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**The Effect of Cohesion Awareness on the Reading
Comprehension of Scientific Texts: The Case of Third Year
Students in the Department of Biology and Agriculture at**

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Dedication

To my parents, who always encourage me.

To all my family members.

To all my friends, with whom I shared the most memorable
lifetime moments.

To the love of my life, my fiancé.

Lydia BERKANI

Dedication

To my sweet family:

My father *Nourdine* and mother *Dahbia*

My brother *Fateh* and my sister *Dihia*

To all my friends

Hayat BENALIA

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Abstract

The present study is concerned with the impact of cohesion awareness on reading comprehension of scientific texts. It aims at determining the extent to which knowledge of cohesion can help improve reading comprehension. The research is based mainly on two theoretical frameworks; Rumelhart's Schema Theory (1980) and Perfetti's Lexical Quality Hypothesis (1994). The research concerns third year BMD students in the department of Biology and Agriculture at Mouloud Mammeri University of Tizi-Ouzou. To this end, the present investigation is based on a mixed (quantitative and qualitative) method research. It uses a questionnaire that is distributed for a group of fifty students, for the sake of gathering more data, a test is opted for. The data are analyzed according to the qualitative content analysis and a statistical method of analysis (SPSS). On the basis of the results of the study, it is concluded that students are interested in reading in English. However, they face difficulties to understand texts. The results also reveal that if the students become more familiar with cohesion, this will help in improving their reading comprehension.

List of abbreviations:

- LQH: Lexical Quality Hypothesis.
- QCA: Quantitative Content Analysis.
- SL/FL: Second Language/Foreign Language.
- SPSS: Statistical Package for Social Science.
- ZPD: Zone of Proximal Development.

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Statement of the Problem

Reading is one of the four skills that any SL/FL learner has to master. It is the process which involves communicating with the author in an indirect way. The reader has to decode the message transmitted by the writer through the text. The main purpose of text reading is to get knowledge about a specific field of study and about language itself.

Comprehension is the goal of reading. Reading comprehension is the process of extracting meaning from the text. In other words, the objective is to gain an overall understanding of the message. A successful comprehension enables readers to acquire information. Thus, the reader is expected to interpret what the author transmits either explicitly or implicitly

Texts are characterized by the unity of their structure, obtained through the application of different rules of grammar, and vocabulary which the reader has to be aware of. To understand a text in a meaningful way, readers need to integrate the meanings of successive sentences and figure out how the information fits together as a whole. This process depends on the comprehension of the cohesive elements which link and tie the sentences in a text and hold its different parts together

Cohesion refers to relations of meaning that exist within the text. The interpretation of these meaning relations is important to its comprehension. These relations are achieved by the use of cohesive ties. In essence, there is a range of different ways in which these words are related to each other to create meaning and establish links and connections across sentences.

A brief glance at the literature and the works that have been conducted about this issue in Mouloud Mammeri University of Tizi-Ouzou shows that the topic of cohesion has already been dealt with at the level of writing. This led us to continue the investigation of the same topic of

cohesion, but in relation to reading. A similar research about the role of cohesive devices in reading comprehension has been done in Mentouri University of Constantine. The results show that physics students have a low level in English, especially in understanding cohesive ties. The present research aims to investigate whether students of Biology and Agriculture of MMUTO face a similar problem or not, and if the knowledge of cohesive ties has an effect on the comprehension of scientific texts.

Aims of the Study

The aim of this study is to show the usefulness of cohesion knowledge as a main component of texts and how it improves students' reading comprehension. In addition, it aims at advancing an understanding of the problems students of Biology and Agriculture encounter while reading. The motive for focusing on cohesion in reading scientific texts in this research is for the reason that texts have become the focus of many researchers. Thus, it is worth investigating the factors facilitating comprehension. More precisely; it aims at checking whether or not getting acquainted with cohesion helps understanding texts as it is responsible for their formation and unity. Besides, the present research focuses on one type of texts which is related to the scientific field. In fact, scientific texts rely on cohesive devices to express logic. Thus, it is impossible for readers to understand scientific text without interpreting these devices. Also, scholars in the field of linguistics and applied linguistics claim that cohesive ties are critical to any reading comprehension. It is then worth investigating whether this view is taken into consideration at MMUTO or not.

Research Questions and Hypotheses

A focus on proving the role of cohesive markers in text comprehension leads to the following three questions:

- Do third year students of Biology and Agriculture at UMMTO understand texts in English easily?
- Are third year students in the department of Biology and Agriculture at MMUTO aware of the cohesive ties?
- Does the input of cohesion knowledge affect students' reading comprehension of scientific text?

In an attempt to answer the previous questions, the following hypotheses are advanced:

H1: Students of biology do not really understand scientific texts because they are not aware of the cohesive devices.

H2: Knowledge of cohesion is one way for improving the reading comprehension of the scientific texts.

H3: Cohesion can be the key for a facilitated reading comprehension.

Research Techniques and Methodology

To conduct this research a mixed method approach is adopted. That is to say, data collection and analysis rely on both qualitative and quantitative methods. This way, the research makes use of two data collection instruments. The first one is a questionnaire addressed to third year students in the department of Biology and Agriculture of MMUTO. The second instrument

is a test which consists of a pre and post test. Each one contains a text followed by reading comprehension questions and grammar activities. The difference is that after collecting the pre-test, three handouts presenting some items of cohesion handed to the participants. To complete the process, the post-test is distributed too. As a sample for this research, a group of third year students at MMUTO is selected randomly from three specialties. Some of the data which are collected from the questionnaire and the two tests will be analyzed in the forms of tables, pie charts and bar graphs.

Structure of the Dissertation

The present dissertation follows the traditional complex model. It consists of a General Introduction, four sections, and a General Conclusion. The introduction presents the problematic issue with the background of the study, the aim and significance of the study, research question and hypotheses, the research design and methodology, and finally, an overall structure of the dissertation. The first chapter entitled “*Review of literature*” presents the main concepts of the central theme and the theoretical framework upon which this research is based. This chapter explores “*Schema theory*”. In order to support this theory Perfetti’s “*Lexical Quality Hypothesis*” is implemented. The second chapter labeled “*Research Design*”. It provides a description of the research instruments and the procedures of data analysis. The third chapter entitled “*Presentation of the Findings*”. It presents the data gathered from the research instruments and analyzed statistically. The fourth chapter is “*Discussion of the Findings*”. It discusses the main results and outcomes included in the previous section. At the end, the general conclusion summarizes the different points dealt with throughout the research.

Introduction

This review of the literature is composed of five parts. Thus it deals with the key concepts related to this research. The first part reviews the literature concerning to the concept of reading. It deals with the notion of reading as one of the different language skills. Moreover, different definitions of the concept of “Reading” are provided, its main aspects and levels are explained too. The second part deals with the language of the scientific text and how the components of a scientific text are developed and joined together. The third part of this section reviews the literature related to the reading comprehension of the scientific text. The main focus is on the description of the reading comprehension and all its concepts. The fourth part is concerned only with cohesion and some light is thrown on the relation between cohesion and reading comprehension. The last part of the section reviews the three theories upon which the research is conducted.

I. Reading

1. What is Reading?

Reading is a process of looking at written symbols, then convert them into meaningful words that communicate something. This process involves: word recognition, comprehension, fluency, and motivation (Leipzig, 2001). It begins by identifying the words in print and how they correspond into spoken language (word recognition). Then construct an interpretation from these words and make sense of them (comprehension). The fact of relating words into meanings automatically and accurately is known as fluency. At the end, reading must be pleasurable and an opportunity to explore readers’ needs so that it will be meaningful for them (motivation). Thus it is crucial considering motivation as a key to reading. This means that reading involves combining

together the three steps (word recognition, comprehension, fluency), and taking into consideration the fourth one (motivation).

Reading is a matter of problem solving (Cziko, et al, 2000). It consists not only of making sense from the words included within the text, but also from readers' experiences, memories, ideas and knowledge of these words. Furthermore, reading is not passive as people think while they read; but in reality the reader is supposed to be a judge of what he reads relying on his view, the author's one, and those he encountered before.

2. Reading Strategies

A strategy is a general plan or set of plans intended to achieve one or more goals. Kvint (2009) defines it as *“a system of finding, formulating, and developing a doctrine that will ensure long-term success if followed faithfully”*.

Reading comprehension strategies are the different techniques that readers use to reach texts' comprehension. Mc Namara et al (2004) advocate that *“A reading comprehension strategy is a cognitive or behavioral action that is enacted under particular contextual condition, with the goal of improving some aspect of comprehension”* (p. 193-202). Reading comprehension strategies refer to the different ways undertaken to uncover writer's message and decode its meaning. To figure out this meaning, different strategies can be used. As foreign language learners are concerned, they usually make use of five strategies: skimming, scanning, predicting, inferring, and guessing the meaning of unfamiliar words. Abbey (2013) goes further to mention that each of them is used for its own purpose.

1.2. Skimming:

Skimming is a strategy used to read large amount of information in a short period of time. Grellet considers it as *“a general idea about the content of printed materials through reading the text quickly i.e. in this strategy, readers will look for something quite specific or get general ideas before putting effort into close reading”*(1999, p. 2-25). Thus, it allows looking only for the main ideas and what fulfills the reader’s aims. It consists of moving rapidly the eyes and haphazardly over the text with the purpose of extracting the general overview and the main ideas.

Skimming is useful when the material is a non-fiction, when it is large and the reader has not enough time; also, when the reader has background information about the topic. Therefore, in such situations some points can be neglected (Beale, 2013). Moreover, skimming as a device for obtaining a general idea about a written passage, is useful in three situations: (<https://www.aacc.edu/tutoring/file/skimming.pdf>).

2.1.1. Pre-reading

It gives a kind of picture about the text before starting reading. Sometimes it is used to help the reader decide whether he will continue reading the text or not.

2.1.2. Reviewing

It is used when the text has been already read. For instance, students have revised before for the exams, and during the exam period they have just to skim.

2.1.3. Reading

It is used while reading a material that does not need detailed attention. Beale (2013) advances the example of reading a long chapter or a web site. Skimming in this situation consists of reading the topic sentences of each paragraph and getting a quick look for the rest.

2.2. Scanning

Unlike skimming, scanning is to look for specific information without reading everything (Beale, 2013). It helps cover a lot of details in a short period of time. It involves moving the eyes quickly down the page searching for specific items (Wood, 2008). To make a successful scan, the structure of the material must be defined in the purpose of locating easily the information. Furthermore, the aim has to be set because it determines the words.

In this context, the way the material is arranged is helpful for a successful scan. These ways are: alphabetically (from A to Z), chronologically (time or numerical order), non-alphabetically, by category or textually (so as to make a textual sense). In fact, the hands precisely the fingers are the key to scanning. Using them to locate the information increases the amount of attention and care on that specific information.

2.3. Predicting

Another reading strategy is predicting. Magiliano states in his own words “*Prediction strategy involves thinking about what might be coming next in the text. It is applied by effective reader that mean, they used pictures, headings and text as well as personal experience to make predictions before they begin to read*”(1993, p. 35).

Thus, predicting is thinking and guessing what a material will be about. The title, heading, pictures, knowledge about the author, background information, and diagrams give a general overview about the whole material (www.readingrockets.org/article/key-comprehension-strategies-teach).

2.4. Inferring

Inferring refers to a guess that relies on the data presented in a given material, the experience, and the knowledge the reader already has. According to Zimmermann *“Drawing inferences from text is a technique which requires readers to use their prior knowledge (schema) and textual information to draw conclusions, make critical judgments, and form unique interpretations from text”* (2009, p. 23).

Furthermore, it is described as a deductive reasoning. It consists in analyzing the information then reaching conclusions. This process can be done either consciously or unconsciously (Adonis, 2006 cited in Poskitt and Skeels, 2012). As reported by Zwaan and Singer (2003 cited in Meyer and Gravani 2012), sometimes making inference is used to fill in given missing information and to get a coherent representation (Cited in Gravani, E.H. and Meyer, J. 2012).

2.5. Guessing the Meaning of Unfamiliar Words

Another obstacle that readers may encounter while reading is facing unfamiliar words. Finding new words in a text may interrupt reading. For this reason, Clarke and Notion (1980) suggests to continue reading and guess the meaning of those words from the text, the aim behind doing this is to save time. The background knowledge of the reader, the meaning transmitted or the goal of the text, also the structure of words and sentences can be useful in guessing the meaning of unfamiliar words,

3. Reading models

A reading model explains what happens in a reading process. It starts from the time the reader's eyes meet with the text until he constructs a meaning. This refers to the transformation of the graphic representations into thought (Rumelhart, 1977). So, every reading act contains the text, the reader, and the interpretation. As reading is concerned, three main theoretical models are introduced in this study: the bottom up model, the top down model, and the interactive one (Redondo, 1997).

