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**SECTION OF ENGLISH**



Investigating the Effects of Using Concept Mapping as a Teaching  
Strategy on Learners' Reading Comprehension:  
The Case of Master Students of English at Biskra University

Dissertation submitted in partial fulfillment of the requirements for a  
**Master Degree in Sciences of Language**

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**Declaration**

I, Meriem **HENOUDA**, do hereby declare that this dissertation is my own original work that has been compiled in my own words. This work has not been falsified or used for other courses and examinations. Nor has another person, university, or institution for another degree or diploma previously, or concurrently, published it, unless explicitly acknowledged (In-text citation and the list of references).

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**Dedication**

To the memory of my beloved aunt and uncle  
I miss you beyond words. May Allah grant you ‘ Al Jannah’

To my Mom

You taught me how to trust Allah, how to believe in myself

You taught me how much could be built with little

You have been a rock of stability throughout my life

To my Dad

You taught me the value of hard work

Thank you so much for your patience and endless support

To my Sister, Asma

You are a golden thread to the meaning of life

Your words of support and tenacity still ring in my ears

To my Brothers

Thanks for your assistance

To my entire family, friends, and loved ones

To all my Teachers who

Took hands, opened minds, and touched hearts

To all the readers of my work

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### Abstract

Reading is deemed a laborious and indispensable skill, for it sustains the acquisition of knowledge, as well as the accessibility of the breadth in many academic areas. Nevertheless, and as it was the case for the majority of Master students of English at Biskra University, reaching the ultimate objective of reading -reading comprehension- was not always guaranteed. Observably, they seemed to possess inadequate reading skills, thereby the subsequent reading comprehension questions were approached inappropriately and/or superficially. Striving to establish the necessary foundation for an effective and deep approach to reading, the current study was an attempt to gauge the effectiveness of implementing the concept mapping strategy on the reading comprehension of the study's sample comprising of 26 students who were selected based on the purposive sampling technique. Methodologically, a Mixed-methods approach that encompassed a case study design along with quasi-experimentation was adopted. In this respect, and to gather relevant data, pre and post-treatment questionnaires along with tests (pretest and posttest) and teachers' interview were employed. As anticipated, the research findings revealed that the participants demonstrated several reading comprehension difficulties that were potentially attributed to a number of causes. Besides, the practicality of the concept mapping strategy was statistically reflected in the posttest scores, which were noticeably higher than the pre-test scores. Ultimately, the results also indicated that none of the interviewed teachers appeared to integrate this strategy in his/her instruction, in general, and reading classes, in particular. Chiefly, the participants demonstrated a genuine interest in this innovative strategy, disclosing positive attitudes towards its application in the classroom.

*Keywords:* Concept mapping, reading comprehension, reading comprehension difficulties, reading comprehension strategies, visual organisers

**List of Abbreviations and Acronyms**

**FL:** Foreign Language

**FLL:** Foreign Language Learners

**EFL:** English as a Foreign Language

**SLL:** Second Language Learning

**FLL:** Foreign Language Learning

**SVR:** Simple View of Reading

**D:** Decoding

**LC:** Language Comprehension

**RC:** Reading Comprehension

**SM:** Sensory Memory

**STM:** Short-Term Memory

**LTM:** Long-Term Memory

**WM:** Working Memory

**ESCM:** Expert Skeleton Concept Map

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## **General Introduction**

### **1. Background of the Study**

With the unprecedented growth number of English language users and learners, English, nowadays, has predominated a genuinely global status and has become the international language par excellence. It has become the language of new media, such as satellite, TV, and internet; and more recently, it has virtually become employed in almost all the domains. That is to say, it dominates the spheres of technology, business, industry, diplomacy, science, and above all, education. Undeniably, the latter is crucial and needs to keep up with the fast-moving world. For many, this may seem patent, but it needs to be made at the outset. That is why, teachers, today, are expected not only to drive students learning, but also to keep high standards of motivation, inspiration, and engagement.

In the Algerian context, English language teaching (henceforth ELT) is not given major importance. Instead, the linguistic level only reflects the impact of the French language, which is memory-laden, on Algerians. Since teaching languages is vital, it was only recently that the Ministry of Education recognises the greatest role English plays in today's world. Accordingly, and though it is still a foreign language (henceforth FL), many reforms have been brought about to ameliorate its status.

Despite all advancements, teaching and learning remain two rudimentary processes to which pedagogues call our attention. In contemporary teaching, teachers are no longer required to test students' memorisation and regurgitation of concepts, but to guide the classroom into being more student-centered. Having students to synthesise, engage in problem-solving, practice critical thinking is put into priority. Majorly, scholars shed light on the importance of equipping students with the necessary skills of independence and self-reliance by training them to teach themselves.

Though it yields many benefits, learning a new language can most often be a daunting task. Incessantly, language learners complain about the plain lists of vocabulary, grammar patterns, idioms, and nuances they have to memorise in order to master the foreign language (English). However, they usually forget that the way into becoming a proficient language learner requires a strong foundation of not only vocabulary items and grammar patterns, but also, and most importantly, the language skills. The latter provide many opportunities to exchange information and build a well-rounded user of the language. With that in mind, foreign language learners (henceforth FLL) need to ensure giving each of the four language skills the attention it needs.

Exactly as writing, reading is another important skill English as foreign language (henceforth EFL) learners have to engage with. It was thought that, with the advent of technology, reading will become less important. However, the exact opposite is true. Reading remains key to general knowledge, a cornerstone to writing which, on the view of EFL learners, is the most demanding, and laborious skill they ought to develop.

## **2. Statement of the Problem**

Reading is that receptive skill through which learners can have the potential to access the breadth of many academic areas, especially that the majority of subjects taught at university require good reading skills in order to be able to study and learn the information. Therefore, it is crucial for EFL learners to work on developing this skill since it could pave the way for becoming competent in the target language. Due to the continuously increasing importance of this skill, scholars have always tried to establish the necessary foundations for an effective and deep approach to reading through the inclusion of such developed cognitive visual strategies as concept mapping to pave the way for readers to foster their reading skill and think more carefully about different parts of the written material.

Despite the sheer volume of literature, demonstrating the tight link between reading comprehension and the overall attainment, in Biskra University, reading is clearly overlooked and neglected in both the license and master levels. Noticeably, a great number of students, particularly, master one students, do not seem to possess adequate reading comprehension skills which in action stems from our own observation when checking their mastery of the language examination marks, as well as the teacher's judgment when evaluating and assessing the course. Furthermore, we have also noticed that despite the span of time students spent to comprehend a given text, whether as an in-class activity or as an examination passage, the majority of their answers, at least according to the teacher who is supposed to be an expert in the field, were inappropriate and superficial. Thus, they do not fit ideally.

To put it clearly, regardless to their ability to read with different degrees of proficiency and the amount of time spent on the reading activity, the majority of master one students cannot read well enough to understand the questions being asked, especially if they require a deep approach to reading. Probably, this results from the lack of practice as students do not have many opportunities to engage in some reading activities as well as the absence of appropriate teaching strategies that can enhance their reading comprehension.

Based on what is known about effective readers who are able to glean information from what they read in an interactive and critical way ever possible, we suggest the use of an active and creative strategy which may have the potential to engage students as much as possible in the process of reading, allowing them to think more carefully about what they read. This strategy is called Concept Mapping. Though it is used in many fields as diverse as science, computing, and chemistry, concept mapping was found to improve many language aspects among which, we should mention, reading comprehension. In

addition to monitoring students' understanding of the content, concept mapping works on clarifying the confusing parts in the text and connecting what is being read to the reader's own experience, i.e., prior knowledge.

### **3. Research Questions**

This research seeks to answer the following research questions:

**RQ1:** What are the main reasons that may cause students' reading comprehension difficulties?

**RQ2:** To what extent does the use of the concept mapping strategy influence students' reading comprehension?

**RQ3:** What are the reasons that apprehend teachers from integrating concept mapping into their instruction?

**RQ4:** What are the attitudes and perceptions of students, as well as teachers towards the use of the concept mapping strategy?

### **4. Research Hypotheses**

Based on the abovementioned research questions, we propose the following research hypotheses:

**RH1:** Potential reasons that may cause students' reading comprehension difficulties can be the lack of opportunities through which students may, to a greater extent, be likely to develop their reading comprehension, as well as the disuse of effective strategies that may enable them to draw connections between different parts of the text.

**RH2:** Using concept mapping as a strategy may work on enhancing students' reading comprehension.

**RH3:** Possible reasons that may likely stand against the integration of concept mapping in the teaching of different aspects may stem from the huge number of students per class, time restriction, and teachers' unfamiliarity with this strategy.

**RH4:** Teachers and students may have positive attitudes vis-à-vis the implementation of concept mapping.

## **5. Aims of the Study**

The general aim of this study is to foster the reading comprehension of master students at Biskra University using the concept mapping teaching strategy.

More specifically, this research work aims to:

- explore the causes leading to reading comprehension difficulties;
- determine the factors that prohibit teachers from integrating concept maps in the process of instruction;
- examine the effectiveness of using concept mapping as a means to improve reading comprehension; and
- identify the attitudes and perceptions of both teachers and students regarding the use of concept mapping.

## **6. The Research Methodology for this Study**

For this research project, the researchers will adopt a Mixed-methods approach due to the nature of the study. The latter involves two processes of firstly exploring the major causes of poor reading ability, the influential factors behind not integrating concept mapping in tutoring, and the teachers' and students' attitudes regarding the use of concept mapping, and secondly, testing the impact of concept mapping on students' reading comprehension. Unlike monomethod studies, the application of the Mixed-methods approach allows for the systematic integrating of both quantitative and qualitative data within a single investigation. The application of this method allows for a deeper understanding of the studied phenomenon than the use of either quantitative or qualitative approach alone.

As for the research design of the present study, quasi-experimentation along with case study strategies with one group tested before and after will be adopted to achieve the objectives set out at the outset. Simply put, the combination of quasi-experimentation and case study with one pre-post-test group works better as the research design to carry out an in-depth investigation as the one at hand. Necessarily, in any research study, all choices should be well-grounded.

That is to say, the adoption of a quasi-experimental design is not random. Nonetheless, it is because of the experimental design, which is difficult to be applied on human nature, as well as on the classroom situation. It requires complete control of all the factors that might be affecting the studied phenomenon. Often, however, it is not possible or practical to control all factors. Thus, it becomes necessary to implement the quasi-experimental design. Partially, the current study requires a descriptive analysis that investigates the studied phenomenon in its real context (the classroom) through the determination of multiple attitudes, views, and perceptions. In addition, this study will attempt not to generalise the findings. In view of this, a case study research design is being adopted in this study.

## **7. Population and sampling technique.**

With respect to accessibility and proximity to the researcher, the study is chosen to be carried out at Biskra University (in Algeria) where there are a total number of around 127 English majors enrolled for a master's degree. It is widely acknowledged in research methodology that in many cases, large groups do not guarantee the desired results. Too often, however, small groups can be more convenient to work with, especially with time constraints. Thus, a sample comprised of 26 students is purposefully chosen to undertake this study. The participants are male and female learners whose ages range from 19 to 25. Methodologically, the selection of the sample takes place according to the purposive

sampling technique in which the researcher deliberately selects the study's participants based on the purpose of the study, as well as their characteristics. That is to say, the reason for the selection of the master level is not done haphazardly, but represented in a twofold aspect.

