motor and sensory tracts of the spinal cord; if the degeneration continues for some time, treatment with vitamin B<sub>12</sub> may not correct it. Initial numbness and tingling of teenagers or toes may, without treatment, progress to instability of gait paralysis.

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## Appendix D: Training Tasks in Predicting

### Artificial immunity

Read the text and fill in the gaps with these words.

Antibodies, chickenpox, immunity, infection, lymphocytes, microorganism, vaccinations, vaccine

We can trick the body into responding to an 1 \_\_\_\_\_ without actually becoming ill. Do you remember going to the doctor to get 2 \_\_\_\_\_ against 3 \_\_\_\_\_

,hepatitis B and measles when you were younger? Vaccines are printed infections. The vaccine is either from very small amount of the dead 4 \_\_\_\_\_ or the toxins that it makes. When you receive the vaccine the white blood cells 5( \_\_\_\_\_ )

Identify them and begin to make antibodies against the infection, but because the microorganism is dead (or not even there), you do not get ill. Just as with natural 6 \_\_\_\_\_

These antibodies stay in the bloodstream for a very long time. So when you come into contact with the live microorganism, 7 \_\_\_\_\_ are produced rapidly and you will not become ill. This is known as artificial immunity. Many infections can now be avoided by being given the 8 \_\_\_\_\_ for them before we come into contact with the live versions.

### Acquired Immune Deficiency Syndrome (AIDS)

Complete the text by filling in the missing information. Certain letters are given to help you.

Acquired Immune Deficiency Syndrome (AIDS) is the worst sexually 1 t\_\_\_\_\_ d disease. It is caused by the Human immunodeficiency 2 \_\_\_\_\_ (HIV) which attacks the immune system. The 3 i \_\_\_\_\_ e system usually plays an important

part in fighting off infections. HIV is transmitted through contact with the infected person's body fluids, such as semen, blood and vaginal secretions. HIV is not only transmitted by sexual intercourse, but also it is transmitted from an infected expectant mother to her unborn child, or between drug addicts sharing an infected needle. HIV reduces the protective function of the immune system by destroying the cells that produce antibodies to fight against viruses and bacteria that enter the body. When the immune system breaks down, the person will then suffer many infections and diseases. These are called opportunistic infections because they take advantage of the body's weakened defences. This is what we call Acquired Immune Deficiency Syndrome (AIDS). A person can be infected with HIV for up to 10 years before showing any signs of AIDS. The person usually dies from one of these opportunistic infections, not from HIV virus itself. To date there is no cure for HIV/AIDS. However, patients are usually treated for the various opportunistic infections. The drug AZT (azidothymidine) can cause the HIV virus to take much longer to develop into AIDS, and so prolong the life of an HIV-infected individual. It is also widely accepted that the use of a latex condom while having intercourse will prevent the transfer of the virus from an infected individual to another.

## Health and Disease

Match the beginnings and endings of the sentences

<b>Beginnings</b>	<b>Endings</b>
1 Microorganisms, such as bacteria and fungi	A act as hosts to human parasites
2 The growth and development of micro organisms	B be hazardous to the environment and to the health of humans and other useful organisms
3 Food preservation methods	C are affected by temperature, moisture, oxygen and acidity
4 Parasites are microorganisms that	D biodegradable (decays) or non biodegradable (does not decay)
5 Pests may	E by making antibodies
6 Pesticides are chemicals that	F cause decay
7 Herbicides kill plant pests (weeds) while	G feed on living material
8 The use of pesticides can	H include reuse, recycling and converting to energy (e.g biogas)
9 Biological pest control involves	I include salting, heating, refrigeration, drying, picking and adding of sugar
10 The improper disposal of waste	J insecticides kill insects
11 Refuse can be classified as	K introducing the or natural predator or parasite of the pest
12 Alternative methods of waste disposal	L kill pests
13 Your immune system protects you from infection	M will result in many health problems and the spread of disease

## Appendix E: Training Tasks in Guessing Word Meaning

### Microorganisms and Decay

Read the text. Some of the sentences contain incorrect words. These are underlined.

Replace them with one on these words.

bacteria, cycle, decay, ill, organisms, plants, rot, unpleasant

Have you had food stored at a room temperature for a long time? What happens to it after a while? It begins to develop or decay. Microorganisms, including reptiles and fungi, feed on organic materials. During this process they cause the erosion or breakdown of the materials. They are important part of the circle of minerals and nutrients between living organs because they break down complex substance into simpler ones that animals can use at the start of a food chain. Decay can cause problems for us because it makes our food nice to eat. It can also make us better because the microorganisms can release chemicals that are toxic or poisonous to us as they feed on it.

Develop > \_\_\_\_\_

Organs > \_\_\_\_\_

Reptiles > \_\_\_\_\_

Animal > \_\_\_\_\_

Erosion > \_\_\_\_\_

Nice > \_\_\_\_\_

Circle > \_\_\_\_\_

Better > \_\_\_\_\_



## Appendix F: the Students' Questionnaire

### The Students' Questionnaire:

Dear student

This questionnaire is part of a research work. It aims at gathering information about your reading comprehension abilities in English, and determining the areas of difficulties in reading.