3.1. The Bottom up Model

It assumes that reading is a decoding process. It focuses on what is within the text rather than the reader. This means that it emphasizes the printed text and the ability to decode it. According to Nunan (1991), reading is a matter of decoding written symbols into their equivalents. The aim is to make an interpretation of the text. The bottom up model is known as “phonics”. It consists of recognizing individual letters, phonemes, and words first. Moving from the smallest units until completing the text as a whole (Gentry, 2008). In this context, this model describes reading as being linear. Readers decode texts by moving from one word to the next, then linking the words into phrases, and then into sentences, to reach finally a coherent passage that is obtained through the use of cohesive ties (Gray and Regers, 1956).

3.2. The Top down Model

This model believes that reading is a matter of a psycholinguistic guessing which focuses on the reader. The latter makes predictions relying on given items from the text, tests and confirms them, then revises them, and concludes with a successful interpretation of the text (Rumelhart, 1977). Grabe states that reading is the ability to link the information in the text to the background knowledge. It is “...*a dialogue between the reader and the text*” (1988, p. 56).

The schema theory fits this model. In the same context, Rumelhart (1977) describes it as “*Building blocks of recognition*”. He states that if the schemata are incomplete, so the reader can’t understand the data in the text; thus he/she will find difficulties in interpreting the meaning. Moreover, the more the reader knows about the topic discussed within the text, the more the need to use graphic information decreases.

3.3. The Interactive Model

The interactive model considers reading as a process of constructing meaning from text through the use of both the bottom up model and the top down one simultaneously. Eskey puts in his words that “*the interactive model takes into account the continuous interaction between bottom-up and top-down processing in the construction of the meaning of a text*” (1988, p. 93-100). This model combines both surface structure systems (the sensory i.e. bottom-up reading) with deep structure systems (the thinking i.e. top-down reading) in the purpose of building meaning for the reader .In other words, readers use both knowledge of word structure and background knowledge to extract the meaning of texts.

II. Scientific Text and its Language

A scientific text is a set of sentences that cohere together in order to communicate a scientific goal. This purpose is to transmit and transfer a progress achieved in a particular research. It is characterized by a clear syntax, phrase ordered, and an accurate language in the purpose of avoiding ambiguity and subjectivity (Hutchins, 1977). In fact, Schelppegel (2013) presents four goals of scientific texts:

- a. Description: to give a definition.
- b. Explanation: to tell how or why something is in that situation.

- c. Recount/procedure: to transmit information or an event that had happened.
- d. Argument: to convince to do or not to do something.

According to O'Connor (1990), scientific texts present not only scientists ideas and achievement but also give solutions to problems. The way this type of texts is presented is different from the articles that people read in their daily life like journal articles, magazines, fictional and narrative passages (Palinscar, 1982). This is due to the unfamiliar terminology and sentence construction they use.

Scientific texts as seen by O'Connor: "*They signal logic and purpose, and temporal quantitative relations, among other things*" (1990, p. 10), which is achieved through its particular language. The fact that led many researchers to consider its main characteristic to be the scientific language it is based on. In the everyday life, people use a language that is vague and general that can be interpreted differently. Whereas, in scientific contexts the lexis -or the words- are specific and each one refers only to its particular thing.

In fact, the language of science or of scientific texts is characterized by its technical terminology and grammar which are interdependent. The focus is on concrete information and not on people's thoughts, opinions, and feelings. It makes use only of two personal pronouns "it" and "they" in order to avoid subjectivity and be as possible objective. Also the whole verbs are put in the past tense (www.engageinresearch.ac.uk > *Introduction* > *Writing scientifically*).

Moreover; scientific language has its own structure, follows a logical order, and uses technical, academic, and condensed language. It focuses on facts in an objective way. Besides, it makes use of the passive voice in the purpose of stressing the action and not the doer.

Furthermore, the doing and linking verbs are common unlike those of inner consciousness. (https://arbs.nzcer.org.nz/supportmaterials/language_of_science.php).

III. Reading Comprehension of the Scientific Texts

1. Reading Comprehension

Reading comprehension is the heart and goal of reading since the purpose of all reading is to gather meaning from the text. Hence, this concept has been defined by many researchers as gaining an understanding of written text through a process of extracting and constructing meaning. Broek (1998) asserts; that reading comprehension includes the ability to " *select, encode, interpret and retrieve relevant information, use story structure and background information, and draw inferences from the information presented*" (Broek,1998 cited in Dawn H. T .2012). That is, reading comprehension is a highly interactive process that takes place between a reader and a text.

Comprehension depends on knowledge. According to Bernhardt "*comprehension is the process of relating new, or incoming information already stored in the memory (background knowledge)*" (1991, p. 9). Obviously, Rumelhart (1977) argues that during the process of reading, readers must not look at words only on the pages (bottom-up processing), but also activate background knowledge (top-down processing), and then build all the elements into comprehension. (Rumelhart, 1977 Cited in Ho Van chung, M.A.2007).

2. Reading Comprehension Levels

As explained before, Reading comprehension is the ability to process the information after reading and understand the meaning. It is a complex process where skills are built upon one

another. Actually, there are three levels of understanding while reading: literal level, inferential level, and evaluative level (Lamont, H. 2006).

2.1. Literal Level

It refers to what the text says. In another way, it involves what the author is trying to transmit. This level involves only surface understanding. The reader needs to understand the ideas and the information stated in the text and does not need to go further. At this level, readers are at the most basic stage of comprehension. They are just building knowledge rather than putting a touch or commanding. This level is the foundation for further comprehension ones.

2.2. Inferential Level

It involves determining what the text means. It also deals with what is said in a deeper way. It begins with stated information, then relying on them; the reader extracts an implicit meaning that cannot be interpreted directly from the surface level. For instance, people do face situation where they read something and after a period of time they say “*Ah yes! This is what is meant.*” So they draw conclusion from stated facts. Moreover, to reach this level of comprehension readers need to infer and check between the lines rather than restricting to what is directly stated.

2.3. Critical Level

Critical level refers to the reason why the author says something. It requires readers to analyze what they read by relating it to their previous knowledge. Consequently, they form opinions and views based on the new material (text). Readers’ interaction with the text differs from one another since everyone’s experience and background is varied.

To conclude, it is important to mention that all of literal, inferential and critical

comprehensive reading is what makes a skilled SL/FL learner, a strong reader. It must be learned and developed.

3. Main Reading Comprehension Problems

For many foreign language learners, reading comprehension is a major problem that hinders the comprehension of the ideas included within the text. In this context, Wiggan argued that "*Many foreign students lack the ability or training to understand the implicit messages that result from an interaction of syntax and rhetoric*" (1977, p. 4). This reveals that any reading comprehension process may be affected by many difficulties which cause the lack of understanding. Many researchers have dealt with reading comprehension problems that EFL learners may face. For example, Kerfoot (1965) in his research on the problems and considerations in reading comprehension found that "*Confusion*" is one of the problems in reading comprehension. In addition to this, another research has been done by Ho Van chung, entitled "A Study of Reading Comprehension Problems in English Encountered by First Year Students of Faculty of Vietnamese Studies at HNus". The results show that students do encounter several degrees of difficulty in reading comprehension. Ho Van chung asserts that two of the most serious problems preventing the students comprehension from English reading were: insufficient vocabulary and the need to reread. Furthermore, comprehension difficulties have different characteristics. They are as follows, first, confusion about the meaning of words and sentences. Second, inability to connect ideas in a passage, omission of or glossing over detail. Third, difficulty in distinguishing significant information from minor details. Fourth, lack of concentration during reading. Yet, from what is stated above, these signs can be the result of language problems, because if a student's knowledge of English is poor, her/his reading will also be poor, thus bringing a poor comprehension.

VI. Cohesion

1. What is Cohesion?

Cohesion is viewed as the type of language that links one sentence or phrase to another. In its simplest definition, it refers to the ways in which the different text parts are linked and connected together (Kennedy, 1998). To achieve cohesion, writers have to connect the words, sentences, or clauses with signals and devices, which in their part create and organize texts. Thus, cohesion is the whole range of items that relate a given sentence with a preceding one (Halliday and Hassan, 1976, p. 6). Stated in their words in their words, *"Cohesion as we said is not a structural relation; hence it is unrestricted by sentence boundaries relation; and in its most normal form it is simply the presupposition of something that has gone before whether in the preceding sentence or not"*. Indeed, they define the notion of cohesion as a semantic relationship between different elements in a given the text. *"...it refers to relations of meaning that exist within the text and that define it as a text"*. It occurs *"when the interpretation of some element in the discourse is dependent on that of another"* (ibid).

Furthermore, Hassan and Halliday introduced the concept of cohesive ties. It refers to a set of cohesively linked items. They continue to argue that they are created by cohesion. A coherent text brings textuality. In order to consider and feel any passage a text and not a set of sentences that are randomly put together, it requires cohesion. In other words, a text is to be so due to the textuality it gains from cohesion. Indeed, it makes the reader interested and comprehends the written or spoken discourse (Booth and Gregory, 1987).

2. Cohesion and Coherence

Cohesion is a relationship between elements of a text where proper interpretation and understanding of one element depends on another. Thus, it serves to relate elements of a text to each other. Coherence on the other hand, according to McCagg (1990) refers to a semantic property of textuality. It is an aspect of comprehension that is established in the mind of the reader as a result of text cohesion.

Cohesion and coherence are different concepts which do refer to different meanings. Louwerse and Graesser (2005) define cohesion as "*continuity in word and sentence structure*". Thus, it is related to the features on sentential level; whereas, they consider coherence as a "*continuity in meaning and context*". In other words, it refers to relations of meanings established in the mind of the reader.

3. Types of Cohesion

Different researchers such as Platt and Weber (1985), Mei-Yum (1993), and Carell (1982) define cohesion in a variety of ways and present different views over it. The present study is concerned only with Halliday and Hassan's classification of cohesion.

As claimed by Halliday and Hassan (1976), they categorize cohesion into two general types: grammatical and lexical. It is expressed either through grammar (grammatical type), or through vocabulary (lexical one). The first type is achieved by the use of devices such as: reference, ellipsis, substitution, and conjunction; whereas, the second one consists only of reiteration and collocation.

3.1. Grammatical cohesion

It is based on structural content. Four devices can create this type of cohesion.

3.1.1. Reference

It is a semantic relation expressed through grammatical means. This type contains two or more linguistic elements that are related to what they refer to. Bloor states that reference occurs “*when two or more expressions in the text refer to the same person, thing, or idea*” (2004, p. 93 cited in <https://www.ukessays.com/essays/english-language/halliday-and-hasans-cohesion-in-english-english-language-essay.php>). Halliday and Hassan (1976) distinguish also between exophoric and endophoric references.

3.1.1.1. Exophoric reference

This type points to something that is outside the text. It is situational i.e. it can be decoded only from the immediate situation. For instance, the expression “*Take this and leave the room now!*” can be only understood by those who are aware about the situation.

3.1.1.2. Endophoric reference

It points something that is inside the text. Thus it is known to be textual i.e. the referent is introduced within the text. Again it is divided into: anaphoric and cataphoric.

a. Anaphoric Reference

It occurs when the item refers to a preceding word within the text (back reference).

b. Cataphoric Reference

In this type, the referent makes reference to a following item in the text (forward reference).

3.1.2. Substitution

Unlike reference that is a relation of meaning, substitution is one of syntax. It appears when

a linguistic element is not repeated but replaced by another. It is used to avoid repetition of lexical items. . It is useful at the level of grammar and vocabulary (lexicogrammatical). For example, a person says: “*Which dress do you like more*”. Another person answers: “*The red one*”. The item “*one*” is used to avoid the repetition of the word “*dress*”. Substitution can be nominal (the same), verbal (do), or clausal (so). (Bloor, 2006)

3.1.3. Ellipsis

It is described as a substitution by zero. It appears when one of the linguistic elements is omitted. The omitted item can be a verb, a noun, or a clause. As described in Halliday and Hassan’s (1976) own words “*something is left unsaid but understood nevertheless*”.

3.1.4. Conjunction

Conjunctions are a set of markers that express a semantic relation. It refers to a combination of two textual elements got coherent complex semantic unit (Thompson, 2004). Their function is to describe relationships between clauses and relate between different linguistic elements. Pierce (1975) insists on the importance of these markers in teaching reading skill. In English there are three basic types of conjunction: coordinating, subordinating, and correlative.