First, it coincides with the availability of the participants, which are chosen based on their relative ease of access. We believe it would be suitable for the administration of the data collection instruments. Second, in some lectures belonging to the mastery of the language course, the students tend to deal with different types of reading and are required to read many texts ranging in difficulty. Another point, we intend not to recruit on a pure volunteer basis, but we will purposefully select the low performing (intermediate) students based on their performance in the reading comprehension pretest. The avoidance of the students who have upper-level standing is because they usually seem to have developed good reading comprehension skills, which may affect the study findings on what concerns the suggested strategy. Moreover, after asking whether they would be willing to participate in the study, four teachers will be chosen to answer the questionnaire.

## **8. Significance of the Study**

This study serves to gain insights into the relationship between reading comprehension and concept mapping as a supplemental teaching strategy. Particularly, the findings of this study will redound to the benefit of this area of research that is at the heart of applied linguistics research and is generally overlooked in the Algerian context. The present study works as a guide for the students who want to make use of what they are learning, allowing for a clear, thorough, and comprehensive summary that is visually represented.

In addition, concept mapping, which can be applicable, in all the subjects allows for a meaningful approach to learning through the integration of the new content to the

previously learnt structures. It would also help in maintaining and developing the students' cognitive language abilities. Most importantly, the present study is expected to provide a theoretical foundation that aims to assist anyone attempting to construct concept maps for a given purpose either with pen and paper or through online concept mapping tools.

This study will support the integration of visual aids in lecturing, in general, as well as the teaching of reading comprehension using concept mapping, in particular. This study would also be of great significance to teachers who may wish to consult it for any detail or explanation on what concerns the teaching process using visuals. Not only would it serve as the basis in improving the delivery of lessons among EFL learners, but it would also help the teachers who want to address gaps in students' learning, prior knowledge, as well as understanding. In light of the aforementioned points, we can say that this study is worth studying.

## **9. The Referencing Style for this Dissertation**

It has long been acknowledged that the choice of the writing style (referencing style) depends, in the first place, on the area of research. Correspondingly, and since the current inquiry belongs to educational research which has its roots in the social sciences, the APA (American Psychological Association) is adopted to write the different parts of this research work. Nevertheless, some options as the layout of the cover page, the alignment option, and text justification are governed by the standards put forward by the supervisor.

## **10. Structure of the Dissertation**

This dissertation is organised according to the following outline:

**Chapter One** is an overview of the reading skill, mainly its definitions, types, models, as well as purposes. More specifically, it focuses on the distinction existing

between reading and reading comprehension, the reading comprehension components, mechanisms, difficulties, strategies, and instruction.

**Chapter Two** provides a description and an overview of the concept mapping strategy including its definition, features, construction, potential uses, and way of scoring, along with its potential applications in language learning.

**Chapter Three** intends to portray the set of methodological aspects the current inquiry will be based on, along with the procedures through which the treatment will be implemented and the data will be collected.

**Chapter Four** seeks not only to display, describe, and classify the mass of obtained data, but also to analyse, as well as interpret the quantitative and qualitative findings to make inferences and draw conclusions.

## 11. Operational Definitions

A number of terms require some elucidation to determine how and in which sense the researcher uses them.

**Concept mapping.** A graphical representation whereby different relationships are visually displayed. It consists of boxes with which the main concepts or key ideas are represented. Arrows on which the suitable linking words must be inserted interconnect these boxes. Concept mapping begins with the main idea and branches out into smaller ones.

## **Chapter One: Reading Comprehension**

### Introduction

#### **1.1 Definition of Reading**

##### **1.1.1 Reading as Interpretation of Experience**

##### **1.1.2 Reading as Interpretation of Graphic Symbol**

#### **1.2 Multi-Dimensional View of Reading**

##### **1.2.1 Cognitive Psychology**

##### **1.2.2 The Socio-cultural View**

##### **1.2.3 View of Linguistics**

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**1.12** Reading Comprehension Difficulties

**1.13** Variables Affecting Reading Comprehension

**1.13.1** Reader Variables

**1.13.2** Text Variables

**1.13.3** Context Variables

Conclusion

## Introduction

This chapter provides diverse definitions regarding reading according to varying focuses, the types of reading, the reasons why people tend to read, and the eminent reading models. Clearly, and as reading comprehension is a highly sophisticated stage of this skill, a view regarding its definitions and components will be documented. This chapter, therefore, focuses on the varied reading comprehension difficulties along with the key elements any effective instruction should focus on. In order to get an in-depth understanding of reading comprehension, as well as its mechanisms, this chapter portrays various roles attributed to human memory, especially that of the working memory. The chapter also accentuates some variables that may affect students' performance on the reading task.

### **1.1 Definition of Reading**

Reading has often been a precursor to knowledge acquisition and a key to second and foreign language learning (henceforth SLL, FLL respectively). It is worth noting that throughout the development of literacy, reading has been viewed differently. By way of illustration, Goodman (1988) states in his definition of reading, "matching sounds to letters" (as cited in Razi, 2011, p.17). Though his stand is partially true, his definition does not literally describe the complexity of this skill. Evidently, the practice of translating a written text/symbol to sounds, or simply decoding, is part and parcel of the reading process; nevertheless, it is not enough to draw a thorough understanding of a passage.

As is clearly shown, each scholar examines the reading process based on his/her view. As such, Dechant (1991) divides the definitions of reading into two major types: (a) the broader category that encompasses all the definitions that associate reading to the

interpretation of experience, and (b) those that restrict reading to the interpretation of graphic symbols. The author asserts that most reading definitions are related in a way or another to (a), (b), or both. These categories are as follows:

### **1.1.1 Reading as Interpretation of Experience**

This entails the students' ability to make sense of all the stimulations they come across in the external world (Dechant, 1991). In this concern, a variety of experiences would be highlighted including reading pictures, faces, clues, rocks, stars, and the weather (Dechant, 1991). Notably, it is almost impossible for students to become readers of graphic symbols, which constitute the upcoming category, before being readers of experience. This leads to the second category of the definitions of reading.

### **1.1.2 Reading as Interpretation of Graphic Symbols**

This type of definitions limits reading to the interpretation of graphic symbols. Harris (1975, as cited in Dechant, 1991), for instance, avers that reading involves the comprehension and interpretation of the signs on the paper. Dechant (1991) concludes his explanation by reflecting on all the previous definitions and asserts that reading refers to the picture the readers draw based on the text by relating what is on the paper to their own fund of experience.

In the light of what precedes, we can deduce that reading takes place if and only if the intended meaning of the text is being generated. This necessitates the reader to bring about his/her entire knowledge. In other words, while reading, students have to make connections between their pre-existing structures and the text they are currently reading.

## **1.2 Multi-Dimensional View of Reading**

The interest in the nature of reading changes in compliance with the multi-faceted disciplines. Many disciplines go far beyond the educational concern about why students refrain from reading and have a tendency toward other activities (Kucer, 2005). Kucer argues that disciplines as diverse as cultural studies, psychology, and linguistics view the process of reading in their own perspectives and as critical to their fields.

### **1.2.1 The View of Cognitive Psychology**

Cognitive psychology, which has grown to become one of the most popular subfields of psychology, provides key information on how people come to process the world in general and develop reading in specific. Not only does the latter present a consistent theoretical and practical point of view regarding different cognitive models and internal mental processes involved in the process of reading, but it also shows the procedure whereby the meaning is generated from print (Dechant, 1991). The Atkinson-Shiffrin model is a case in point.

### **1.2.2 The Socio-cultural View**

The socio-cultural view grew from the work of the influential psychologist Lev Vygotsky who believed that the participation in socially-mediated activities is crucial, maintaining that the sociocultural environment governs the development of such mental activities like reading. Freebody and Luke (as cited in Kucer, 2005) explain that the meaning of the text is not merely a cognitive act, but it is socio-culturally determined.

### **1.2.3 View of Linguistics**

Linguistics, as a field of study, emphasises the linguistic dimension of reading as well as the textual factors of the language of the written product (Kucer, 2005). This perspective highlights the teaching and learning of language-related features, such as sound patterns, morphological features, and syntactic combinations.

### **1.2.4 Developmentalist's View**

Accompanying all the aforementioned trends, the developmental view came into existence. It emphasises the exploration of how young children construct the linguistic, cognitive, and sociocultural dimensions of the written language.

While reading is perceived differently depending on the discipline from which it is to be studied, the previous trends are neither isolated nor linear. In fact, they study the phenomenon of reading at the same time; each discipline may wish to utilise the results being realised by the other disciplines to reach particular conclusions (Kucer, 2005).

## **1.3 Chall's Proposal for Reading Stages**

Seeking to present the foundation for the reading acquisition process, Chall (1976) introduced a six-stage classification wherein he elucidates that normal children tend to go through definitive and distinct stages of reading development. These stages are best manifested in Table 1.1.

As presented in the table, Chall's initial stage of reading focuses mainly on the development of visual and auditory skills that enable him/her to read materials as simple as pictures. Simply, s/he may wish to retell stories that were read for him ahead before. As s/he goes on developing his/her reading, and when reaching 18 or more, s/he undergoes the world view stage in which s/he becomes mature enough to decide whether

to read as much or as little of the text based on his/her predetermined needs and purposes (Chall, 1976).

It is at this stage that s/he would be able to reach reading comprehension. Though this classification seems to be reasonable and is still widely adopted for use by most scholars, the ages and grades given for each stage should be perceived as approximations (Kucer, 2005). That is to say, the characteristics of these stages may overlap. For instance, a student may reach the multiple viewpoints stage by the age of ten.

Table 1. 1

*Chall's Stages of Reading Development*

Stages	Names	Approximate age	The grade	Characteristics/ abilities by the end of the stage
Stage 0	Pre Reading stage	Birth (0) to kindergarten (6)	Preschool	<ol style="list-style-type: none"> <li>1. S/he tries to retell stories from books previously read to him.</li> <li>2. Phonemic awareness (s/he gains control of oral) language.</li> <li>3. The development of visual, auditory, and perceptual skills needed for the beginning of reading.</li> </ol>
Stage 1	Initial reading (decoding stage)	6 - 7	1st-2nd grade	<ol style="list-style-type: none"> <li>1. The awareness of letter-sound and print- spoken word relations.</li> <li>2. The attempt to read simple and short passages.</li> </ol>
Stage 2	Confirmation and fluency stage	7 - 8	2nd-3rd grade	<ol style="list-style-type: none"> <li>1. The consolidation of what was learned in stage 1 through reading what is only familiar.</li> <li>2. Not for gaining new information.</li> </ol>
Stage 3	Reading for Learning new	9-12	4th-8th grade	<ol style="list-style-type: none"> <li>1. Gaining new information and experiencing new feelings.</li> <li>2. Learning how to find information in a paragraph.</li> </ol>
Stage 4	Multiple viewpoints	15 - 18	High school	<ol style="list-style-type: none"> <li>1. Holding more than one point of view.</li> <li>2. Reading more complex materials.</li> </ol>
Stage 5	A world view	18+	College and beyond	<ol style="list-style-type: none"> <li>1. Reading is used for one's own needs.</li> <li>2. Integrating prior knowledge into that of others and the one in the text.</li> <li>3. Ability to synthesise and create new meaning.</li> </ol>

*Note:* Adapted from *The Great Debate: Ten Years Later, with a Modest Proposal for Reading Stages*, by J. Chall, 1976. *Theory and Practice of Beginning leading Instruction* (pp.1-64). University of Pittsburgh: Learning Research and Development Center.