So you are kindly requested to answer the following questionnaire. Please, tick the appropriate box ( ). For some questions, you will be required to make longer statements or express your opinion.

#### Section One: The Learners' Needs in English

1/For what specific purpose do you require English?

- |  |                          |
|--|--------------------------|
| Understanding lectures on Biology in English?      | <input type="checkbox"/> |
| Taking part in oral discussion in English          | <input type="checkbox"/> |
| Writing answer to examination questions in English | <input type="checkbox"/> |
| Writing answer to examination questions in English | <input type="checkbox"/> |

5/What are the aptitudes in English you think are most useful to you?

To read and understand

To listen and understand

To speak

To write

3/Grade the following skills from the most important (I) to the least important (4)

Speaking

Listening

Reading

Writing

4/What is the degree of importance of the English documentation needed for your  
“memoire de fin cycle”

Vital

Very important

Of little importance

Section Two : Reading Situation

5/ Do you read English

Yes

No

6/If the answer is “yes”, what do you read in English?

Basic texts

Professional journals

Theses, dissertation

Other, please specify.....

Section Three: Reading Strategies

7/While reading, which of the following ways do you adopt in order to get information?

Read the whole text to get a general idea

Go quickly through the text to get the information needed

Read the introduction and the conclusion only

Try to understand the text relying on schemes, graphs and pictures

Use previous information having some relation with your text

See a colleague to give you explanation

Other, please specify.....

8/ Which of the following ways do you adopt to get the meaning of sentences?

Read the sentence many times until you understand it

Relate the sentence to previous ones

Deal with the sentence word by word

Other, please specify.....

9/ To get the meaning of a word, which of the following ways do you adopt?

Try to guess its meaning from the context

Look it up in a dictionary

Translate it into French or Arabic

Other, please specify.....

#### Section Four: Reading Comprehension Problems

10/How do you read in English?

- Fluently
- With little difficulty
- With some difficulty
- With great difficulty

11/Do you have difficulties in understanding the text in your field

- Yes
- No

12/ If the answer is yes, do you think your problems are due to;

- Vocabulary
- Grammatical structure
- Paragraph organisation
- Methods of teaching
- Other, please specify.....

13/ To overcome your reading difficulties, do you make use of some reading strategies?

Yes

No

If the answer is yes, what type of reading strategies do you use?

.....

## RESUME

Les étudiants en biologie du niveau Master 1 ont besoin de développer des aptitudes en lecture en langue anglaise pour avoir accès à une littérature scientifique en rapport avec leur spécialité. Le but de cette recherche est d'étudier les effets de l'enseignement explicite des stratégies de lecture chez les étudiants de Master 1 en biologie à l'université Constantine 1. L'hypothèse proposée est la suivante : Si on attire l'attention des étudiants sur l'efficacité des stratégies de lecture, ils seront en mesure de les utiliser d'une manière appropriée à leurs besoins spécifiques. Pour justifier notre hypothèse nous avons mené une étude expérimentale où le groupe contrôle et le groupe d'expérience ont été sélectionnés de manière hasardeuse parmi les étudiants de biologie. Les deux groupes reçoivent le même traitement et les mêmes textes de lecture. Cependant le groupe d'expérience reçoit un enseignement explicite des stratégies de lecture à savoir l'écumage (skimming), l'analyse (scanning), l'anticipation et la prédiction. Le t-test a été utilisé comme mesure statistique pour analyser les données recueillies. Ce teste génère des résultats significatifs. Les résultats de cette investigation révèlent que les performances du groupe d'expérience sont nettement meilleures. Ceci confirme que l'enseignement explicite des stratégies de lecture améliore nettement la compréhension des textes scientifiques.

## الملخص

التعليمات الواضحة للاستراتيجيات القراءة : دراسة خاصة لطلاب الماستير

بكلية علوم الطبيعة و الحياة بقسنطينة 1

يحتاج طلاب العلوم الحيوية بجامعة قسنطينة 1 إلى تنمية مهارة القراءة باللغة

الانجليزية و ذلك للاطلاع على مختلف المراجع و المنشورات العلمية المتعلقة بتخصصاتهم.

يهدف هذا البحث إلى التحقيق في الأثر المترتبة عن الاستراتيجيات الواضحة لتعليم

القراءة للطلاب الماستير بكلية علوم الطبيعة و الحياة بجامعة قسنطينة 1 .

نفترض انه إذا فهم هؤلاء الطلاب حقا بعض استراتيجيات القراءة الفعالة فإنهم سوف

يتمكنون من استخدامها وفقا لاحتياجاتهم العلمية المحددة.

من أجل التحقيق في هذه الحالة الخاصة ثم إجراء تصميم تجريبي متكون من تجربة

إحصائية.

يعتبر الاختبار مفيد جدا لأنه يمكننا من التحصيل على نتائج موثقة و التي ظهرت في

الأخير إنها معتبرة جدا.

و هذا يعني إن تزويد الطلاب بالتعليمات الواضحة لاستراتيجيات القراءة تمكنهم فعلا من

تحقيق الفهم عند القراءة.