3.1.4.1. Coordinating conjunctions

They are used to connect two independent clauses. Examples of this type are: and, for, nor, but, or, yet, so.

3.1.4.2. Subordinating conjunctions

They are used to establish a relationship between the dependent clause and the rest of the sentence. For instance, those of concession (though,...) ; time (before,...) ; relative adjectives (which,...) ; condition (if, ...) ; relative pronoun(who,...); comparison (whereas,...) ; reason (because,...) ; manner (as if,...) ; place (wherever,..)

3.1.4.3. Correlative conjunctions

This type of conjunctions is used to join various sentence elements which are grammatically equal. They are always used in pairs and denote equality and show the relationship between ideas expressed in different parts of a sentence. These conjunctions are: as ...as; just as ... so; both ... and; hardly ... when; scarcely ... when; either ...or; neither ...nor; if ... then; not only ... but also; ...etc.

3.2. Lexical cohesion

It is explained as being achieved through vocabulary selection. It relies on lexical items to create text connections. Morris, J. ; Beghtol, C. and Hirst, G. (2014, p.1) state “*lexical cohesion occurs when related word pairs join together to form larger groups of related words that can extend freely over sentence boundaries*”, it is categorized into:

3.2.1. Collocation (Word Association)

This term refers to words which occur with one another. They share a lexical field. For example: hot weather, beach, and ice cream.

3.2.2. Reiteration

It involves the repetition or the restatement of lexical items in order to emphasize them. Four means can be used: repetition, synonyms/near synonyms, subordinates, or general words.

4. Cohesive Devices?

Cohesive devices are sometimes called linking words, linkers, conjunctions, discourse markers, or transitional words. They may occur within a single sentence or between sentences. They are words such as: in conclusion, however, moreover ...and so on. In fact, cohesive devices enable texts to preserve consistency and connectedness. They are employed to assemble sentences and get a meaningful text.

The main purpose of using cohesive devices is to achieve textuality i.e. their main function is text formation. A cohesive ties by means of which cohesion is achieved *"is a semantic relation between an element in a text and some other element that is crucial to the interpretation of it"* (Halliday and Hasan, 1976, p. 8, cited in Witte and Faigley, 1981, p. 190). Thus, they signal to the reader the relationships between the different clauses, sentences, and paragraphs. Morris and Hirst (2003) claim that cohesive ties facilitate solving ambiguity and decoding the information transmitted.

5. Cohesion and Reading Comprehension

The question of whether cohesion plays a specific role in comprehension has been the focus of a number of studies. Standal (1987) found that cohesion is among the factors bringing facilitated comprehension of expository texts by college students. The participants were exposed passages which were neither easy, nor difficult. In fact, he came to the conclusion that cohesion binds sentences semantically; this led to enable readers to reach text comprehension. Moreover, Meyer, Brandt, and Bluth (1981) states that since conjunctions make text organization explicit, and since the reader should be aware of text organization for bringing comprehension, it follows that the presence and understanding of conjunctions in text should facilitate the comprehension. Kieras (1985) advocates that being well acquainted with cohesion helps readers bringing their attention to the important information included within texts (Lorch, 1986) and help checking information in memory (Spyridakis and standal, 1987 cited in Geva 1992).

VII. Theoretical framework of the study

The current study aims to test the extent to which cohesion knowledge can be helpful for the comprehension process. To this extent, it adopts the schema theory by Rumelhardt (1980) and

the Lexical Quality Hypothesis by Perfetti (1972).

1- Schema Theory :

Schema theory was introduced by Rumelhart. It discusses the role of background knowledge in reading comprehension. Schema theory explains how readers can use their background knowledge in order to understand a text. Readers' understanding of a text depends on how much related schema are, as readers, possess while reading. In fact, readers' failure to make sense of a text is caused by their lack of appropriate schemata (James, 1987). Considering the fact that schemata is related to the readers prior knowledge gained through experiences stored in the mind, therefore, the more information readers may acquire from the text, and the more effective readers they may become. Schema theory assumes that a text does not carry meaning in itself. Rather, it gives the reader the opportunity to construct and retrieve meaning by relating the text's material to the reader's previously acquired knowledge (Adams and Collins, 1979 cited in Meurer, 1985). Moreover, efficient comprehension requires the ability to relate the textual material to one's own knowledge.

Generally, there are three major types of schemata, namely, linguistic schemata, content schemata and formal schemata, which are closely related to reading comprehension (Hudson, 1982 cited in Shuying, 2013). First, linguistic schemata, it plays a basic role in the comprehensive understanding of the text. Linguistic schemata refer to the knowledge about vocabulary and grammar, indeed, grammar knowledge comprises cohesion knowledge, thus from what has been said previously it is concluded that schemata include knowledge about cohesion and cohesion knowledge is crucial for text comprehension. Lack of such kind of knowledge contributes considerably to the problems in reading comprehension.

Second, schema theory states that content schema are another type of schemata; these refer to the knowledge of the content of the text to be read (Carrell, 1987 cited in Man and Young 2005). Precisely, it includes what we know about people, the world, culture, and the universe. Students' familiarity with the content of the text has a large impact on their reading comprehension. Third, formal schemata, if refers to the knowledge of the ways in which different genres are presented and knowledge about text types and genres.

In schema theoretical view reading is considered as an interactive process. And the interaction is subdivided into two levels: interaction between bottom-up and top-down processing, and between readers' background knowledge and the background knowledge presupposed in the text. Bottom-up processing begins by specific information from the text. Top-down processing starts with predictions then searches the more specific level to confirm these predictions. The bottom-up processing and the top-down processing always occur interactively in reading.

2. Lexical Quality Hypothesis:

The lexical quality hypothesis is coined by Perfetti. It claims that variation in the quality of word representations has consequences for reading skill. So, the text comprehension depends on the reader's amount of lexical quality representation of the information included in the text. "*Lexical quality representation*" refers to the knowledge about phonology, orthography and morpho-syntax which impact in a direct way the comprehension (Perfetti and Hart, 2002). And "*quality*" is the extent to which a mental representation of a word specifies its form and meaning components in a precise and flexible way, precision is so important in the word identification because "*pretty*" and "*petty*" and "*knight*" and "*night*" are not the same. Thus, a high quality of lexical knowledge leads to efficient reading skills, whereas low quality of lexical representations

leads to inefficient reading skills and comprehension and leads to a specific word related problems in comprehension. Lexical quality of words is identified as a part of the comprehension process (Hart and Perfetti, in press). Moreover, reading comprehension requires higher cognitive abilities to understand a text. Thus, lexical quality affects reading comprehension because a text includes different kinds of words which require knowledge in order to be interpreted. Reading is partly about words, knowledge about words is important to understand skill in reading (Perfetti, 1985). Moreover, reading comprehension rests to a considerable extent on knowledge of words.

To conclude, readers have to reflect relying on what they have stored before. When meeting known words in texts the comprehension process happens automatically and without effort. Whereas, when the reader is unfamiliar with the lexis this hinders or at least delays comprehension (Perfetti, 1992). In fact, as much as the reader knows about language items, as he/she gets a facilitated comprehension. Furthermore, lexical knowledge and comprehension are associated with each other. Comprehension depends on lexical knowledge but lexical knowledge is not sufficient for comprehension because a text is constructed of different representational features which should be mastered by the reader in order to accomplish the comprehension.

Conclusion

The review of literature in this chapter allowed defining reading, comprehension, scientific text, and cohesion. In addition, it presented the “*Schema Theory*” and “*The Lexical Quality Hypothesis*” as being the framework upon which the study is based. Regarding the reading skill, it is considered as a paramount skill that any student wants to develop since it is one of the four language skills. Moreover, reading cannot be accomplished without comprehension, and comprehension can be a very hard task for many readers. Besides, reading involves not only

comprehension but also the ability to relate the information inside the text to the outside or previous one. In fact, it is thanks to cohesion that ideas in texts are combined together into complex sentences. Then, construct a meaning that the reader should retrieve if he has a particular knowledge about it. Hence, this section shows the correlation between reading comprehension and cohesion. More precisely, cohesion plays an important role in the reading comprehension of texts. Though the findings are important, further studies are still required for the development of the reading process since it is a considerable skill in any language.

Introduction

The present chapter is concerned with the research design of the study. It provides a description of the techniques used to accomplish the investigation. This chapter is subdivided into three main sections. It first presents the context of the investigation and advances a description of the subjects of the study. Moreover, it describes the procedures of data collection: a questionnaire and a test administered to third year students in the department of Biology and Agriculture at Mouloud Mammeri University of Tizi-Ouzou. The chapter then shows the procedures of data analysis; a statistical method used in social sciences known as Statistical Package of Social Sciences (SPSS) is used to analyze the close ended questions of the questionnaire and some of the test's results. As concerns the open ended questions and the other test results a Qualitative Content Analysis (QCA) is relied on to better interpret the data.

2.1. Context of the Study and Population Sample

The study is carried out in a realistic setting, that is, in the department of Biology and Agriculture at MMUTO. The population concerns only third year students of the same department. The purpose of choosing of this level is that students in such degree they are supposed to read different documents and books. In fact, due to the inability to deal with all of them, a sample is selected randomly from three specialties "*Vegetal Biology and Physiology*", "*Agronomical Science*", and "*Water and Soil*". The total number of the participants in this investigation is ninety (90). Fifty (50) of them are involved in this research to respond to the questionnaire. In fact, it is related to their level of English, difficulties they face during reading, and the way they deal with them; whereas, the rest of the participants (30 students) are taken to complete the test.

2.2. Techniques of Data Collection

Any investigation needs instruments to collect data. Researchers can choose from various types of data collection techniques. Indeed, in order to reach the aim of the present research study and get answers to the research questions about the reality and quality of the reading comprehension of third year students of Biology and Agriculture at MMUTO, their abilities to understand scientific texts in English, the problems they encounter, how they deal with them, and whether knowledge of cohesion can help to surmount the obstacles they face or not. Both a questionnaire and a test are designed as two different types of data collection procedures. A mixed approach is selected for gathering and analyzing the information obtained from these two different techniques. The reason behind choosing this methodology is that it is suitable to the fulfillment of the issues addressed in this study.

2.2.1. The Questionnaire

Broadly speaking, a questionnaire is a research instrument which consists of a list of questions that are presented to a population in order to collect and record information, facts, and opinions about a particular issue of interest. It serves to obtain statistically useful data from different respondents without consuming time and effort. Brown (2011, cited in Dornyei, 2003) defines a questionnaire as being any written tool containing series of questions to be answered by respondents. Indeed, a questionnaire is made up of two types of items: closed and open ended that the researcher may choose to include one of them or both. Close ended items allow the respondents to select from suggested answers under each question. However, open ended ones let the respondents free to answer in their own words. As far as this research is concerned, it makes

use of both closed and open ended questions. The questionnaire would be a suitable tool in the present work since it is concerned with a non native language as claimed by Dornyei (2001).

The questionnaire has been distributed for the subjects on the 25, 26 and 27 of April, 2016. The questionnaire covers 22 questions that are subdivided into five sections. The first section is devoted to background information; whether they are interested in learning English or not and their level. The second section aims at getting data about their reading; if they read in English, if yes, what motivates them. The third deals with comprehension; their understanding, what they do encounter as problems, and how they respond and react to solve them. The fourth aims at getting data about cohesion; their familiarity with the notion of cohesion, also knowledge of cohesive ties. The last section presents students evaluation of the fact of studying Biology and Agriculture in English, its importance or unimportance, by justifying their answers.

2.2.2. The Test

In order to complete and support the results obtained from the questionnaire, a test has been designed too. In fact, it is described as an examination of persons' proficiency and knowledge. Test is considered as a useful tool for gathering data since they reveal the person's strengths and weaknesses. Thus, it is carried out to fulfill the data gathered from the questionnaire administered to third year students of Biology and Agriculture. The test as a whole comprises a pre-and-post test. Each one is divided into three parts: a text to be read and followed by reading comprehension questions, and to end with grammar activities. Furthermore, between the two tests three handouts containing some explanations about cohesion are distributed. Indeed, (30) students are involved to respond to the test at home. In fact, it aims to explore if there is a significant improvement in the post-test in comparison with the pre-test.