## **1.4 Purposes for Reading**

Exactly as writers who for the sake of entertaining the reader, transmitting a given message, or leaving a lasting impression usually write, readers too may wish to engage in the reading process to satisfy particular needs. In language classrooms, students may encounter texts with different purposes. Depending on the situation, activity, skill, and the language aspect to be fostered, the purpose of the reading task will be determined. For example, Harmer (1991, as cited in Chouaf, 2009) groups the reading purposes into two broad categories, namely reading for usefulness and reading for interest.

### **1.4.1 Reading for Usefulness**

Probably the most common incentive for students to read is seeking information. This covers two major objectives. The first one, Harmer (1991) mentions, is to get the information for its sake (as cited in Chouaf, 2009). That is, the act of reading a specifically selected text is for the sake of getting knowledge that would help to clear up confusion or to answer a question. While the second, he states, is to know a piece of information to employ it in performing a task. For instance, it is quite necessary to read diligently a manual before operating the machine.

### **1.4.2 Reading for Interest**

Reading for interest is also referred to as reading for pleasure. The latter goes back to anything that drives someone to read enthusiastically. Whether it is during school time or in free time, reading for pleasure, is voluntary. Readers, thus, are not concerned with information but rather for enjoyment, be it intellectual or emotional (Smith, 2014, as cited in Chouaf, 2009).

## **1.5 Types of Reading**

The way people read can vary in kind. This emanates from the various purposes readers have in mind before engaging in the reading task. The literature suggests the following types of reading:

### **1.5.1 Scanning and Skimming**

Scanning is a fast reading wherein the eyes move quickly or scan over the reading material to locate a specific piece of information, be it a word, number, name, or an idea. Readers dealing with such type of reading know at the beginning what they are looking for. However, this should not be confused with skimming which is a gist reading wherein the major focus is on getting the general meaning of a passage. Typically, readers may engage in this type of reading to get the general theme, topic, meaning. It is worth mentioning that trying to understand every single word in scanning or skimming is not at all workable as this will hinder the flow of ideas in the text.

### **1.5.3 Extensive Reading and Intensive Reading**

Extensive reading is meant to obtain a general understanding of a subject the reader feels rapturous and happy to read about. The students, in this case, engage in the act of reading simply because they like the text not because they feel obliged to undertake a given instruction (task). That is to say, the choice of what to read, when, and where is all a matter of students' choice. Intensive reading, on the other side, is a detailed reading that involves specific learning aims. Generally, this kind of reading focuses on reading short texts and doing exercises on them. Notably, students know the purpose of the reading act and what is expected from them prior to reading. In such a type of reading, students are not guaranteed the right to select the reading material, which, most of the time, does not meet the Learners' expectations.

## **1.6 Models of Reading**

Due to the important role reading plays in the field of SLL and FLL, researchers have studied the relationship between the reading process (what goes on in the brain) and the procedure of teaching reading (Dechant, 1991). Consequently, they have come up with what is commonly known as the reading model that represents a graphic attempt to depict how an individual perceives a word, processes a clause, and comprehends a text (Razi, 2016). In what follows, the three most prominent models, namely bottom-up, top-down, and interactive will be reviewed.

### **1.6.2 Bottom-up Model**

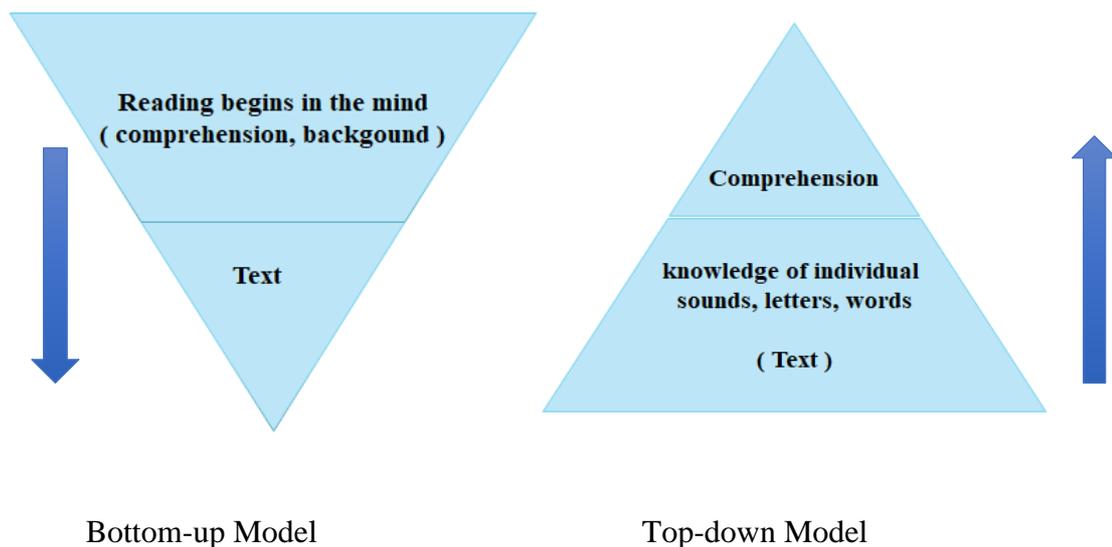
Though this model goes beyond the boundaries of behaviouristic research, some scholars still consider it a behaviourist-based model. Advocates of this model believe that learning to read starts from children Learning the small parts of the language (letters) and move on to understanding the whole text (Razi, 2016). This model, as the Figure 1.1 displays, spotlights the written or printed text by giving emphasis to the ability of recognising graphic stimuli, decoding them to sounds, and recognising words in order to achieve the general meaning (Anderson, 2000; Anderson, 1999, as cited in Razi, 2016). Since the bottom-up model is part to whole model, the instructional focus revolves mainly around the direct instruction of phonics to enable students to begin combining letters and then read words, sentences, paragraphs, and long texts.

### **1.6.3 Top-down Model**

This model is also known as the cognitive view or the whole to part model. Reflecting the cognitive perspective, this model holds the view that processing texts begins in the mind of the reader who has some sort of background knowledge and constructs an assumption of what s/he thinks the meaning of the text will be (Razi, 2016).

As is shown in Figure 1.1, the top of this model is the higher-ordered mental component - comprehension- and the bottom is the physical text.

The core of this model is meaning which takes precedence over the linguistic structure (decoding). Razi (2016) points out that teachers advocating the top-down model do not focus on phonics instruction but rather on introducing the entire literature as a whole by getting students to read the complete sentences. To keep their motivation in reading high, the students are asked to select materials based on their interest instead of assigning one book to the whole class.



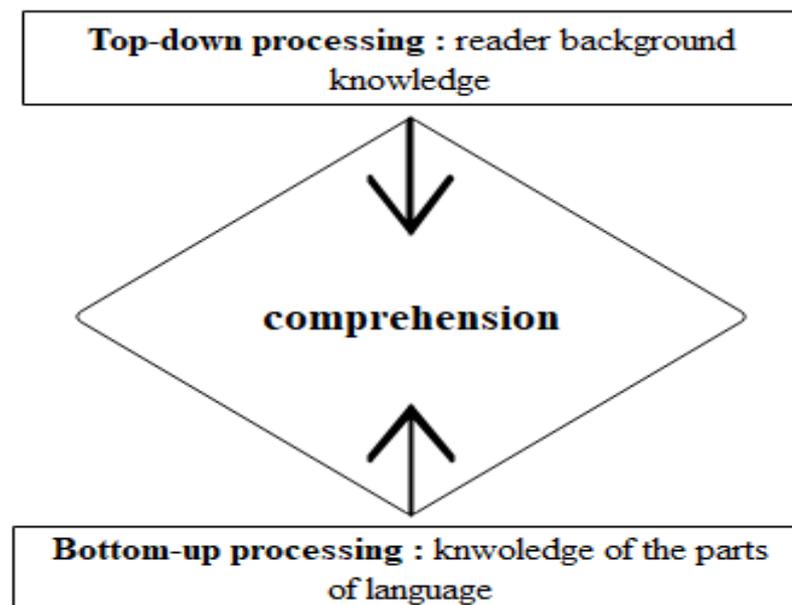
*Figure 1.1.* Top-down and bottom-up models of reading. Adapted from “Using Technology to Teach Reading Skills”, by C. E. Chen (*n.d.*). Retrieved from <http://www2.nkfust.edu.tw/~emchen/CALL/unit7.htm>

#### **1.6.4 Interactive Model**

This model, which is constructivist based, calls attention to the interaction between top-down and bottom-up processes, emphasising the strongest points of each. This is well delineated by Leu and Kinzer (1987) when they assert that, “reading proceeds as each

knowledge source in one's mind interacts simultaneously with the print on the page and with other knowledge sources” (as cited in Dechant, 1991, p. 5).

According to this model, good readers are those who can decode the letters of the words, as well as to integrate their prior knowledge to interpret the text. This model does not support the generation of a particular mould on students. Therefore, each student is free to use his own strengths to be able to understand the text. Yumul (2015) notes that following the interactive model principles, teachers encourage students to share their knowledge in class and bring their prior knowledge to create an understanding of the text. This model is well demonstrated in Figure 1.2.



*Figure 1.2.* Interactive model of reading. Adapted from “Using Technology to Teach Reading Skills”, by C. E. Chen (*n.d.*). Retrieved from <http://www2.nkfust.edu.tw/~emchen/CALL/unit7.htm>

### **1.7 Reading Comprehension Definition**

The literature argues that the attainment of a universally valid definition of reading comprehension has not yet been achieved. In his book, Tennent (2015) has compiled a number of definitions of reading comprehension such as:

Moyle (1972) defines reading comprehension as, “the skill of reading to extract knowledge or reading with understanding” (p. 22).

Harris and Hodges (1995) state, “reading comprehension is the construction of meaning of written text through a reciprocal interchange of ideas between the reader and the message in a particular text.” (P. 23).

In this regard, it is evident that reading comprehension is the ultimate purpose of the act of reading. It does not, by no means, refer to the mere ability of turning the printed letters into sounds, but it is more than this. It refers to the active involvement of the reader in the text in an effort to construct meaning and build understanding. This occurs through the combination of text-related ideas and the reader’s fund of prior knowledge.

### **1.8 The Components of Reading Comprehension.**

The fact that reading is more complex than what people think it is has invigorated scholars to propose theories that attempt to explain whatever happens in the person's visual or nervous system while reading. In this literature, and as it is hard to find a panoramic formula that clearly represents the components of reading comprehension, our choice goes to the Simple View of Reading (henceforth SVR). The point of the SVR is not to imply that reading is simple, but rather, it is a complex process that is conceptualised in a simple and comprehensive way.

The SVR, which was initially proposed in 1986 by Philip B. Gough and William E. Tunmer, is based on a widely recognised formula that reading is composed of two

equally important components, namely word recognition (decoding) and language comprehension. To further explain the complementary role of both elements, as well as the way they impact reading comprehension, Gough and Turner (1986, as cited in Murray, 2016) introduced the following formula:

$$\boxed{\mathbf{D}} \times \boxed{\mathbf{LC}} = \boxed{\mathbf{RC}}$$

While D stands for decoding, LC and RC for language comprehension and reading comprehension, respectively. Notably, the scores are not added but rather nullified. The three variables may range from 0 (nullify) to 1 (perfection) (Murray, 2016). Mathematically, if one of the components (either decoding or language comprehension) is 0 ( $D = 0$  or  $LC = 0$ ), the overall reading comprehension ability will be 0 ( $RC = 0$ ). That is, if the reader could not decode the text or does not have any language comprehension skills, he cannot read.

The SVR works as an overarching guide for it enlightens teachers about the students' progress and weaknesses in reading comprehension. Fundamentally, the teachers who are well acquainted or at least aware of the SVR would be able to develop effective ways to assess students reading and to provide appropriate instruction. Murray (2016) states, "the report of the national reading panel (NRP, 2000) concluded that the best reading instruction incorporates explicit instruction in five areas: phonemic awareness, phonics, fluency, vocabulary, and comprehension. These five areas are featured in the simple view of reading" (p. 27).

It is necessary, thereafter, to introduce Figure 1.3 that shows Scarborough's (2002, as cited in Murray, 2016) illustration. It represents the two essential components of the SVR- word recognition (extension of decoding) and language comprehension, as well as

the underlying single skills and abilities that come together to contribute to teaching reading. According to the illustration, reading comprehension requires the coordination of automatic word recognition of words and the application of what we know about the language (English).

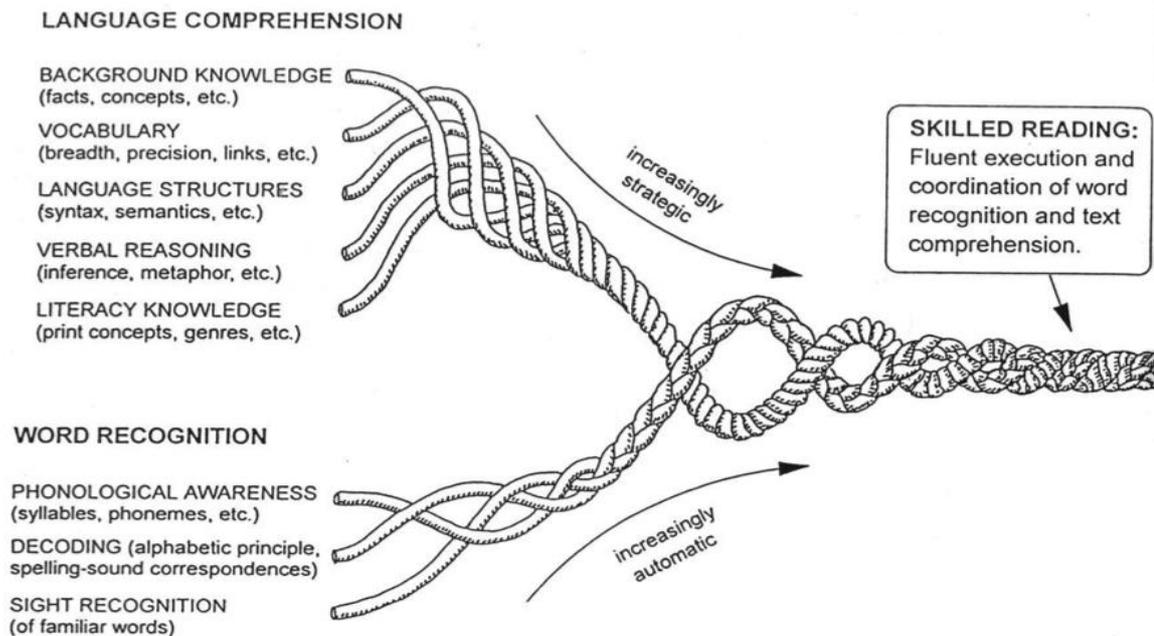


Figure 1.3. Components of the simple view of reading. Reprinted from “Word Recognition Skills: One of Two Essential Components of Reading Comprehension”, by M. S. Murray, in K. A. Munger (Ed.), *Steps to Success: Crossing the Bridge Between Literacy Research and Practice* (p.30), 2016, Open SUNY Textbooks, Milne Library: University of New York at Geneseo, Geneseo.

Word recognition is a teachable skill. As time goes on, this skill becomes increasingly automatic and fluid because the brain becomes able to notice and manipulate the phonemes. Not only will students develop a large pool of words that they can read automatically, but they will also start to learn to read never-seen-before words (Murray,2016). Conversely, the elements needed for language comprehension are not

skills per se. They are mental processes that are, to some extent, difficult to teach. Elements such as background knowledge, vocabulary, and literacy knowledge are domain-specific (Murray, 2016). Therefore, the more content and vocabulary are familiar, the easier language comprehension will be.

### **1.8.1 Word Recognition Skills**

Some scholars refer to word recognition as the reader's ability to read and identify written words correctly and effortlessly in the shortest time possible. Murray (2016) states, “a mere glance with no conscious effort is all it takes for word recognition to take place” (p. 30). Word recognition, thus, requires students to develop automaticity when reading isolated words. Importantly, automatic in the sense that the skilled reader cannot avoid reading words in the print because s/he learned to instantly recognise them (Murray, 2016). To achieve automatic word recognition, students have to be introduced to the following: phonological awareness, decoding, and sight recognition.

**1.8.1.1 Phonological awareness.** Phonological awareness is a necessary element for automatic word recognition. Phonological awareness is an awareness that our speech can be taken apart into smaller units. It refers to the ability to break and manipulate the oral language into parts (Fakhir, 2014). That is, while sentences can be taken word by word, words can be divided into syllables and rhymes. Syllables and rhymes can be divided into individual sounds that are referred to as phonemes. Moats and Tolman (n.d.) maintain that any failure in the course of developing phoneme awareness (awareness of individual sounds) hampers to create the relationship between speech and print that is essential for learning to read. Murray (2016) insists that teachers have to know that the development of larger units (rhymes and syllables) precedes the development of awareness of individual phonemes.

**1.8.1.2 Decoding.** The term means different things for different people. Some equate it to “sounding out” (Parker & Snow, 2019) while others to context-free word recognition (Gough & Tunmer, 1986, as cited in Parker & Snow, 2019). Oakhill, Cain, and Elbro (2015) illuminate that understanding the alphabetic principle and knowing letter-sound correspondences are the two critical requirements for accurate word decoding. The alphabetic principle refers to the understanding that the alphabetic system (letters) symbolises speech sounds (Murray, 2016). By way of illustration, if a child makes the association that the written letter “k” makes /kkk/ sound, s/he is said to apply the alphabetic principle (Murray, 2016). Murray (2016) maintains that letter-sound correspondences indicate the students’ ability to provide the correct sound for the letters and letter combinations. For instance, the following letter combinations “gh, ch, s” may be pronounced as /f/, /k/, /z/, respectively.

**1.8.1.3 Sight word recognition.** Sight word recognition is the third critical component for successful word recognition. These are words that frequently occur in the text but have unusual spelling patterns. This is because they do not follow the basic rules of phonics knowledge nor they follow the common letter-sound correspondences (Murray, 2016). One sight word that is frequent and irregular would be the word “was”. If a student spells it out, s/he may end up writing “wuz”. Some further examples of sight words are: who, were, and does. It is essential to note that the process of decoding sight words is a difficult task; consequently, it requires cheer memorisation from the part of students (Murray, 2016; Blank, 2011; Mulvahill, 2018). This would help students to recognise them immediately and automatically without having to use the decoding skills.

### **1.8.2 Language Comprehension Ability**

After having introduced the sub-elements needed to gain word recognition, which is one essential component of reading comprehension, namely phonological awareness, decoding, and sight words, we would be introducing, throughout this part, the second essential component which represents language comprehension. The latter, as denoted by Murray (2016), is the product of the interaction among the following elements: background knowledge, vocabulary, language structures, verbal reasoning, and literacy knowledge.

**1.8.2.1 Background knowledge.** The first element that contributes to language comprehension is the role of background knowledge (prior knowledge). Murray (2016) defines, “background knowledge is a term used in education for a specific subset of knowledge needed to comprehend a particular situation, lesson, or text” (p. 54). To exemplify, understanding a text about the mental functions requires readers to use their prior knowledge of the brain structure. There is a set of instructional strategies that trigger readers to activate their prior knowledge for a better comprehension of texts, such as answering questions, KWL strategy, prediction, discussion, and visual aids (pictures, maps, and diagrams).

Importantly, to well understand the text, readers should bring information, knowledge, and emotions, to the printed work (Brown, 2001, as cited in Alfaki & Siddiek, 2013). This explains why most scholars consider comprehension to be an interactive process between the print (textual information) and the readers’ background knowledge (Seymour, 2017; Shuying, 2013). The print, then, only activates the reader's relevant pre-existing structure (Carrell, 1981, as cited in Al-Issa, 2011). So, it is important to introduce students to a wide variety of multicultural content that is related to science, history, and art.

**1.8.2.2 Vocabulary.** The relationship between comprehension and vocabulary is well-documented. A number of Scholars have long appreciated that vocabulary knowledge is needed for comprehension that even Murray (2016) and Adams (2011) insisted that it is a prominent predictor of reading comprehension. Thus, students with the richest vocabulary repertoire tend to show advanced reading comprehension. Betts (1946) eloquently points out that reading comprehension depends on understanding at least 95% of the words in the text (as cited in Beck & Mckeown, 2001). It is important, though, to note that many of these words require direct instruction.

**1.8.2.3 Language structure.** Language structure is the final element contributing to language comprehension. In her article, Murray (2016) goes on into explaining the possible relationships between words and sentences, pointing out that there are facets to language structure. The latter is the knowledge of grammar, verbal reasoning, and literacy. These elements are manifested as having to do with the language components: form, content, and use, respectively.

**1.8.2.3.1 The language form.** Some of what children have to learn to be able to comprehend print is the language form that refers to the surface features of the language. These elements consist mainly of the rules that govern morphology and syntax. Morphology substantially examines the form of individual words. In other words, it studies how words' meanings change in compliance with the change of the words' internal structure through the addition of prefixes, suffixes, or both. Syntax, on the other side, examines the way words are arranged and ordered within the sentence. This includes the way phrases, clauses, and sentences are structured. Since syntax makes sentences clear and consistent, any change in word placement leads to the change in the meaning of the whole structure.

**1.8.2.3.2 Language content.** Language content simply refers to semantics which is concerned with how the meanings of individual words unite to create the overall meaning. This implies that for the sake of understanding the meaning of a text, the reader has to possess considerable knowledge about language content (knowledge of objects, events, and relations). Murray (2016) states that semantics requires the reader to be knowledgeable also of slang, idioms, metaphors, and simile that can pave the way for making correct judgments about the content.

**1.8.2.3.3 Language use.** Language use refers to pragmatics that is the study of meaning in relation to the user and the context. To put it another way, it deals with the meaning of sentences in terms of speaker/writer's intentions. Despite showing a good command and proficiency in English phonology, morphology, syntax, and semantics, many readers cannot get through their struggles in reading comprehension. This is simply because of their limited knowledge of pragmatics. Pragmatic competence ensures more successful reading comprehension (Murray, 2016). Therefore, teachers must raise students' awareness of issues such as deixis, presupposition, entailment, cohesion, and unity.