The test period lasted six (6) week. In the first week, the students were given the pre-test (N°1). They were asked to read the text, and then answer the questions below. In the following three weeks, each Sunday or Monday they were provided with a handout. They had just to read them and try to understand what was included inside. In the next week (week 5) nothing was given for them. It was until the sixth week that the students were asked to respond to the post-test. They were expected to do the same procedure as the pre test; that is, to read the text and answer the questions.

2.3. Procedures of Data Analysis

The last point of this chapter is intended to explain the procedures used to analyze the data gathered. The Statistical Package for Social Sciences (SPSS) is used to analyze the closed ended questions obtained from the questionnaire and some test results. Whereas, Qualitative Content Analysis (QCA) is adopted for to analyze the open ended questions and the other test results.

2.3.1. Descriptive Statistical method

A computer program named Statistical Package for Social Sciences (SPSS) is used to analyze the closed ended questions of the questionnaire and some of the results obtained from the test. This program is the one which is mostly used in social sciences. It makes possible the description of statistical data, and it presents the results in their equivalents, and then transfers them into form of diagrams: tables, histograms, and pie charts. Accordingly they facilitate the interpretation of the results.

2.3.2. Qualitative Content Analysis

To complete the data analysis of the open ended questions and the test results, a Qualitative Content Analysis is adopted. It allows interpreting the data in a form of narrative passages. In this context, Hsieh and Shannon (2005, p.2) define it as “... *a research method for subjective interpretation of the content ...*” Moreover, the analysis of the results is based on the conventional type of content analysis. It consists of transferring the data gathered into categories which facilitate the interpretation process, it is used to describe, analyze, and interpret qualitative data.

Conclusion

This chapter highlighted the research design used in this study. First of all, it has described the data collection techniques which consist of a questionnaire and a test that are designed to third year students of Biology and Agriculture. Then, it clarifies the methods used for the analysis of the gathered data. SPSS is useful to transfer the information into percentages and diagrams. And QCA to interpret the results and convert them into passages. The results gathered using these data procedures will help to investigate the effect of cohesion on the reading comprehension of scientific texts.

Introduction

This chapter presents the results reached from the questionnaire addressed to a group of fifty (50) third year students in the department of Biology and Agriculture at MMUTO. In addition, it presents the outcomes gathered from the test which was distributed to thirty (30) participants of the same population. It aims to provide answers to the research questions of the study. For the sake of readability and visibility, some of the results are presented in percentages, and then converted into tables, pie charts, histograms, and bar graphs. Others are interpreted in form of narrative passages. The chapter is arranged into two main parts. The first part presents the results obtained from the analysis of the questionnaire about students' interest to learn English, the factors motivating them, problems they face while reading, the way they engage to solve them, their knowledge of cohesion, and suggestion for a best reading comprehension. As for the second report, it demonstrates the results obtained from the test which reflects the participants' knowledge of cohesion, their level of comprehension, and whether cohesion knowledge influences texts comprehension.

I. Presentation of the Questionnaire's Results

Q1: Does the English language interest you?

	Yes	No	No answer	Total
Participants	44	5	1	50
%	87.2	11.4	1.4	100

Table 1: Students Interest in Learning English

As indicated in the first table, the majority of the participants (88.4%) show an interest towards English. Whereas, an insignificant number of the students (11.6%) report that they have no interest.

-If yes! Why?”

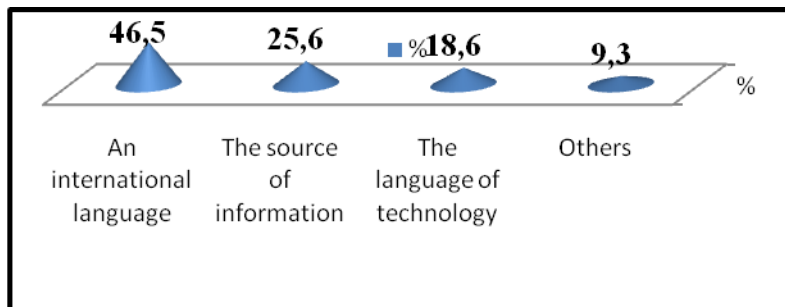


Diagram1: Reasons for Students' Interest in Learning English

As underscored in the above diagram, different reasons behind students' interest to learn English are set out. Indeed, 46.5% of the answers point out that the students are interested in English because it is “*an international language*”; 25.6% indicate that it is “*the source of information*” on both the internet and the library; and 18.6% assert that it is “*the language of technology*”; whereas, only 9.3% of the participants state other reasons.

-Precise

In citing other motives for learning English, many students pointed out that most of the known movies are filmed in English. Moreover, they enjoy listening to English music. Thus, this motivates them to try to understand the lyrics of the songs. Another participant asserts that English allows them to communicate everywhere and get good jobs abroad.

Q2: How can you describe your level in English?

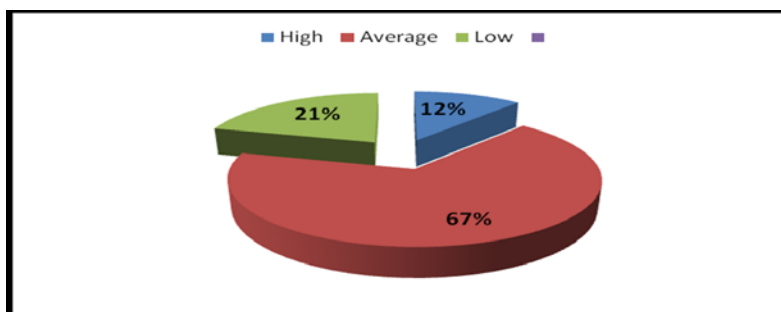


Diagram 2: Students' Level in English

As for the students level in English, the outcomes clearly show that 67% of them argue that they have an "average" level in English, yet 21% of them have a "low" level, and only 12% of them consider themselves having a "high" level.

Q3: Did you enjoy English sessions in the secondary school?

	Yes	No	No answer	Total
Participants	41	8	1	50
%	81.4	16.2	2.4	100

Table 2: English Sessions in the Secondary School

The results show that the majority (81.4%) of the students affirm that they enjoyed English sessions during the Secondary School. However, an insignificant number of them (18.6) did not enjoy it.

Q4: How do you consider the English module at the university?

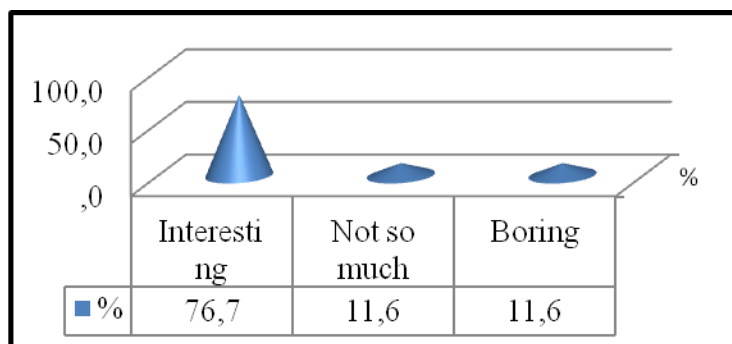


Diagram3: Students' Views about the English Module at University

As it is highlighted in diagram (5), 76.7% which refers to the majority of the participants find the English module at university "interesting", and 11.6% of them consider it to be "boring". Moreover, the same number of the participants considers it beneficial.

Q5: How do you find learning about Biology and Agriculture in English?

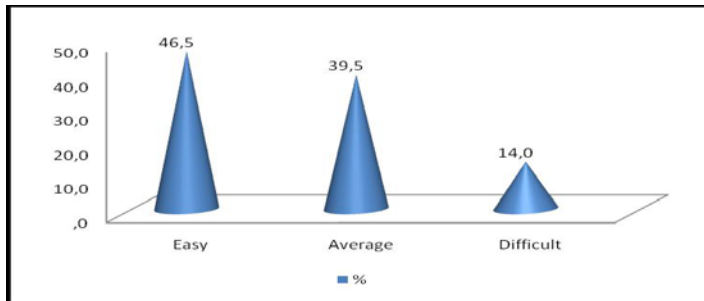


Diagram4: Students' Views about Learning Biology and Agriculture in English

The results displayed in diagram (6) show that the majority of participants (46.5%) affirm that learning Biology and Agriculture in English is “*easy*”, and 39.5% of them assert that it is neither easy nor difficult but “*average*”. The remaining (14%) find it “*difficult*”.

Q6: How often per a week do you go to the library or access the internet to read?

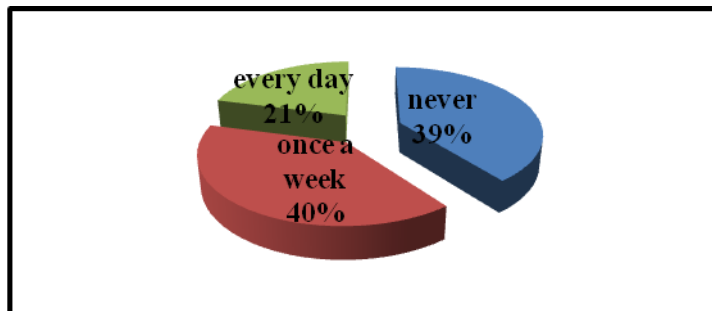


Diagram 5: Students' Frequency of Reading

The diagram above presents the frequency of reading among students. Indeed, 40% of them read “*once a week*”, 39% “*never*”, while 21% of the students read “*every day*”.

Q7: If never, what are the factors that prevent you from reading?

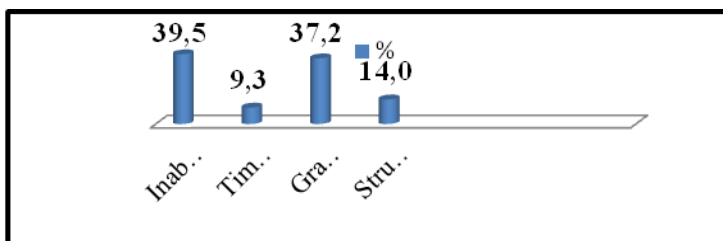


Diagram 6: Factors Preventing Students from Reading

As shown in diagram (8), 39.5% of participants are unable to understand the vocabulary when they read, while 37.2% ignore the grammar, and 14% ignore the structure of the words and sentences, and only 9.3% who argue that the lack of reading is related to time constraints.

Q8: In case you read, what do you read?

	Articles related to your field of study	Handouts given by your teacher	Novels	Others	No answer	Total
Participants	16	19	5	8	2	50
%	32.6	39	9.3	16.3	1.9	100

Table 3: Documents Students Read in English

From table 9, it appears that most of the students (39%) read only handouts given by their teachers. Moreover, 32.6% read articles related to their field of study, and 9.3% read novels. Unlike the rest (16.3%) who claim to read other documents like online magazines.

Q9: In which language do you often read?

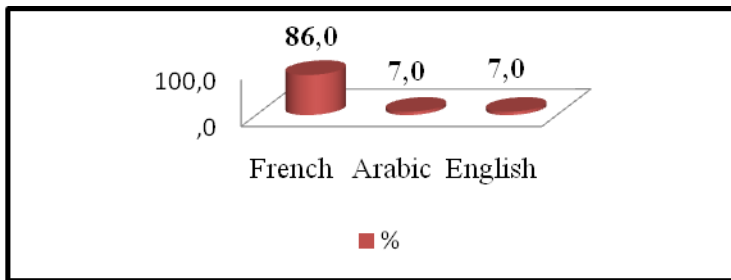


Diagram 7: Students' Preferred Language in Reading

As the participants are asked about the language in which they often read, diagram 10 demonstrates that the major part of the participants (86%) read in French, whereas; 7% read in Arabic, and the same percentage of the respondents assert that they read in English.

Q10: Are you interested in reading in English?

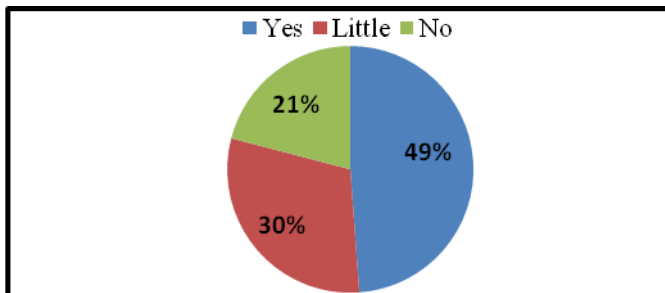


Diagram 8: Students' Interest in Reading in English

As for diagram 11, the results indicate that the majority of the respondents (49%) answer by “yes” when asked if they are interested in reading in English. Indeed, only 30% of the participants argue that they are “little” interested in reading in English. In contrast, 21% state that they have no interest in reading in English.

Q11: If yes, what are the factors that motivate you to read in English?

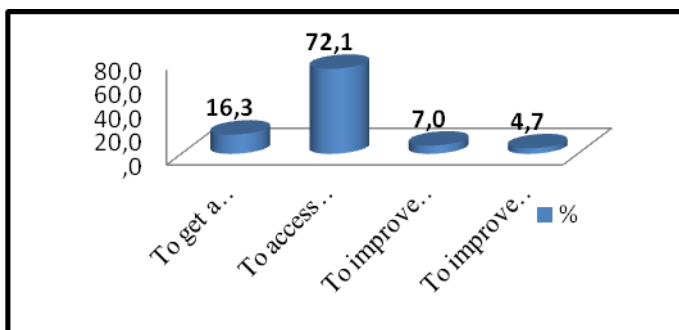


Diagram 9: Factors Motivating Students to Read in English

When asking the participants about the factors that motivate them to read in English, diagram 12 denotes that 72.1% of them affirm that they read “*to have access to different types of information*”. Besides, while 16.3% of the participants assert that they read in English “*to get good marks*” in the exams, 7% justify by the desire “*to improve their reading abilities* and 4.7% advocate improving their writing skills.

Q12: Do you understand English texts easily?

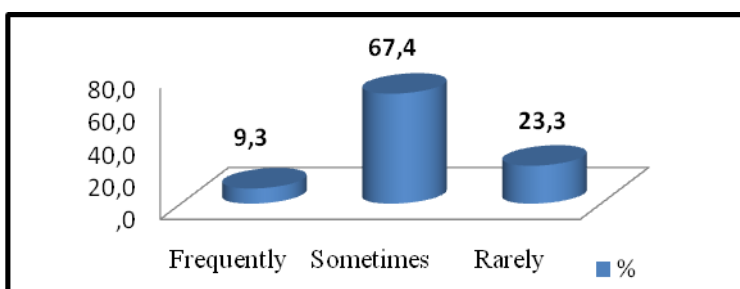


Diagram10: English Texts Comprehension

Based on the gathered data, it has been noticed that 67.4% of the participants declare that “*sometimes*” they understand English texts easily, whereas, 23.3% of them affirm that they “*rarely*” understand. Moreover, only 9.3% who frequently understand while they read.

Q13: What are the frequent difficulties you encounter when you read?

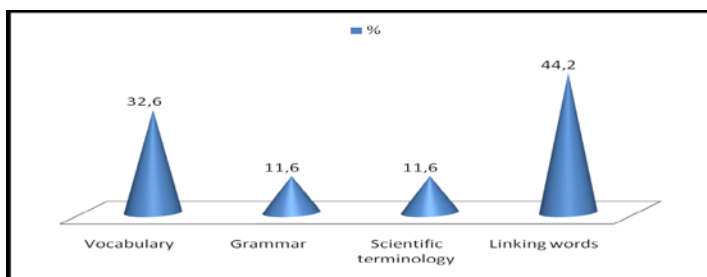


Diagram11: Students’ Frequent Difficulties while Reading Scientific Texts

As highlighted in diagram 14, it is apparent that the majority of the students (44.2%) assert that they have difficulty with understanding the “*linking words*”, and 32.6% of them have problems with “*vocabulary*”. While 11.6% of the participants encounter difficulties with “*grammar*”, the rest affirm that they don’t understand “*scientific terminology*”.

Q14: What do you do to surmount those difficulties?

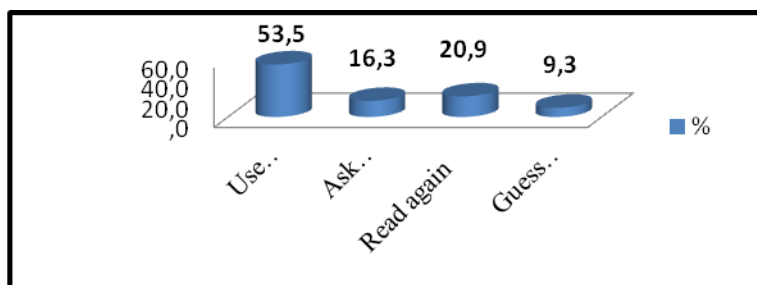


Diagram12: Students’ Strategies to Surmount the Reading Comprehension Difficulties

As highlighted in the above diagram (15), the respondents give various suggestions which they consider could surmount the difficulties they encounter when they read. In fact, 53.5% of the respondents “*use dictionaries*”. Moreover, other students 20.9% argue that “*reading again*” may help them to understand better; yet; 16.3% of the participants say that they “*ask teachers or classmates*” for help, and only 9.3% of the participants assert that they “*guess from what has been already said*”.

Q15: Have you ever heard about linking words?

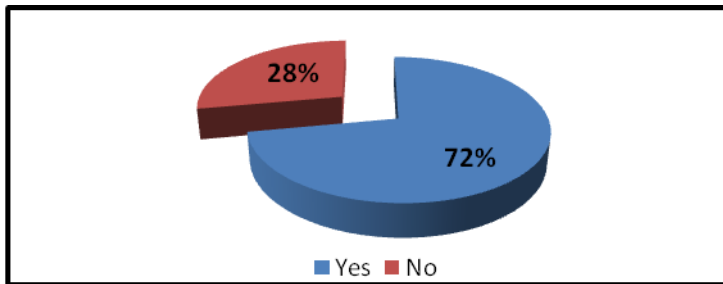


Diagram13: Students' Previous Knowledge about the Linking Words

Relying on the results presented in diagram 16, 72% of the participants affirm that they have already heard about linking words. In contrast, the rest of the students that is 28% assert that they have never heard about them and that they have no idea about them.

Q16: Do you understand all the linking words that you find in the text?

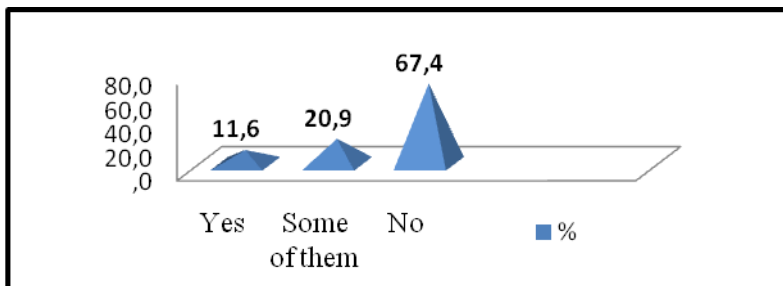


Diagram14: Students' Comprehension of the Linking Words.

From the results displayed in diagram 17, it has been perceived that 67.4% of the students assert that they don't understand all the linking words that they find in texts, also 20.9% of the participants indicate that they understand some of them and only 11.6% affirm that they comprehend all those they encounter while reading.

II. Presentation of the Findings Obtained from the Analysis of the Test

The analysis of this part is based on the results obtained from the pre-and post test conducted with thirty participants of third year students at the department of Biology and

Agriculture. The results are analyzed by using SPSS. It aims to find out the students' level of comprehension in the pre-test compared with the post-test. It intends to explore whether there is any progress after assimilating some knowledge about cohesion or not. Concerning the data collected from the pre-and- post test, they are presented in the form of tables. Moreover, they are classified and arranged into categories to be ready for further analysis. After presenting each table, a description will be provided.

Test N°1 (Pre Test)

The first test is scored to 24 points. These points are divided according to the number of the questions included within the test. Each time the student gets the right answer, he/she will get one point.

Table 04: Students' Scores in the Pre-test

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	10	09	11	11	16	12	10	08	04	15	14	07	07	14	12
Wrong answer	14	15	13	13	08	12	14	16	20	09	10	17	17	10	12
Score/24	10	09	11	11	16	12	10	08	04	15	14	07	07	14	12
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	06	17	08	04	14	11	09	06	10	06	06	14	07	08	06
Wrong answer	18	07	16	20	10	13	15	18	14	18	18	10	17	16	18
Score/24	06	17	08	04	14	11	09	06	10	06	06	14	07	08	06

First, in order for the student to get the average score, he/she has to get 12 points. From the scores presented in the table above, it is clear that only 09 students from the participants get the average score, and the rest of the students (21) get under the average score. The lowest score

is 04, and the highest one is 17. Thus, the number of the students who get bad marks is higher than the number of those who get the good marks.

Table 05: Reading Comprehension Questions

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	07	08	08	08	09	06	03	09	07	04	06	07	07	08	03
Wrong answer	03	02	02	02	01	04	07	01	03	06	04	03	03	02	07
Score/10	07	08	08	08	09	06	03	09	07	04	06	07	07	08	03
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	06	04	05	08	07	03	06	02	07	03	04	07	05	04	03
Wrong answer	04	06	05	02	03	07	04	08	03	09	06	03	05	06	07
Score/10	06	04	05	08	07	03	06	02	07	01	04	07	05	04	03

The reading comprehension part of the pre-test is scored to 10 points, the highest mark is 08, and the lowest is 02. Precisely, 22 out of 30 students get below the average mark (05), and only 08 students reached the average.

Table 06: Grammar and Cohesion

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	03	01	02	02	07	06	07	01	03	02	11	01	02	07	06
Wrong answer	11	13	12	12	07	08	07	13	11	12	03	13	12	07	08
Score/14	03	01	02	02	07	06	07	01	03	02	11	01	02	07	06

Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	09	01	13	03	07	08	03	04	03	05	02	07	02	04	03
Wrong answer	05	13	01	11	07	06	11	10	11	09	12	07	12	10	11
Score/14	09	01	13	03	07	08	03	04	03	05	02	07	02	04	03

The part of grammar and cohesion is scored to 14 points. The analysis of the test shows that most of the students could not even finish the questions of this part. Most of them let the last passage untouched or roughly answered (table 03), the majority of the students that is 21 don't reach the average, whereas only 09 students who scored the average.

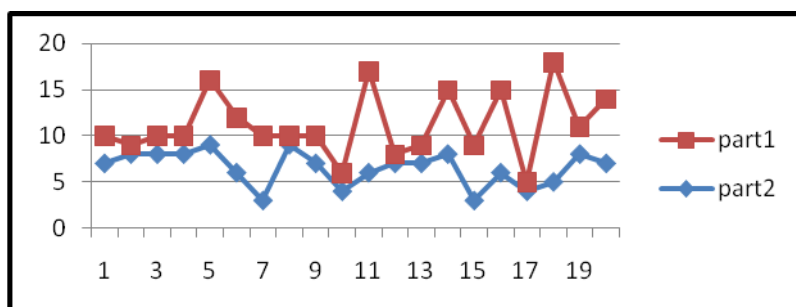


Diagram 15: Comparison between the Two Parts of the Pre-Test.

Diagram 22 makes a distinction between the scores of the two parts of the pre test. It is demonstrated that the results of the comprehension part is better than the second part but it is still insufficient for an effective text comprehension.

Test N°2 (Post-test)

The total score of the post-test is 22 points. The whole points are divided according to the number of the questions, so each question is scored with 01 point.

Table 07: Students Scores of the Post Test

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	11	10	13	14	13	10	10	12	11	06	08	14	08	03	11
Wrong answer	11	12	09	08	09	12	12	10	11	16	14	08	14	19	11
Score/22	11	10	13	14	13	10	10	12	11	06	08	14	08	03	11
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	08	17	14	12	11	13	11	12	14	11	12	13	13	15	12
Wrong answer	14	05	08	10	11	09	11	10	08	11	10	09	09	07	10
Score/22	08	17	14	12	11	13	11	12	14	11	12	13	13	15	12

As shown in the table above, it has been perceived that 22 of the students get over the average score which is considered as a good score, and the highest one is 17. More precisely, 4 students get exactly the average score, and only 8 participants who get under the average score. Thus, the total number of the students who get good scores is more than those who did not reach the average.

Table 08: Reading Comprehension Part

Students	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	02	06	09	06	07	07	06	05	07	06	06	04	04	05	07
Wrong answer	08	04	01	04	03	03	04	05	03	04	04	06	06	05	03
Score/10	02	06	09	06	07	07	06	05	07	06	06	04	04	05	07
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	06	05	07	08	06	02	05	03	08	02	06	06	07	02	07
Wrong answer	04	05	03	02	04	08	05	07	02	08	04	04	03	08	03
Score/10	06	05	07	08	06	02	05	03	08	02	06	06	07	02	07

From the scores of the reading comprehension questions, it has been noticed that the highest score is 09 and then the majority of the students that is 23 get over the average score. Thus, only 07 students get under the average score. The bad mark of the reading comprehension part is 02. Moreover, the results of the reading comprehension part are improved comparing to the results of the same part in the pre-test.