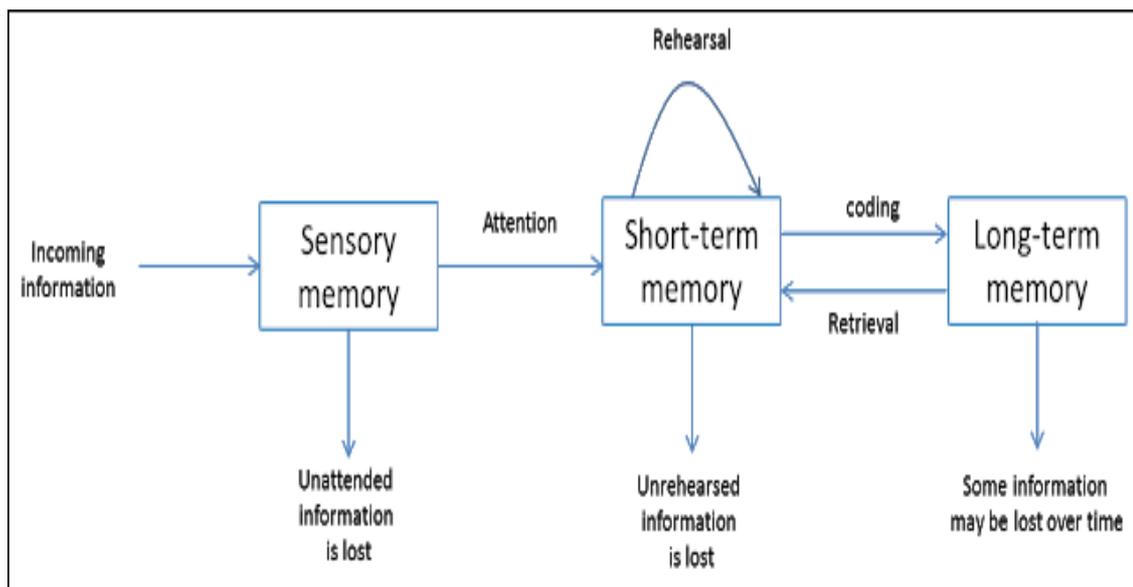
## **1.9 Reading Comprehension and Memory**

As already indicated, reading comprehension is a highly ordered activity. On that account, a process as complex as reading does not seem to be limited only to word recognition and language comprehension. In fact, human memory, with its stores, contribute significantly to the comprehension of different texts.

**1.9.1 The Atkinson-Shiffrin Model**

It was in 1968 when Richard Atkinson and Richard Shiffrin introduced the so-called Atkinson-Shiffrin model, which is also known as the Multistore model. According to Malmberg, Raaijmakers, and Shiffrin (2019), this model proposes that human memory is subdivided into distinct systems (stores) known as sensory memory (henceforth SM), short-term memory (STM), and long-term memory (LTM). This is clearly demonstrated in Figure 1.4. Apparently, these systems seem to be distinct, but all the three work together to form the basis of human memory.

Compared to other memory models, the Atkinson-Shiffrin model is excessively simplistic, yet still valid (Malmberg, Raaijmakers & Shiffrin, 2019). The reason why we opted for this model to delineate multiple memory stores stems from it being a well-supported model that still triggers a large amount of ongoing research. Thus, several research models are based upon its components. Baddeley and Hitchy Model is a case in point.



*Figure 1.4.* The Atkinson-Shiffrin model. Adapted from “Multi-Store Model of Memory”, by S. A. McLeod, 2007 (<https://www.simplypsychology.org/multi-store.html>).

**1.9.1.1 Sensory memory (SM).** This is where the environmental input including what we see, hear, and feel is detected by the sense organs. Chiefly, while the capacity of SM is almost unlimited (large-capacity), its duration is extremely short (Cherry, 2020). It is important to note that the SM is subdivided into three categories, namely the iconic memory (for the visual input), echoic memory (auditory), and haptic memory (tactile). It should be pointed out that when there is an overwhelmingly large amount of information working as stimuli, the brain has simply to filter out the unnecessary ones. Such a process is referred to as attention (Atkinson & Shiffrin, n.d.). Through attention, only the material the person chooses to attend to passes to the STM while the other pieces of information will decay (forgotten).

**1.9.1.2 Short-term Memory (STM).** The short-term memory represents the second memory store wherein people handle the concepts they are working on now. Unlike SM, STM is limited in capacity and duration. Importantly, Cherry asserts that if it is that a person wants to remember more items for a longer duration, rehearsal is required (Alcorn, Pain, Thompson, 2012). Atkinson and Shiffrin consider rehearsal as the mental process responsible for maintaining information in STM (Raaijmakers, n.d.). Some information, however, after a certain amount of time, will be automatically transferred to LTM (Cherry, 2020). Rehearsal, then, is crucial in maintaining pieces of information in STM and in transferring them to LTM (Malmberg et al., 2019).

**1.9.1.3 Long-term memory (LTM).** The final memory store in the Atkinson-Shiffrin model is the long-term memory. The latter is characterised by relatively permanent storage and long duration (Cherry, 2019). This, in turn, allows people to remember things from a very long time ago (some are even kept for a lifetime). It is

important, though, at this point, to pinpoint that LTM is not concerned with sensations, but contributes to the creation of meaning (Cherry, 2019).

This model elucidates that STM and LTM are related not only through “coding” which is the process of transferring and storing information in LTM (Raaijmakers, n.d.), but also through “retrieval” which is another sub mechanism which gets the person from LTM back to STM again. Information stored in LTM does not decay or lost even though it can sometimes be irretrievable. This makes it unique in its features compared to SM and STM (Atkinson & Shiffrin, n.d.).

### **1.9.2 The Working Memory Model**

The fact that the Atkinson-Shiffrin model shows some drawbacks has lead Baddeley and Hitch to propose a new memory model in 1974 known as the working memory model, which introduces a further type of memory. This model is demonstrated in Figure 1.5. They suggested that the concept of STM, in the Atkinson-Shiffrin model, was too simple to explain the complexity of cognitive activities such as reading comprehension. Consequently, STM has been replaced by the so-called working memory (henceforth WM).

**1.9.2.1 The working memory (WM).** The working memory (henceforth WM) is the newly coined term which is used as a replacement for short-term memory. The WM plays a significant role in several cognitive tasks ranging from comprehension and reasoning to problem-solving and learning. It essentially stores and manipulates information needed to accomplish these processes. As opposed to the Atkinson-Shiffrin model that views STM as a single and unitary system, the working memory model considers the WM as involving multiple subsystems.

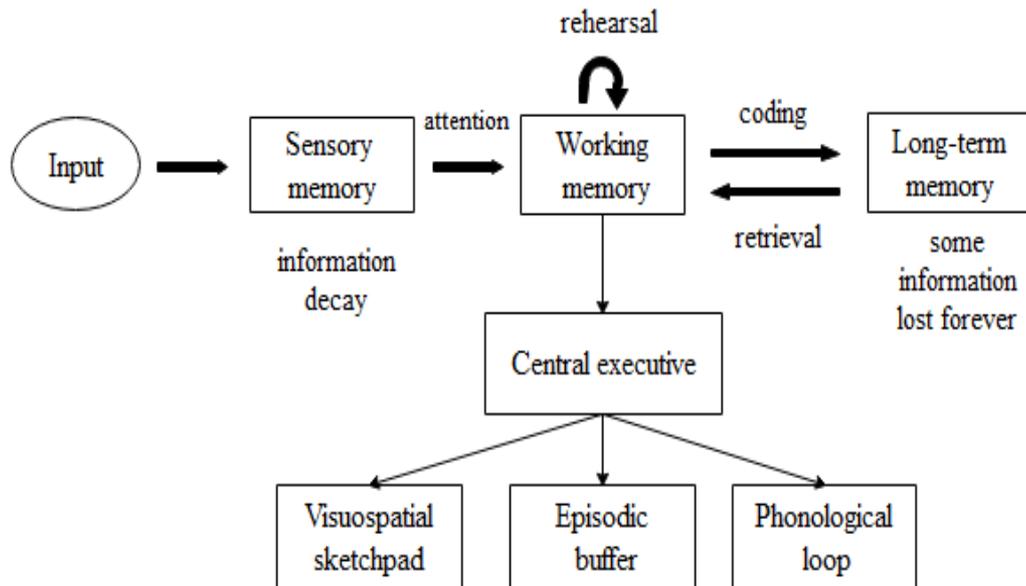


Figure 1.5. The working memory model components. Adapted from “Working Memory”, by S. A. Mcleod, 2012 (<https://www.simplypsychology.org/working%20memory.html> )

**1.9.2.2 Components of WM.** The working memory is composed of various components that are as follows: the central executive, visuospatial sketchpad, episodic buffer, and phonological loop (Baddeley & Logie, n.d.). It is important to note that different types of information go to the corresponding store instead of all information going into one single store.

**1.9.2.2.1 The visuospatial sketchpad.** This allows people to store and manipulate visual and spatial information. It is the visuospatial sketchpad that allows them to find, for instance, the location of an object in a crowded room or to visualise 3D objects (Atkinson & Shiffrin, n.d.).

**1.9.2.2.2 The phonological loop.** The phonological loop processes auditory and verbal information. In other words, it is concerned with acoustic sound-based memories (Atkinson & Shiffrin, n.d.). This sub store operates when people deal with spoken or written materials (Mcleod, 2012). It is the phonological loop, Mcleod (2012) states, that allows people to remember the beginning of long sentences when they get to their end.

**1.9.2.2.3 The central executive.** This active mechanism directs the work of WM. It is involved in the control and regulation of the WM system including the coordination of the subsidiary memory systems (Baddeley & Logie, n.d.; Alcorn et al., 2012). Majorly, the central executive monitors the visuospatial sketchpad and the phonological loop. Moreover, it is in charge of filtering information and sending it to the corresponding subsystem to be processed. Differently put, the central executive selects which information people would pay attention to (Atkinson & Shiffrin, n.d.).

**1.9.2.2.4 The episodic buffer.** The episodic buffer brings information from LTM to WM so that it can be mentally manipulated. It also contributes to the combination and blending of visual and acoustic information coming from the visuospatial sketchpad and phonological loop, respectively (Atkinson & Shiffrin, n.d.). The episodic buffer's function may be better manifested when a person is exposed to the audiovisual input.

### **1.9.3 The Mechanism of Reading Comprehension (From SM to Meaning Creation)**

When a person reads a text, the iconic memory detects the text's sentences, words, and punctuation as being visual sensory information (input) and quickly moves it into the WM before new input (word) makes its way and crowd out old information. At this point, the central executive, which works as a decision-maker, directs attention and selects information in order to send it to the phonological loop (Baddeley & Logie, n.d.). The

latter converts the written information into sound-based information that would be temporarily stored and processed.

Phonological articulation is concerned with learning graphemes and phone relationships that are vital to word recognition and decoding skill (Best, 2010). To gain the full meaning of different pieces of the print, the phonological loop makes use of facts, word meaning, relations, personal information, and background knowledge coming from LTM through the episodic buffer. Once the information is well understood, it will be transferred and stored in LTM (*All Kinds of Minds*, 2009) so that it will be retrieved later.