Table 09: Grammar and Cohesion

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Right answer	09	08	07	07	08	10	08	08	10	08	08	11	09	07	10
Wrong answer	03	04	05	05	04	02	04	04	02	04	04	01	03	05	02
Score/12	09	08	07	07	08	10	08	08	10	08	08	11	09	07	10
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Right answer	09	08	09	11	08	06	07	04	08	10	05	07	06	05	08
Wrong answer	03	04	03	01	04	06	05	08	04	02	07	05	06	07	04
Score/12	09	08	09	11	08	06	07	04	08	10	05	07	06	05	08

The data presented in the table indicates that most of the students get good scores in the grammar and cohesion part. In fact, 27 of the students get over the average score and only 03 students get under the average score. The highest score is 11 and the lowest one is 04.

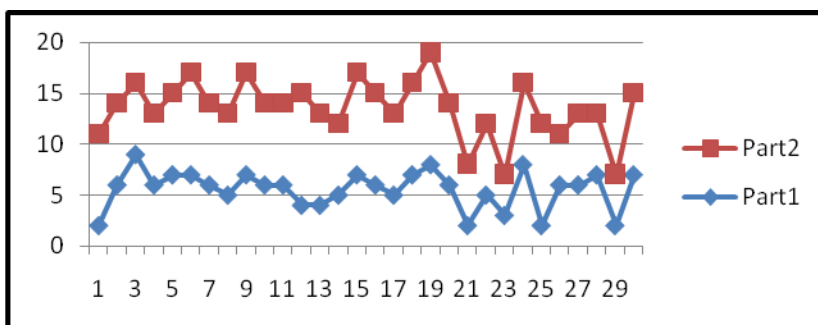


Diagram 16: The Comparison between the Two Parts of the Post-test

Table 10: The Comparison between the Results of the Pre and Post Test

Student	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Test N°01/24	10	09	11	11	16	12	10	08	04	15	14	07	07	14	12
Test N°02/22	11	10	13	14	13	10	10	12	11	06	08	14	08	11	15
Student	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Test N°01/24	06	17	08	04	14	11	09	06	10	06	06	14	07	08	06
Test N°02/22	08	17	14	12	11	13	11	12	14	11	12	13	13	15	12

The pre-test is scored to (24) points and the post-test is scored to (22) points. The results of the post test are better than the results of the pre test. For the first test only 08 students get over the average score, and for the second one 23 students get over the average score. Thus, there is significant improvement between the two.

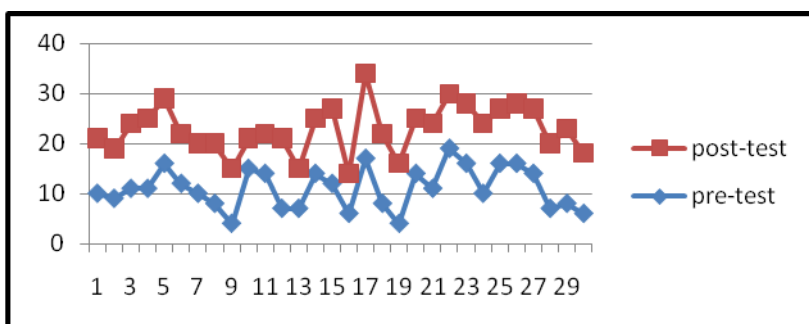


Diagram 17: Comparison between the Results of the pre and the Post Test

Diagram (23) shows an increase in students' results of the post test in contrast with the pre test.

Conclusion

The chapter has provided results of both of the questionnaire and the test. They have indicated the reality of students' comprehension of scientific texts in English; their awareness of cohesion; as well as it has explored cohesion effect on reading comprehension. The results have revealed that the majority of the students of Biology and Agriculture at MMUTO are interested in reading in English but they face different difficulties. From the results it is concluded that most of these problems are related to cohesion and vocabulary. Consequently, they always struggle to understand the content of texts by using different strategies. Furthermore, the test results have confirmed that knowledge of cohesion may be one among the important aspects for a facilitated reading comprehension. In the light of presenting details and explanations, the next chapter is devoted to the interpretation and discussion of the results described in the present chapter.

Introduction

The chapter discusses the results of the study. The findings which are obtained from the questionnaire and the test are analyzed and interpreted together due to the relationship that exists between the outcomes gathered from the two research tools. Further, the results are discussed in relation to what has been presented in chapter one. In fact, the present chapter develops three main parts. Each part provides answers at least to one of the research questions presented in the introduction. It starts with discussing the results concerning students' English comprehension in relation to reading. It, then, deals with highlighting the relationship between cohesion and reading comprehension. Finally, the last part concerns suggestions for reading comprehension improvement.

I. Students' English Comprehension in Relation to Reading

1. Students' Perception of English and their Performance

The different results as displayed in the previous chapter reveal that third year students in the department of Biology and Agriculture at Mouloud Mammeri University of Tizi-Ouzou (88, 4%) are interested in learning English. Thus, this confirms the assumption that people all over the world desire English mastering since it has become a world language and owning a unique position all over the world (Kornos and Crizer, 2008). Similarly, Crystal states “...*of course, English is a global language; you hear it on television spoken by politicians from all over the world. Whenever you travel, you see English and there will be signs and advertisement. Whenever you enter a hotel or restaurant in a foreign city, they will understand an English menu.*” (1997, p. 2)

In fact, the research shows that 46, 5% of the respondents are motivated because English is an international language; whereas 25, 6% argues that it is the source of information, and 18, 6% assert that it is the language of technology. Thus, the majority of them (90, 7%) are interested for academic and professional purposes. Along with these findings, Benrabah (2014) claims that lately people in Algeria became desiring English mastery for getting better job opportunities.

However, when it comes to their level in English, the findings demonstrate a contrast compared with their degree of motivation. Only 12% of the participants consider themselves as having a high level, whereas, 67% of the respondents advocate having an average level. Thus, there is a gap between students' interest in English and their level. That is having such motivation they are expected to have a good mastery in this language. As a result, motivation cannot be enough to succeed. This result goes hand in hand with what has been claimed by Nation "*Keep motivated and work hard; Do what needs to be done*" (2014, p.11). In other words, to reach one's objective people have to combine both motivation and effort. In dealing with this point, Lane and Lane provide an explanation to what must be followed by motivation. They claim that reaching objectives does not happen suddenly, but "*how much effort will be applied to attain an outcome, and the level of persistence applied to the task in the face of difficulties and setback.*" must be taken into consideration (2001, p. 687-694).

2. Comparing Students' Frequency of Reading in English to the Other Languages

The gathered results demonstrate that a great number of third year students of Biology and Agriculture (86%) at MMUTO are more comfortable while reading in French than in other languages. This can be explained by the fact that they are more familiar with it since it is

approximately the everyday language of the Algerian Berber community. Further, it presents the language of the field work and administration.

The research also reveals that 90, 7% don't always read in English due to language unfamiliarity; grammar rules, vocabulary, structure. This confirms Perfetti's (1985) view that most of the comprehension failure is due to text structure ignorance. Indeed, in another work, he (1985) claims that if the decoding process is slow, the problem will be related to word level. In other words, as long as the reader possesses more knowledge about a language comprising grammar, structure, vocabulary...etc the decoding process takes place automatically. In contrast to these findings, other results show that only 9, 3% of the students who justify their lack of reading in English by time constrain. They claim that they spend a considerable amount of time to decode the words, and then interpret the ideas, finally reaching text comprehension. Regarding this, in their research, Cain and Oakhill (1998) came to the same conclusion that most of EFL learners avoid reading due to time consuming.

Furthermore, when it comes to the issue of the kind of documents the participants usually read in English, most of them (74, 5%) argue to read both those related to their field of study and the handouts distributed by their teachers. Conformingly, Van Ek (1976) views that language learning objectives including reading as a language skill must reflect learners' needs. Thus, it is obvious that one tends to read what is relevant for his/her scope.

3. Major Factors Motivating Students to Read in English

The survey reveals that the majority of the respondents (45%) face different situations where they need to read in English. They read different documents that are published in the English language. This fact is due to the reason that English is considered as a FL in Algeria that

is taught from the middle school until university. As a result they have to read texts and accomplish all the other tasks as stated in the curriculum. In this concern, Woolcok affirms *“Whether it is intended or not, the quality of the syllabus is a fairly reliable indicator of the quality of teaching and learning that will take place in a course”*. (2003, p. 9 cited in: <http://docplayer.net/16923388-Using-the-course-syllabus-to-document-the-quality-of-teaching-and-identifying-its-most-useful-items-according-to-the-students.html>)

Though students don't understand texts easily, the study shows various results concerning the factors pushing them to read in English. In fact, the majority of the students (72, 1%) claims that reading in English allows them to access different information within documents published only in English since it is the language of science and technology. The other reason is that they aim at getting good scores since it is included in the Algerian curriculum. Consequently, the objective is limited to academic achievement. In this concern Dornyei (2001) claims that student's motivation and reading are consequences of both fear of failure and the desire of getting good marks.

II. The Relationship between Cohesion and Reading Comprehension

1. Students' Reading Comprehension Difficulties and the Strategies Used to Overcome those Difficulties

As mentioned in the literature review, different factors may prevent the students from comprehending texts (see chapter one). The results of the present investigation demonstrate that there are different factors that cause problems for students while reading. Indeed, the outcomes show that these problems minimize the comprehension level. In fact, it is suggested that inability to interpret the linking words is the frequent difficulty that the majority of the students (44, 2%)

claim to face (see diagram14). In this claim, Stoodt (1972 cited in Innajih 2007) came to the conclusion that there exists a relationship between comprehension as a goal of reading and the comprehension of cohesion markers. As described by Schema theory (1994), when the student or the reader generally is looking at the written text, his/her brain is analyzing the stimuli, which are the words, on many levels (letter sounds, word parts, semantics, and word order and so on). In another way, being aware of these words constructing a text allows the reader to understand easily and automatically what is inside the text.

The results also reflect that students have some knowledge about cohesive features as suggested by Geva “*adult L2 learners may demonstrate familiarity with the meaning of conjunctions*” (1992, p. 735). The more they read and experience, the easiest is for them to learn and adjust new words and concepts in the brain and develop the schema. But it is still insufficient to construct a general text understanding. Furthermore, Goldman and Murray believed that learners’ mastery of conjunctions is a difficult task even though “*ESL students frequently are very good in reciting the prescriptive rules of usage... for various [conjunctions]*” (1992, p. 505).

11, 6% of the respondents assert to be disturbed by grammar. This result can be related to the complex sentence structures which are formed relying on various ties and grammatical rules that students ignore. To concur this results, Meier (2014) claims that there is a close correlation between grammar and reading comprehension. She states in her own words: “*as students learn to employ more complex sentences in their oral and written language, their ability to make sense of what they read increases, too.*”

(<http://www.readingrockets.org/blogs/sounditout/teaching-grammar-reading-comprehension>)

Diagram 14 demonstrates that 32, 6% admit to encounter vocabulary difficulty. Vocabulary is one among the major components of texts. A name without a meaning, or a meaning without a name are both low qualities, as claimed in Lexical Quality Hypothesis by Perfitti (1985). Unlike high quality which refers to a fully and specified representation of the words that allow to get exactly the printed words in the text. Thus, in case the reader's knowledge of vocabulary is weak, comprehension would not be only difficult but impossible. To sustain this point, Nation and Stuart (2001) assert that it is important to interpret at least 98% of the vocabulary included within the text. These results confirm also other previous research. Gunning (2003), for instance, suggests that unfamiliar vocabulary decreases as students progress from one level of qualification to the next. These implements, for the student to comprehend texts in the following grade, he/she has to assimilate more vocabulary knowledge.

As the rest of the students claim, only 11, 6% assert that scientific terminology is one of the problems causing lack of understanding when they read. This can be explained by the fact that almost all the scientific words are derived either from Latin or Greek languages. Thus, those they know in French are the same in English or at least have the same root. For instance, if they encounter the English word "Toxic" they will associate it with the French word "Toxique". It is the same thing for words such as "Human" and "Humain"; "Vegetal" and "Vegetable". This view is shared by Hutchinson and Waters. They state that problems of terminology can be easily solved by comparing them to their French equivalents (cognates). As stated in their own words: *"technical terms are (...) likely to pose the least problems for learners: they are often internationally used or can be worked out from a knowledge of the subject and common word roots"* (1987, p.166).

In the same perspective, it is worth mentioning the way students engage to solve these problems. The results show that half of the participants (50%) agree to use dictionaries when encountering words that they do not understand. While discussing this point with one of the participants, he claims *“using dictionaries is the faster means”*. Grellet (1998) assumes that dictionary usage is inevitable for readers’ comprehension as a reading focus. Moreover, Adams and Huggins (1986) suggest that while reading, it is obvious for EFL learners to refer several times to dictionaries. Another respondent adds *“especially with the new technologies; you have just to choose and select the word and check it on the internet”*.

Another way of dealing with the difficulties is reading again. The results attest that students (19, 6%) read again texts when they lack comprehension with paying more attention to what is said in the text. In this context, when encountering a word that the reader ignores, it is meaningful for him/her to read again the text. This corroborates with what has been presented in the literature review, where it is assumed that sometimes a synonym may be included within the text, thus, it directs the reader to the unfamiliar one. Also, Baker (1999) admits that it is a helpful strategy to read the text again. This idea is related to Pressley and Afflerbach’s view (1995) that good learners are those who tend to use strategies to achieve comprehension. He continues to state that a good reader is the one who fights to understand even if he is disrupted by different factors.

Moreover, some other students (15, 2%) also tend to ask teachers or classmates for help in case they find difficult concepts to understand. A participant affirms for instance: *“...asking a teacher allows gaining more information than checking in a dictionary and helps break barriers with him/her”*. Another student argues by saying that sharing information with classmates creates a good atmosphere inside classes. In fact, this plays a significant role in increasing the students’

motivation to learning. Thus, it confirms Scrivener's idea (2005) that increasing interaction promotes a funny and positive atmosphere for learners.

The interaction between students also highlights the idea of collaborative learning. Vygotsky (1978 cited in Wertsch 1985) describes it as a "social occurrence" which increases the motivation level. He affirms that effective learning happens when the child interacts with two or more people. Furthermore, Vygotsky introduced ZPD to refer to the distinction between learners' abilities when they work alone and when they collaborate with others. That is, what children can do with guidance and encouragement from a knowledgeable person. Said differently, Vygotsky considers that any learning situation goes from the new to the known through a process of scaffolding. He stresses the role of social interaction in the development cognition and the central role community plays in the process of learning and making meaning.

Working together allows students to share and exchange different kinds of information and life experiences. Conformingly, Braunger and Lewis sustain the importance of interaction in a learning environment. They state "*Children need the opportunity to interact with both pairs and adults in a wide variety of sittings as they are learning and practicing language and literacy knowledge, skills and strategies. It is important to talk about what is read as well as what one does as a reader*" (1998, p. 30). This means that if learners work together, they will probably accomplish a successful task. It is only through interaction and dialogue in social groups that learning takes place (Dowhower, 1999).

As diagram 15 shows, other participants (8, 7%) claim that in dealing with the unfamiliar words, they guess from what has been said before. Students may develop their reading comprehension in English by inferring and guessing from the context and the text as supported by

Dehn (1984 cited in Mawhorter 2013). In fact, it is worth mentioning that these outcomes confirm what has been suggested in the review of the literature that making inferences from the text promotes comprehension in case students face difficult and new words. It is obvious that when the reader does not possess all the schemata that are related or mentioned in the written passage, this leads to an ineffective comprehension. As a result, the only solution for them is to try to infer from what they understand.

2. Students' Familiarity with Cohesion

From the results displayed in the previous chapter, it appears that the majority of the students (72%) assert that they have already heard about linking words. But more than half (67, 4%) do not really understand all those they find in texts. In fact, the test demonstrates the same results (table01). The pre-test scores (table 03) show that the participants could not even finish the second part of the test which is related to cohesion. This implies that third year students of Biology and Agriculture at MMUTO have a low level in relation to cohesion. In this regard, Connor and John (1990) claim that FL learners face a problem with interpreting cohesive signals, which in their turn lead to comprehension failure.

Moreover, it was clear that students' knowledge of cohesion was low and that they were not able even to relate the conjunctions or the linking words to what they refer to. This situation brings to the mind the low quality representation that is introduced by Perfetti (1985) in his theory "Lexical Quality Representation" of the words unlike high quality. It refers to a precise meaning of the concepts that leads to an efficient interpretation of the text. Additionally, Rumelhart (1994) assumes that when the reader carries more schemata and knowledge about the

text he will not have hardships to comprehend it because relating past knowledge to new one is the first type of thinking the reader uses when trying to decode any message.

3. The Impact of Cohesion on Reading Comprehension of Texts

As long as the test is concerned, the results demonstrate that the scores of the post test are much better than the pre test (Table 07). As table 04 reveals, approximately all the participants get the average in the post test. Indeed, the results of the reading comprehension part in the post test show an increase in the students' scores. Most of them reached nine out ten. Furthermore, the majority of them (more than 17) get over the average. As a result, it can be claimed that the reading comprehension level has considerably developed due to the assimilation of some knowledge about both grammatical and lexical cohesion that is presented in the handouts. In fact, this confirms both the Schema Theory (1980) and Lexical Quality Hypothesis (1994) which state that background knowledge influences reading comprehension of texts.

Schema theory occurs when students succeeded to relate and use the knowledge of cohesion they have assimilated from the handouts to complete the second test successfully. That is, to bridge from the past or the known to integrate the new. Furthermore, it is clear that they became possessing a high quality of word representation as claimed by Perfetti. In other words, they own a fully representation of the cohesive devices and their meanings. Besides, this goes hand in hand with the results reached by Bechoua in her research for a magister degree. In this claim, she states *"... if cohesive devices are taught thoroughly to first year university students, their reading comprehension skill would relatively improve..."* (2012, p. 117)

Similarly, the second part of the post test also mirrors a development in the scores obtained. Table 06 reveals that all the participants get over the average score, where the best score is 11 out of 12 and the lowest score is 7 out of 12 which overtake the average. This means that the cohesion knowledge helped the learners to score better in the second test with regard that it is more difficult than the first one. In fact, trying to become well acquainted with cohesion is necessary due to its frequent occurrence in texts and discourses. Thus, this also corroborates with what has previously been affirmed by both “Schema Theory” (1980) and “Lexical Quality Hypothesis” (1994). In dealing with cohesive features, Arapoff (1968 cited in Bechoua 2012) suggests that *“just the fact that such words occur frequently makes them worth studying”* (p. 244).

III. Participants’ Suggestions for Reading Comprehension Improvement

The participants in the present research have suggested different points that may help in improving readers’ understanding of texts. A high percentage of the respondents (51, 2%) state that in order to increase the level of understanding learners have to learn more about grammar rules. A participant affirms: *“...when reading I cannot even distinguish between the different tense verbs”*. In this context, another says: *“It was until the two last years that I made a distinction between want and went i.e. before it represents the same thing for me. And this really caused problems not only when reading”*. Then, she continues to emphasize grammar if someone wants to improve his/her reading skill. Given this background Perfetti (1994) argued that a low quality representation occurs in two situations. Either when the reader has no knowledge of the concept or when there are homophones, which are words that sound the same as others but different in spelling, meaning, or origin (want and went).

Moreover, passive voice was also mentioned. One of the respondents affirms that while reading she always encounters difficulties to understand such sentences. Moreover, the results of the survey also demonstrate that 30. 2% of the respondents declare that there is no improvement of reading comprehension without improving someone's vocabulary. So, as long as schemata include a lot of vocabulary, the understanding will increase. These results are likely to prove Bishop's (1997) assertion too which suggests that vocabulary plays a significant role in the process of reading comprehension. In the same context, Kintsch (1982) assumes that identifying vocabulary separately within sentences makes the process of text understanding easy. This is possible only when the reader possesses a lot of schemata or has a high quality representation of the words.

Concerning the other participants, the outcomes show that they suggest checking about cohesion. They claim that this allows understanding the logical relationships between the sentences. One among the students assert "*... when I read I find words that I don't know to what do they refer to. This makes me disturbed*". This can be explained by the fact that since texts are characterized by the use of cohesive devices, thus, in order to interpret texts in a meaningful way it is influential whether the reader understands these ties or not. These findings go hand in hand with the LQH of the words too. This occurs when the students could not relate the word or representamen to its meaning or object as claimed by Müller (1994). In this respect, Moradan (1995) affirms that instruction of cohesive feature must be part of English courses in the purpose of facilitating learners' reading comprehension. Similarly, Innajih (2007) invites syllabus designers to increase attention to cohesion and its relation to reading comprehension.

Another participant argues that understanding some conjunctions like "because or before" is easy but there are others as she says she cannot even utter them. Considering the claim that

mostly all the words included in texts written in English are connectors and cohesive features, it is worth arising knowledge about cohesion for reading comprehension success (Arapoff, 1968).

Conclusion

This chapter has dealt with the discussion of the gathered data from the questionnaire and the test. It answers the study's research questions introduced in the general introduction. Moreover, it confirms some of the hypotheses suggested, while others are refuted. In fact, it has been concluded that students are interested to learn and read different documents in English. This is explained by the fact that English is a global language, the language of technology, the source of knowledge rather than for other reasons like prestige.

Though the participants are motivated to read in English, they face a set of problems which prevent their comprehension. Indeed, they engage to set the reasons behind their failure to achieve understanding of the scientific texts. They claim that the major factors influencing text interpretation are vocabulary and grammar difficulty as well as unfamiliarity with linking words (cohesive ties) which form complex sentence structures. Furthermore, the results also reveal that students use different strategies to overcome the comprehension difficulties they encounter. They use dictionaries, ask teachers or some classmates, read again and guess the meaning from the text. Additionally, the participants engage to advance suggestions which may help in the reading comprehension improvement. They claim to learn more about grammar rules, as well as developing their vocabulary and cohesion knowledge.

This dissertation was concerned with investigating the effect of cohesion knowledge on reading comprehension of scientific texts in the department of Biology and Agriculture at Mouloud Mammeri University of Tizi Ouzou. That is, it tries to check whether assimilating knowledge of cohesion can be helpful for the students to understand better scientific texts or not. The investigation in the area of reading is important since it is the key for accessing knowledge. Besides, even though there exist other skills like listening but reading allows storing large amounts of information since it is based on seeing, hearing, and pronouncing at the same time. The research was conducted on the basis of Schema theory and Lexical Quality Hypothesis which were supported by many other authors.

For the sake of answering the advanced research questions and testing the hypotheses suggested in the General Introduction, a mixed method approach was adopted. Thus, quantitative and qualitative methods were joined together in order to analyze the data. Indeed, the data were gathered from two research instruments. Fifty (50) students were randomly selected from third year students in the department of Biology and Agriculture at MMUTO to respond to a questionnaire. Moreover, in order to gather more data about the students' familiarity with cohesion and its relationship with reading comprehension, a test which consisted of two parts (pre and post one) was distributed too for thirty (30) students of the same population. That is, it tried to check if there were significant improvements in the reading comprehension after distributing the handouts. For the sake of analyzing the quantitative data, a software package known as SPSS was used. In addition to the statistical analysis, qualitative content analysis was opted for interpreting the qualitative data.

The data analysis of the questionnaire and the test provided answers to the research questions. As claimed by Crystal (1997) who advocated that English became the language spoken all over the world, consequently, people are interested to expand their knowledge and become master users of this international language. The outcomes demonstrated that third year students at the department of Biology and Agriculture are interested to read in English. The biggest part of them asserted that they read in English in order to access different types of information and articles related to their field of study since most of the scientific documents are published in English. However, their level did not allow them to understand texts in an easy way. Only 9, 3% claimed to understand easily, whereas the rest (90, 7%) face different problems. Indeed, the majority had problems with vocabulary and linking words.

In dealing with these problems students engaged in solving them. Most of them (53, 5%) relied on dictionaries, others asked either teachers or classmates, read again, and guessed. Though, their effort to convey meaning from the text but the reading comprehension is still limited. Furthermore, the analysis of the test result brought significant outcomes. In the pre test only nine (9) students out of thirty (30) reached the average. Unlike the post one where the majority of the participants (22 out of 30) get the average mark or more. As a result, it can be concluded that the handouts presented for them helped to increase their knowledge of cohesion. As a result, it influenced their reading comprehension too.

To sum up, relying on the theoretical frameworks presented in chapter one, it is concluded that students in the department of Biology and Agriculture at MMUTO were not familiar with cohesion. Consequently, this affected their reading comprehension in a negative way. Moreover, cohesion knowledge is one of the factors facilitating the reading comprehension. Thus, it should be stressed in the learning process. It is hoped that this work will contribute to a better

implementation of cohesion in teaching English as a FL. This should thus help learners become well acquainted with advanced cohesion and understand written discourses.