#### **1.9.4 The Role of Working Memory in Reading Comprehension**

Although the role of SM and LTM in reading comprehension is quite essential, probably the most pivotal role is the one of WM. There is considerable evidence that demonstrates the capacity of WM in holding information in the brain until it is fully processed (Seigneuric, Yuill & Oakhill, 2000). Loosli, Buschkuehl, Perrig, and Jaegg (2012) note that information must be temporarily stored in WM meanwhile the sentence is being read (as cited in Vaagen, 2015).

Since the WM's major mission is to retrieve the relevant stored long-term knowledge, as well as to transfer the outcome of its operation to the LTM (for storage), students with low WM capacity will inevitably have difficulty combining new information to what they already know (Welie, 2016; Merikle, 1996; Baddeley & Logie, n.d.). It is also important to note that the ability to hold links between the text's end and its beginning is crucial for effective reading comprehension. WM seems to play a key role in this process. Because of all these highly ordered functions of WM, researchers consider it

to be a strong predictor of individual variation in reading comprehension (Nouwens, Groen & Verhoeven, 2016; Pearson & Cervetti, 2012).

A 2019 article provides a thorough description of the human memories and how they coordinate to reach a high level of reading comprehension. Throughout the article, the author suggests some key strategies and hints on how to maximise students' reading productivity concerning SM, STM, and WM. Among the strategies aiming to enhance the reader's WM, the writer mentions, is the use of concept maps (*All Kinds of Minds*, 2009). The latter is meant to organise information throughout the text, to consolidate ideas, and to keep track of what is read ("Reading Strategies", n.d.).

### **1.10 Reading Comprehension Instruction**

Reading education researchers have provided valuable information about the kind of instruction students mostly need in order to become efficient readers. They generally maintain that effective comprehension instruction may involve phonological awareness instruction, language structure instruction, vocabulary instruction, and comprehension strategies instruction (Pearson & Cervetti, 2012). Too often, inventing strategies for facilitating the comprehension of texts and remembering what has been read is one feature of skilled readers (Texas Education Agency, 2002). Since most students do not plan to use the reading strategies, explicit instruction has become essential to repair their lack of understanding.

Good readers are most often strategic readers. In this respect, Texas Education Agency (2002) defines the comprehension strategies as follows, "are conscious plans or procedures that are under the control of a reader, who makes decisions about which strategies to use and when to use them" (p.7). In explicit reading comprehension strategy instruction, according to the Texas Education Agency (2002), the teacher selects a given

reading strategy that better fits the text and the purpose of reading. Later, and before giving the students the opportunity to practice it on their own, s/he should explain what, why, and when to use the strategy. In addition, s/he should clarify the goals behind using it. Subsequently, the students will be able to apply it regularly in other texts.

### **1.11 Reading Comprehension Strategies**

A great number of students may have trouble with basic reading skills. They may have difficulty understanding the main or sub ideas of the reading passage or even managing the time-on-task. Thus, reducing these obstacles using instructional strategies has become rudimentary. The literature identifies a number of comprehension strategies that have been proved to be highly useful, such as prediction, summarisation, questioning, making inferences, graphic organisers, and many others (Texas Education Agency, 2002).

#### **1.11.1 Prediction**

Readers may use their prior knowledge and information from the text, such as the title, pictures, and headings to anticipate the course of future events that may take place at a later time in the story. It is a good way to maintain the linkage between new information (in the text) and preexisting structures.

#### **1.11.2 Summarisation**

This strategy necessitates from the reader to identify the main parts/ideas of the text and rewrite them using his own words. Summarisation enables for the quick recall of text.

#### **1.11.3 Making Inferences**

Most authors do not provide direct and clear descriptions of texts. This places heavy demands on making inferences. The latter refers to the combination of what is

already known as prior knowledge and the clues presented in the text in order to draw conclusions of what is not directly stated in the text.

#### **1.11.4 Graphic organisers**

Graphic organisers demonstrate the different relations in the text i.e., between the concepts, key ideas, and sub-elements. They help the students to write well-organised summaries of a text. Such visual tools have been proved to assist the readers in breaking the reading passage into its smaller parts, as well as keeping the track of thought. Some examples of graphic organisers are story maps, concept maps, tree diagrams, Venn diagrams, and semantics maps (e.g. mind maps, spider maps). Therefore, concept mapping, which may be used in a variety of fields, is just one example of the reading strategies.

#### **1.12 Reading Comprehension Difficulties**

Poor readers are those who struggle with the basics of reading and who experience difficulty learning to read. It is commonly believed that decoding inefficiency may result in reading comprehension difficulties; however, Nation (2011) believes that not all students who have reading comprehension difficulties do suffer from basic reading problems. A substantial amount of literature elucidates that, based on the SVR, reading comprehension deficits germinate from problems in one of the two components entailed in reading comprehension (i.e. Word recognition skills and language comprehension ability).

As pointed out by the Texas Education Agency (2002), poor readers may be unable to extract or rebuild meaning from the text, resulting in a surface approach to reading. They may not also be able to draw connections between the different parts of the text. Since there is a tight link between vocabulary and reading comprehension, it is well established that the lack of vocabulary knowledge may result in impaired comprehension (Texas Education Agency, 2002). Another possibility regarding the difficulties of reading

comprehension may be restricted to the semantic or pragmatic aspects of the language. The evidence suggests that poor comprehenders show lower results compared to typical readers, mainly, on tasks requiring making inferences.

Reading comprehension and background knowledge are typically highly interrelated. It is worth noting that, too often, struggling readers do exhibit insufficient background knowledge about the topic of the text (Texas Education Agency, 2002; Nation, 2011). This can even comprise the extent to which they activate this knowledge and bring it rapidly. Reflecting on the available literature, it is apparent that reading comprehension difficulties are varied. Accordingly, accurately diagnosing the reading difficulties helps the instructor in making the necessary adjustments in teaching.

### **1.13 Variables Affecting Reading Comprehension**

We have long recognised the importance of various memories on reading comprehension. In this respect, any deficiency in the SM, WM, or LTM would inevitably lead to a variety of reading difficulties and disabilities. However, there may be other reasons that would likely affect students' reading comprehension. These might be related to readers, text, or context.

#### **1.13.1 Reader Variables**

There is an ample body of literature aiming to investigate the relationship between the reader's affective and psychological factors and the extent to which they comprehend the text. Factors such as the purpose of reading, language proficiency, and level of interest in the text, background knowledge in the text's topic, motivation, and stress are all determinants of performance on the reading task (Gilakjani & Sabouri, 2016). Examination, for example, tends to put more pressure on students; their level of concentration and understanding will be affected accordingly. Motivation is another

factor that we can shed light on. Evidently, unlike the students with extrinsic motivation, the ones who are naturally self-motivated (intrinsic motivation) show their interest in the reading material and can easily adapt to the reading activity and its instructions.

It is worth mentioning, then, that teachers have not to expect from the anxious, uninterested, or demotivated students to be engaged in the reading task. Hollwell (2013) adds another factor that he calls medical problems (as cited in Gilakjani & Sabouri, 2016). It should be pointed out that poor reading comprehension might too often be associated with some medical problems. Students with speech problems, hearing impairments, and decoding/word recognition disabilities are less likely to take part in the reading activity (Jennings, Caldwell & Lerner, n.d.). Sometimes, the brain that hampers the reading process, as it is the case with dyslexia. The latter results from the difficulty in recognising speech sounds and make sound-letter associations.

### **1.13.2 Text Variables**

Though there has been little research showing the significant relation between text features and reading comprehension, it seems logical that the knowledge of some text-based characteristics, such as text genre, structure, textual markers, syntax, vocabulary contribute, to some extent, to its comprehension (Gilakjani & Sabouri, 2016). If the purpose of the reader, for instance, is to gain a general understanding of the material, then s/he can skip the unfamiliar lexicon trying to predict their meaning from the context. Moreover, knowing the different genres can give the reader directions on how the text should be read and how information could be easily extracted.

### **1.13.3 Context Variables**

Though it is widely recognised that students bring to the classroom vastly varying capacities, the classroom may also have a large impact on students' comprehension and concentration levels. In fact, the learning environment, including calmness, availability of materials, the inclusion of technology, comfortability with classmates tend to affect the development of reading comprehension (Gilakjani & Sabouri, 2016). Students will be less likely to logically think about the text at hand while the classroom is noisy and disruptive. That is, to maximise the comprehension of texts, teachers have first to ensure a calm, controlled, and effective learning environment wherein students can promote the sense of belonging, safety, and self-efficacy.

### **Conclusion**

The present chapter aimed at delineating the varied aspects related to reading and reading comprehension including their definitions, types, components, without forgetting to shed light on the main existing relationship between reading and reading comprehension. Moreover, it provided a review of the mostly-recognised reasons that may likely affect students' reading comprehension including those attributed to the environment, text, and the reader himself, indicating that some strategies can be used to remedy their struggles in reading comprehension tasks. In the forthcoming chapter, an account would be given to a renowned visual mapping tool known as concept mapping.

## **Chapter Two: Concept Mapping in Reading Comprehension**

### Introduction

#### **2.1 Teaching Effectiveness**

#### **2.2 Teaching Strategies**

#### **2.3 Graphic Organisers**

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**2.12.2.3** As a whole class activity

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**2.12.4** Concept Mapping as an Assessment Tool

**2.13** Concept Maps and Language Development

**2.13.1** Concept Mapping and Writing

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**2.14** Concept Maps Scoring

Conclusion

## Introduction

The intent of this chapter is to provide a description and an account of the concept mapping strategy. This chapter makes it clear that concept maps belong to a particular type of instructional strategies -graphic organisers. The definition of graphic organisers, categories, and benefits will be first reviewed. This chapter, then, presents the definition of concept maps, features, construction, potential uses, and way of scoring. Likewise, the main applications of concept mapping in language learning, especially on enhancing reading comprehension will be outlined. This chapter finally examines the relationship between concept maps and learner differences.

### **2.1 Teaching Effectiveness**

It is widely accepted that teaching is a challenging task, yet it is one of the key propellers for educational development. Traditionally, in teacher-centred classrooms, teachers were conceived as the main source of information while students as passive recipients of knowledge (CohenMiller, Shamatov, & Merrill, 2018). This method of teaching predominantly used traditional methods of teaching, namely lectures wherein students were only required to listen and take notes (CohenMiller et al., 2018). Beausaert, et al. (2013) criticise the teacher-centred approach as to push students to “adopt a surface learning” (as cited in CohenMiller et al., 2018, p. 39). This is because this form of instruction does not engage learners in such cognitive processes as problem-solving, decision making, and critical thinking while it also allows for little engagement and interaction in the classroom.

It is abundantly clear, later, that the shift from the teacher-centred model to a learner-centred approach has made the learning process a more relevant, successful, and enjoyable experience, often with the aim of promoting students’ independent thinking, as

well as thorough understanding (ko, Sammons, Bakkum, 2016). As part of this trend, teaching effectiveness was foregrounded. Barry (2010) defines teaching effectiveness as, “a set of behaviours that effective teachers incorporate into their daily professional practice. These involve a deep understanding of subject matter, learning theory and student differences, planning, classroom instructional strategies...” (p. 3). This implies that the teacher’s real effectiveness involves knowledge of what, when, where, why, to whom, and how to teach.

## **2.2 Teaching Strategies**

It is often thought that having mastery of content knowledge is the only criterion for high-quality teaching. However, beliefs about what constitutes an effective teacher put emphasis on additional criteria that can vary markedly (Barry, 2010). Barry (2010) and ko et al. (2016) argue that effective teachers master their teaching content, monitor students’ understanding, provide regular appropriate feedback, and teach students instructional meta-cognitive strategies. Following this, instructional strategies represent an integral part of the teacher’s practice. This is clearly determined when CohenMiller et al. (2018) report, “teachers should have a sound knowledge of active and interactive teaching and learning methods and use them in their practices regularly” (p. 39).

Broadly and simply put, Kraus and Sears (2008) assert, “students need to be taught effective memory strategies to help with learning and thinking skills. Perhaps teachers can also improve by making information memorable through effective teaching techniques” (p. 37). Apparently, teachers need to introduce and employ active learning methodologies that best serve the learning needs and actively engage students in their learning (Rubio, 2009). Some of the instructional strategies that can be used to inspire classroom practice are cooperative learning, modeling, inquiry-guided instruction, lesson

objective transparency, experiential learning, class discussion, and graphic organisers (Goodwin, 2018; Cox, 2019).

### **2.3 Graphic Organisers**

Graphic organisers have long been accepted tools in language teaching. They are defined by Marzano, Pickering, and Pollock (2001) as, “tools which combine linguistic forms like words and phrases with non-linguistic forms like symbols and arrows which show relationships” (as cited in Kansızoğlu, 2017, p. 139) and by Lestari and Wahyuni (2018) as, “a graphical or spatial representation of text concepts. It is an instructional tool that can help students to organise, structure the information and concepts to relate with the other concepts” (p. 1). The literature suggests that these visual devices, which commonly use lines, circles, and boxes, are the best teaching facilities that are specifically designed for enhancing students’ learning.

### **2.4 Types of Graphic Organisers**

For the sake of fostering meaningful learning, teachers can make use of a variety of graphic organisers such as concept map, matrix, Venn diagram, problem-solution map, K-W-L schema, mind map, story map, character map, flow chart, linear system, story pyramid, cause and effect map (Kansızoğlu, 2017). Though it is viewed that the choice of the appropriate organiser involves consideration of the nature of the course and purpose of classroom activity only, it is also important for teachers to cater for individual differences in the classroom. Following this, however, Ellis and Howard (2007) state, “graphic organisers can be effective with all students” (p. 1). This denotes that graphic organisers can address the problem of diversity in the classroom since they can be applied with all types of students regardless of their differences.

### **2.5 Benefits of Graphic Organisers**

Implementing such tools in the classroom practice helps the teacher to present information concisely, organise parts of the lesson visually, as well as explain and exemplify abstract concepts meaningfully. This visual display, according to Kansızoğlu (2017), helps students to foster their organisational skills alongside language skills. Besides, they are powerful instructional tools that contribute to critical thinking, problem-solving, and note taking (Kansızoğlu, 2017). This is clearly shown when Lestari and Wahyuni (2018) say, “reading and writing skill, communication skills, analytical skills as well as creative skills are subject to improve with the use of graphic organisers” (p. 3). Ausubel adds that graphic organisers provide a means of activating learners’ prior knowledge which should regularly be related to new information (Miranda, 2011).

### **2.6 Concept Maps as Graphic Organisers**

Dating back to 1972, and in the course of Novak's research programme at Cornell University, the concept map was developed. This tool, which is sometimes referred to as flowchart, is a graphical organiser through which meaningful relationships are visually displayed (Novak & Cañas, 2015). This diagram represents the different relations among a set of connected concepts and ideas belonging to the same topic, lesson, or unit. Too often, concepts, which primarily describe objects or events, are represented by single words enclosed in boxes or circles (also called nodes) and connected to other concepts by arrows (also called lines or arcs) (Novak & Gowin, 1984). This generates a highly informative Network as the one shown in Figure 2.1 that represents a model of concept maps. Specifically, in concept maps, words, or phrases written by the arrows, define the kind of relationships existing among different parts. These words are called the linking

words. The latter usually include such categories as verbs, adverbs, verb phrases, or prepositions (Novak & Cañas, 2015).

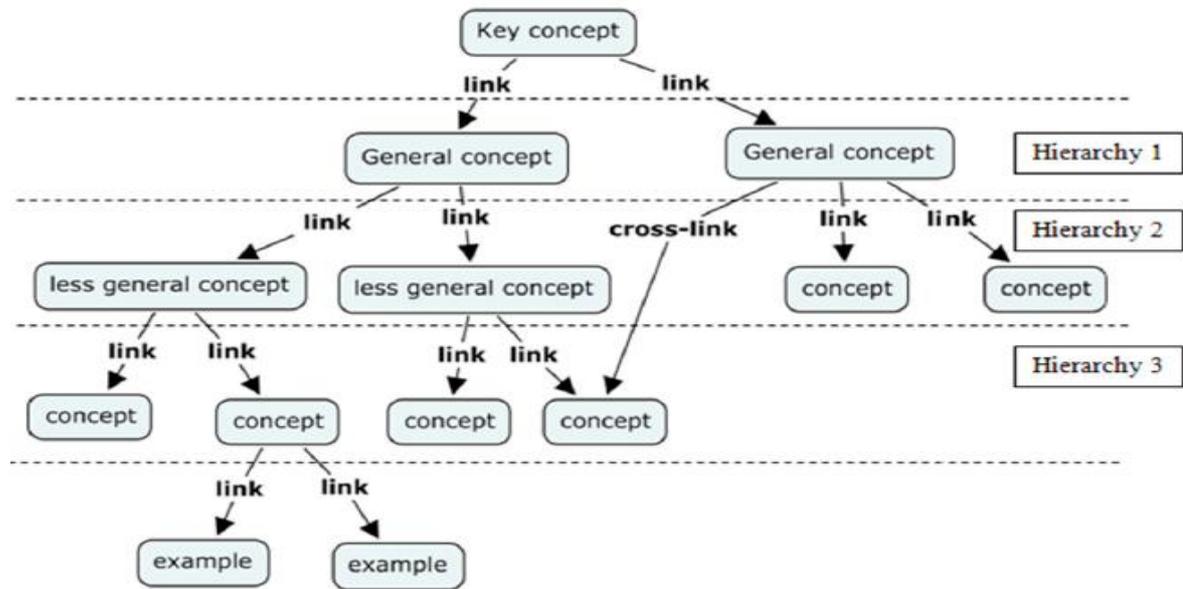


Figure 2.1. A concept map showing the model of concept maps. Reprinted from “computer-based concept mapping as a method for enhancing the effectiveness of concept learning in technology-enhanced learning”, by G. Asiksoy, 2019, Sustainability, 11, p. 2.

Similarly to many graphs, the concept map begins with a main concept or idea then branches out into smaller ones (concepts/ ideas). That is, it shows how the main and central idea can be broken down into smaller components. Concepts and linking words form propositions (statements, units of meaning) (Novak & Cañas, 2015). In the concept map in Figure 2.2, “scaffolding learning”, “Vygotsky’s ideas”, “facilitate learning”, “expert skeleton concept maps” and “Vee diagram” are concepts while “builds upon”, “can”, and “uses”, are linking words, and together they form the propositions “scaffolding learning builds upon Vygotsky’s ideas” and “scaffolding learning can facilitate learning through using expert skeleton concept maps and Vee diagrams”.

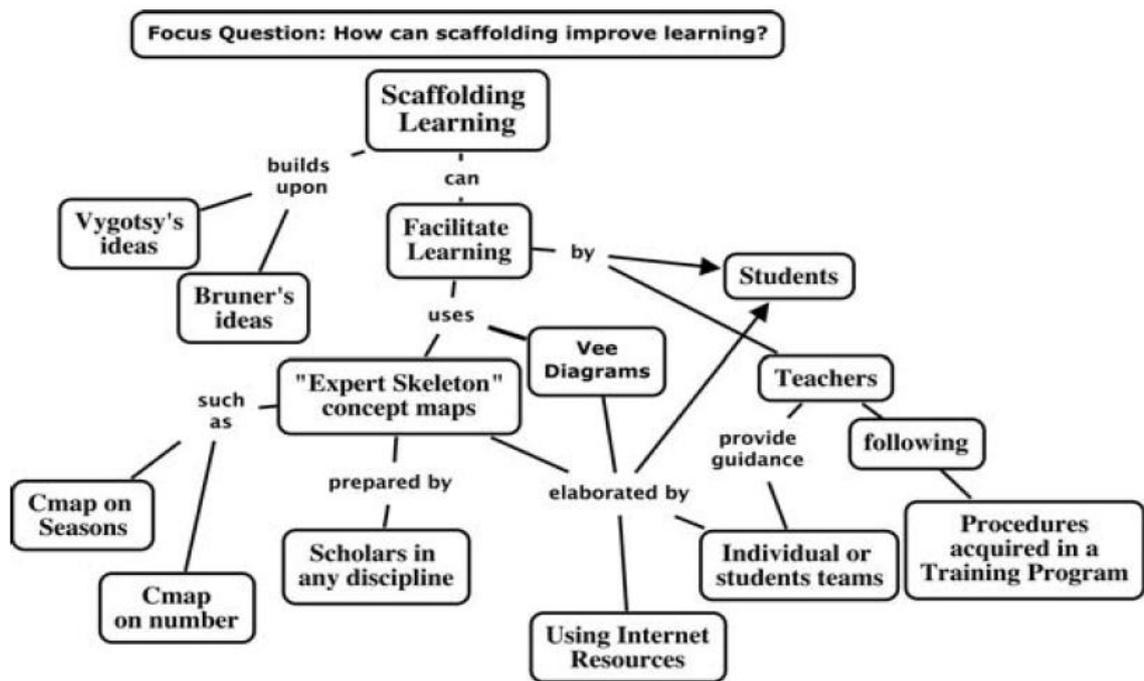


Figure 2.2. A concept map showing the way scaffolding improves learning. Reprinted from *Learning, creating, and using knowledge* (p. 81), by J. D. Novak, 2010, New York: Routledge, Inc. copyright 2010 by Taylor & Francis.

### 2.7 Key Features of Concept Maps

As was asserted earlier, the concept map is a visual organiser and a representational tool which contributes considerably to different aspects of human activity. Surely, it would be relatively easy to have any diagram ready if its key characteristics are substantially determined. While concept maps may look similar to other node-linking mapping methods, it should be noted that its characteristics differentiate it from other visual organisers. According to Novak and Cañas (2015) and Gardner (2015), these may include concepts, linking words, propositions, hierarchical structure, focus question, parking lot, and cross-links. These elements are best illustrated in Figure 2.3.