Based on the research findings and evidence from the students' questionnaire and test, the present study offers some pedagogical implications for students as well as suggestions for future research. First, students should attempt to learn more about cohesion and how it functions in texts. Second, reading more allows them to extend their knowledge, because this will help improve their reading comprehension skill. Third, students should use prior knowledge and make inferences for better understanding. Moreover, further research on the same issue in different settings can be conducted. In fact, it would be efficient if the same issue will be investigated in the department of English since they are supposed to have an advanced knowledge of cohesion. In addition, other researches can be conducted using interviews, experimentations, and classroom observation.

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The Students' Questionnaire

Dear students,

This survey deals with the role of cohesive ties in understanding scientific texts. Your answers are crucial for the study. So, you are kindly requested to fill in this questionnaire to allow gathering authentic data about the issue. We promise you that your answers will be used only for academic purposes, so please feel comfortable to sincerely answer the questions.

Please use a tick (✓) to indicate your answer, or provide full statements. Thank you in advance for your collaboration.

Section One: Background Information

Q1: Does the English language interest you?

☐ Yes

☐ No

If yes! Why?

Because it is: a. The international language.

b. The source of information.

c. The language of technology.

d. Others.

Precise:

.....
.....

Q2: How can you describe your level in English?

☐ High

☐ Average

☐ Low

Q3: Did you enjoy English sessions in the secondary school?

☐ Yes

☐ No

Q4: How do you consider the English module at university?

☐ Interesting

☐ Not so much

☐ Boring

Q5: How do you find learning Biology and Agriculture in English?

☐ Easy

☐ Difficult

Section Two: Reading

Q6: How often a week do you go to the library or access the internet to read?

☐ Everyday

☐ Once a week

☐ Never

Q7: If never, what are the factors that prevent you from reading?

- a. Inability to understand vocabulary.
- b. Time constraint.
- c. Grammar ignorance.
- d. Structure ignorance.

Q8: In case you read, do you read:

- a. Articles related to your field of study.
- b. Handouts given by your teacher.
- c. Novels.
- d. Others.

Q9: In which language do you often read?

☐ French ☐ Arabic ☐ English

Q10: Are you interested in reading in English?

☐ Yes ☐ Little ☐ No

Q11: If yes, what are the factors that motivate you to read in English?

- a. To get good marks.
- b. To have an access to different information.
- c. To improve your reading abilities.
- d. To improve your writing skills.

Section Three: Reading Comprehension

Q12: Do you understand English texts easily?

☐ Frequently ☐ Sometimes ☐ Rarely

Q13: What are the frequent difficulties you encounter when you read?

☐ Vocabulary ☐ Grammar ☐ Linking words ☐ Scientific terminology

Q14: What do you do to surmount those difficulties?

- a. Use dictionaries.
- b. Ask teachers or classmates for help.
- c. Read again.
- d. Guess from what has been already read.

Section Four: Cohesion

Q15: Have you ever heard about linking words?

☐ Yes

☐ No

Q16: Do you understand all the linking words that you find in texts?

☐ Yes

☐ some of them

☐ No

Q17: What would you do to improve your understanding?

- a. Improve your vocabulary.
- b. Learn more about grammar rules.
- c. Check about cohesion.

Section Five: Students Evaluation

Q18: How do you find studying Biology and Agriculture in English?

☐ Very useful

☐ Useful

☐ Useless

Q19: Does, studying English help you in your learning process?

☐ Yes

☐ No

Q20: Do you think it is important to study Biology and Agriculture in English?

☐ Yes

☐ No

If yes! Why?

.....
.....

Thank You

What is a cell?

The word cell comes from the Latin word “cella”, meaning “small room”, and it was first coined by a microscopist observing the structure of cork. The cell is the basic unit of all living things, and all organisms are composed of one or more cells. Cells are so basic and critical to the study of life, in fact, that they are often referred to as “the building blocks of life”. Organisms- bacteria, amoebae and yeasts, for example, may consist of as few as one cell, while a typical human body contains about a trillion cells.

According to cell theory, first proposed by Schleiden and Schwann in 1839, all life consists of cells. The theory also states that all cells come from previously living cells, all vital functions (chemical reactions) of organisms are carried out inside of cells, and that cells contain necessary hereditary information to carry out necessary functions and replicate themselves. All cells contain, lipid bilayer boundary (plasma membrane), cytoplasm, DNA (hereditary information), Ribosomes for protein synthesis (Eukaryotic). Cells also contain, at least one nucleus, Mitochondria for cell respiration and energy. Cells may also contain Lysosomes, Peroxisomes, Vacuoles, Cell walls.

(Adopted from General biology, 2013, pp. 25)

Reading Comprehension Questions

Answer the following questions in small sentences:

1. When did the cell theory emerge?

.....

.....

.....

2. According to the cell theory, state three partial ideas about cell.

.....

.....

.....

3. From the text state two compositions of a cell.

.....

.....

.....

4. What is the role of a cell?

.....

.....

.....

Grammar (Cohesion)

1. Answer by true or false:

- Cells are so important to life study (.....)
- Cell was first studied by microscopist (.....)
- Cells are mortal (.....)

2. Match each underlined pronoun with what it refers to in the text:

- It hereditary information
- Themselves cells
- They cell

3. Fill in the table with conjunctions from the text suitable for the following functions:

Referring to past events	Addition	Something that actually exists	Listing
Expressing fewness	Connecting words representing alternative	Two events happening at the same time	Frequently/repeatedly

4. Find in the text synonyms or near synonyms of the following words:

- a. Living things=

b. Consist=

c. Proposed=

5. From the text give the lexical field of the word “cell”.

.....

.....

.....

COHESION AND COHESIVE TIES

Cohesion is the type of language that links one sentence or phrase with another. Cohesive ties /devices are sometimes called linking words, linkers, conjunctions, discourse markers, transitional words. They may occur within a single sentence or between sentences. They are words such as: in conclusion, however, moreover...

Cohesive devices tell the reader what happens in a sentence and help to guide them through their writing. They signal to the reader what the relationships are between the different clauses, sentences, and paragraphs. In fact, conjunctions present the major part of the cohesive devices.

Types of conjunctions:

There are three basic types of conjunctions

1. Coordinating conjunctions: they are used to connect two independent clauses. Examples of this type are: and, for, nor, but, or, yet, so...
2. Subordinating conjunctions: used to establish the relationship between the dependent clause and the rest of the sentence. For instance concession (though, although, while...) ; time (after, as long as, before,...) ; relative adjectives (that, what, which, whatever, whichever,...) ; condition (if, only if, unless, until, assuming that...) ; relative pronoun(who, who, whom, whoever...) ; comparison (whereas, than, rather than,...) ; reason (because, since, in order,...) ; manner (how, as though, as if,...) ; place (where, wherever,..)
3. Correlative conjunctions: used to join various sentence elements which are grammatically equal. They are always used in pairs and denote equality and show the relationship between ideas

expressed in different parts of a sentence. These conjunctions are: as... as, just as ... so, both ... and, hardly ... when, scarcely ... when, either ...or, neither ...nor, if ... then, not only ... but also ...

Other well known cohesive devices:

Comparison: also, equally, similarly, likewise ...

Addition: and, also, furthermore, too ...

Exemplification: for example, for instance, to illustrate, such as, namely ...

Sequencing: first, second, next, then, after ...

Result/consequence: so, therefore, as a result, thus ...

Contrast: in contrast, in comparison, instead ...

Qualifying/concession (something unexpected): but, however, although, except, unless, even though, nevertheless, still, yet ...

Reformulation: in other words, put more simply, that is to say, rather, in simple terms ...

Highlighting: in particular, especially, mainly, particularly, above all ...

Transition: turning to, with regard to, with reference to, as far as x is concerned ...

Listing: first, second, furthermore, finally, to begin, next ...

Generalizing: generally, in general, on the whole, as a rule, usually, in most cases ...

Reinforcement: also, moreover, what is more, besides, above all, not only...but also, in the same way...

Similarity: equally, likewise, correspondingly, in the same way ...

Expressing an alternative: alternatively, rather, the alternative is, another possibility would be ...

Deduction: then, in other words, in that case, otherwise, this implies that, if so...not ...

Summary: in conclusion, to conclude, in brief, to summarize, overall, therefore ...

Starting the obvious: obviously, clearly, naturally, of course, as can be expected, surely, after all...

By: M. Kirkland, 2006

Christopher Pell

Chapman, (1983) Reading Development and Cohesion.

Halliday, M.A.K and Hassan (1976). Cohesion in English, London. Longman.

Personal Pronouns

A personal pronoun is a pronoun that is associated primarily with its reference in grammatical sense. It may represent specific people, animal, or things. The uses of personal pronouns depend on the number, person, gender, and case. Basically, they are used to avoid repetition. Indeed, understanding the referent and identifying to what it refers influences text comprehension.

Number	Person	Gender	Personal pronouns		Possessive adjective determiner	Possessive pronoun	Reflexive/intensive pronoun
			Subject pronoun	Object pronoun			
Singular	1 st	Male/female	I	Me	My	Mine	Myself
	2 nd	Male/female	You	You	Your	Yours	Yourself
	3 rd	Male	He	Him	His	His	Himself
		Female	She	Her	Her	Her	Herself
		Neuter	It	It	Its	0	Itself
Plural	1 st	Male/female	We	Us	Our	Ours	Ourselves
	2 nd	Male/female	You	You	Your	Yours	Yourselves
	3 rd	Male/female/neuter	They	Them	Their	Their	Themselves

Demonstrative Pronouns

	Singular	Plural
Here	This	These
There	That	Those

Relative pronouns

Who	Person
Where	Position, place
When	Time, occasion, moment
Why	Reason, explanation
What	Specific thing, object
Which	Choice, alternative
How	Manner, way, form

Some Conjunctions

Cause	Due to, causing, because, so that, in order that, for, ...etc
Illustration	Such as, for example, for instance, as follow, in other words, ...etc
Addition	In addition, also , and, moreover, ...etc
Alternative (choice)	Or, on the other hand, rather, another possibility,...etc
Contrast	But, although, in contrast to, however, contrary to, ...etc
Frequency (repetition)	Often, frequently, rarely, several /many times, ...etc
Time	When, while, whenever, once, since, at the same time, again, ...etc
Listing	First, second, furthermore, next, finally, to begin/conclude, ...et

Relying on what you have learned from the handouts, read the following text then answer the question:

Agrochemicals are special case of widely used chemicals. In less than half a century the advent of pesticide use has coincided with the tremendous increase in agricultural productivity. They are used worldwide in plant protection to control or destroy weeds, insects, fungi, and other pest. The recent trend towards conservation tillage systems has also meant an increase reliance on chemical pesticide use, such as the integrated pest management approach combining nonchemical means with chemical use for pest control. Whatever their patterns of use, most of them reach the soil during or after treatment. The soil which is the main recipient of all pesticides plays a leading role in the environment fate of these chemicals and in the protection of surface and ground water. The environment fate of pesticides in soil is viewed with great concern today mostly due to the problems resulting from the use of persistent and mobile molecules affecting the surface and ground water quality.

Field experiments under semi controlled or non controlled conditions and short-term laboratory mobility studies (leaching, volatilization and run-off test), together with soil adsorption-desorption and degradation studies under controlled conditions have been widely performed. But as the systems investigated become more and more complex, it's obvious that close collaboration and use of large and expensive equipments in research centers become a necessity. It is obvious that a harmonization on research methods is absolutely necessary.

(From Some Current Research Methods by Juan Cornejo, 2000, PP.

Reading Comprehension Questions

1. What does the text speak about?

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2. Why are they used?

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3. What is the reason behind the use of pesticides to soil?

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4. What is the main characteristic of integrated pest management approach?

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5. Are the following statements true or false:

- Agrochemicals are types of pesticides. (.....)
- The advent of pesticide came just after the increase in agricultural productivity.
(.....)
- All pesticides reach the soil while treating plants. (.....)

Grammar (Cohesion)

1. Match each underlined pronoun in the text with what it refers to :

- They soil
- These agrchemicals

c. Which pesticides

2. Fill in the table from the text :

Reinforcement	Cause	Contrast
Illustration	Consequence	Choice

3. Find in the text antonyms of the following words :

Increase≠

Non chemical≠

Surface≠

4. Check in the text the lexical field of the word “soil”.

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