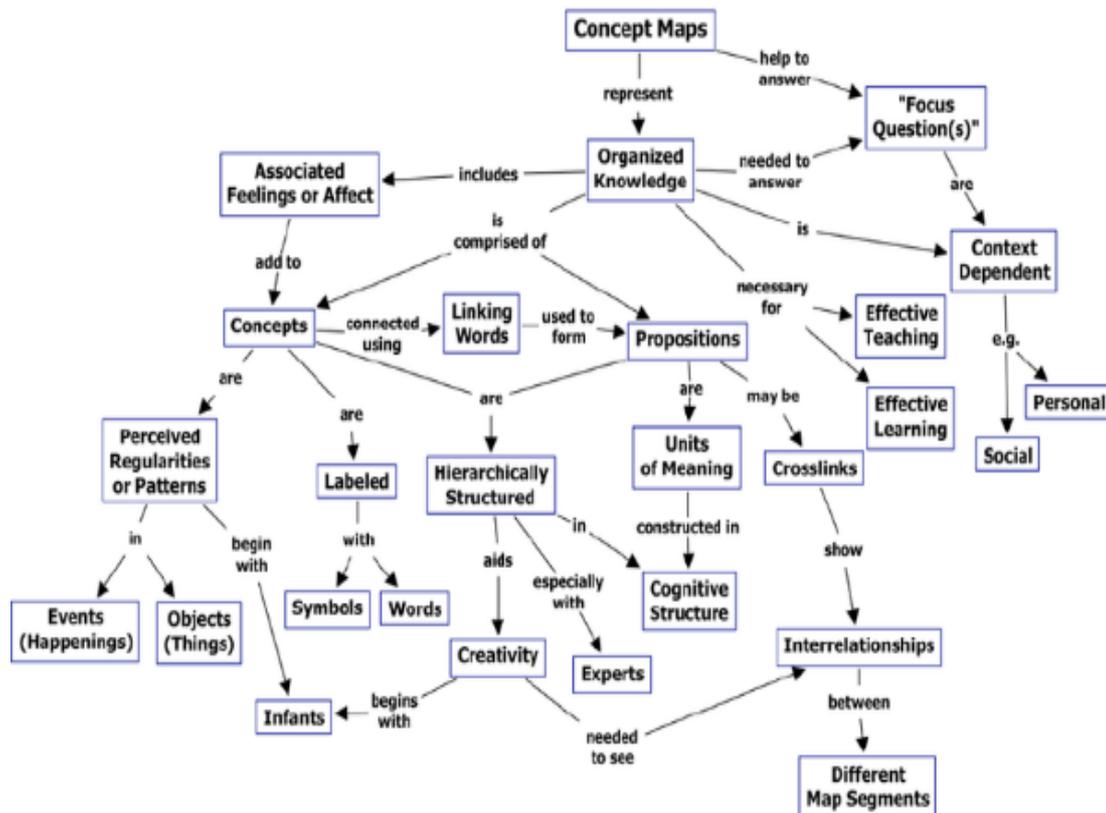


Figure 2.3. A concept map showing the key features of concept maps. Reprinted from “theoretical origins of concept maps, how to construct them, and uses in education”, by J. D. Novak, and A. J. Cañas, 2007, *Reflecting Education*,3(1), p. 30.

### 2.7.1 Concepts

Concepts can be either subjects or events. Novak and Cañas (2015) define concepts as, “a concept is a perceived regularity in events or objects, or records of events or objects, designated by a label” (p.1). The label for most concepts can be with words or symbols.

### 2.7.2 Linking Words or Phrases

Linking words or phrases represent well-defined words and/or phrases that can be verbs, adverbs, phrasal verbs, or prepositions. In the concept map, the linking words are placed on the lines that connect different concepts; therefore, they work on clarifying the kind of relationships between these concepts (Novak & Cañas, 2007). Instances of linking words/phrases are “consist of, have, contains, are, includes, of, etc”.

### **2.7.3 Propositions**

Propositions are also referred to as semantic units or units of meaning. This structure is composed of two or more concepts connected with particular linking words to formulate a meaningful statement that together with concepts will form the foundation of new knowledge in a domain (Novak & Cañas, 2015).

### **2.7.4 Hierarchical Structure**

A key element of the concept map is its hierarchical structure, which places the most general concepts at the very top of the concept map while the less general have to be arranged hierarchically below. That is to say, it is designed to be read from top to bottom.

### **2.7.5 Focus Question**

It is highly recognised that the first step in learning about something is to ask the right question. The focus question clearly determines the issue or the problem the concept map revolves around (Gardner, 2015). It works as a guide for the development of the map; particularly, in maintaining its direction. It is important to note that the focus question may not be directly inserted in the concept map itself and this, of course, is not considered as a mistake. However, and since it works as a reference point, the focus question should preferably be placed at the top of this diagram. Fundamentally, since any concept map responds to a focus question, the better the focus question is, the richer the concept map would be. The focus question of the concept map represented in Figure 2.3 is what are the key features of concept maps?

### **2.7.6 Parking Lot**

The parking lot describes a set of words (concepts) that are put in the form of a list to be moved into a specific place in the concept map (Novak & Cañas, 2015). It may contain only the key phrases or concepts, but later, the concept mapper could expand on them while constructing the map. Preferably, each concept should be kept to one or two

words so that the concept mapper will not end up with a text-heavy concept map that has no visual influence (Novak & Cañas, 2015). An example of a parking lot is represented in Figure 2.4 below.

### **2.7.7 Cross-links**

Cross-links are included to show different relationships between concepts belonging to different domains in the concept map, allowing the person to visualise how ideas and concepts are related to one another (Novak & Cañas, 2015). In Figure 2.3, the arrows relating the concepts “Organised Knowledge” with “Focus question” and the concepts “Creativity” and “Infants” are cross-links.

## **2.8 The Theoretical Underpinning of Concept Maps**

Typically, Novak expanded upon Ausubel’s theory of assimilation that is also known as the theory of meaningful learning. This theory demonstrates what exactly meaningful learning is and how it differs from rote learning (Novak & Cañas, 2015). Stressing out the importance of background knowledge, Ausubel affirms that meaningful learning takes place if and only if students are consciously capable of assimilating the newly acquired elements into their relevant constructed structures (prior knowledge) (Johnson, n. d.). He also adds that meaningful learning enables the brain to link the pieces of information in an organised, hierarchical, and meaningful manner, as well as to quickly store and retrieve knowledge (Azarnoosh & Naeini, n. d.; Johnson, n. d.). On the other side, rote learning, which is a memorisation-based technique, stores information in an unconnected and isolated form, making it difficult for future recall.

Concept maps have their origins in the constructivist view of learning that holds that learners should not be considered as passive recipients of information; rather, they should be conceived as active participants in learning and knowledge construction. Therefore, new learning is affected and shaped by what learners bring to the task (what

they already know) (Novak & Cañas, 2015; Jena, 2012). Following this, Ausubel (1968) acknowledges, “the most important single factor influencing learning is what the learner already knows. Ascertain this and teach accordingly” (as cited in Pope, 1980, p. 73). Besides, and because Ausubel believes that new learning will be enhanced in case the students’ existing cognitive structures are clear and organised, he proposed a major instructional mode wherein the use of advanced organisers is required.

### **2.9 Concept Map Creation**

There is no recipe on how to construct concept maps. While some may start by brainstorming and listing the concepts, others may wish to start directly by placing the key concept and link it to other concepts. For the sake of constructing a successful concept map, the student should consider the following set of steps that are well explained in “Center for Teaching” (n.d.):

1. Naturally, the concept mapper has to be acquainted with strong background knowledge about the topic, domain, or lesson, about which s/he would construct the concept map.
2. A crucial step in creating a concept map is to identify the main concept, which may be the subject of a research paper or a study topic. Importantly, the need to concentrate our attention on one particular topic is essential at this stage. Otherwise, the concept map would be big and potentially not helpful. To do so, the concept mapper may wish to use a focus question that helps to specify the problem or issue the concept map is supposed to resolve. Good examples of focus questions are what is in a solar system? What is a plant? What is the structure of the universe?
3. Now, since the specific main concept is available, s/he can use the focus question as a guide for brainstorming and listing out any related concepts that will eventually fall under

the main concept to form the overall map. This list is called a parking lot and it is presented in Figure 2.4.

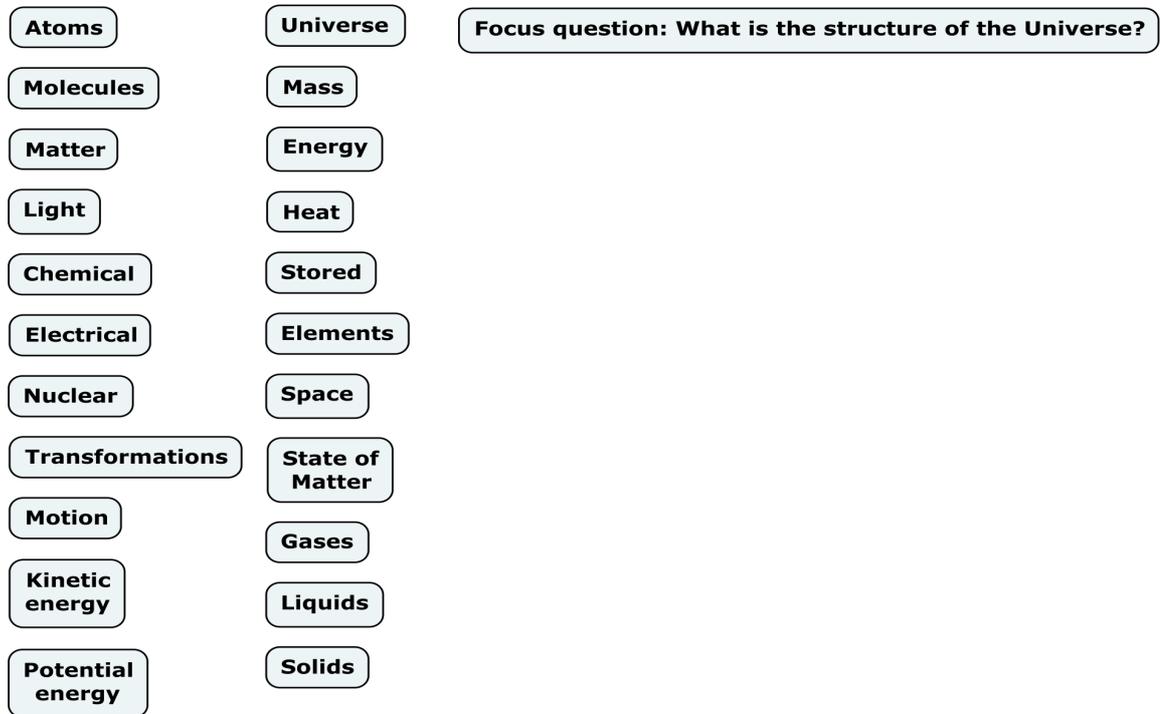


Figure 2.4. A focus question and a parking lot to draw a concept map. Reprinted from “the theory underlying concept maps and how to construct them”, by J. D. Novak, and A. J. Cañas, 2015, p.18.

4. From this list, and after determining the concepts that will fit in, a rank order should be established, starting from the most general concepts to the most specific ones ( the least general concepts). There is no harm to keep some concepts in the parking lot if no good connection with other concepts is clearly seen. As such is the case in Figure 2.5 that represents a concept map constructed based on the parking lot from Figure 2.4.
5. Decide about the main points and sub-ideas.
6. Start creating the preliminary concept map. Begin with the main topic then branch out to major points and supporting details.

7. Use symbols, arrows, and crosslinks to illustrate how concepts are related to one another, without forgetting to add the necessary linking words.
8. Review the map and look for more connections. Remember there is no final version of a concept map. This is especially true when the person acquires new knowledge, which enables him/her to update the concept map to reflect better understanding of the topic.

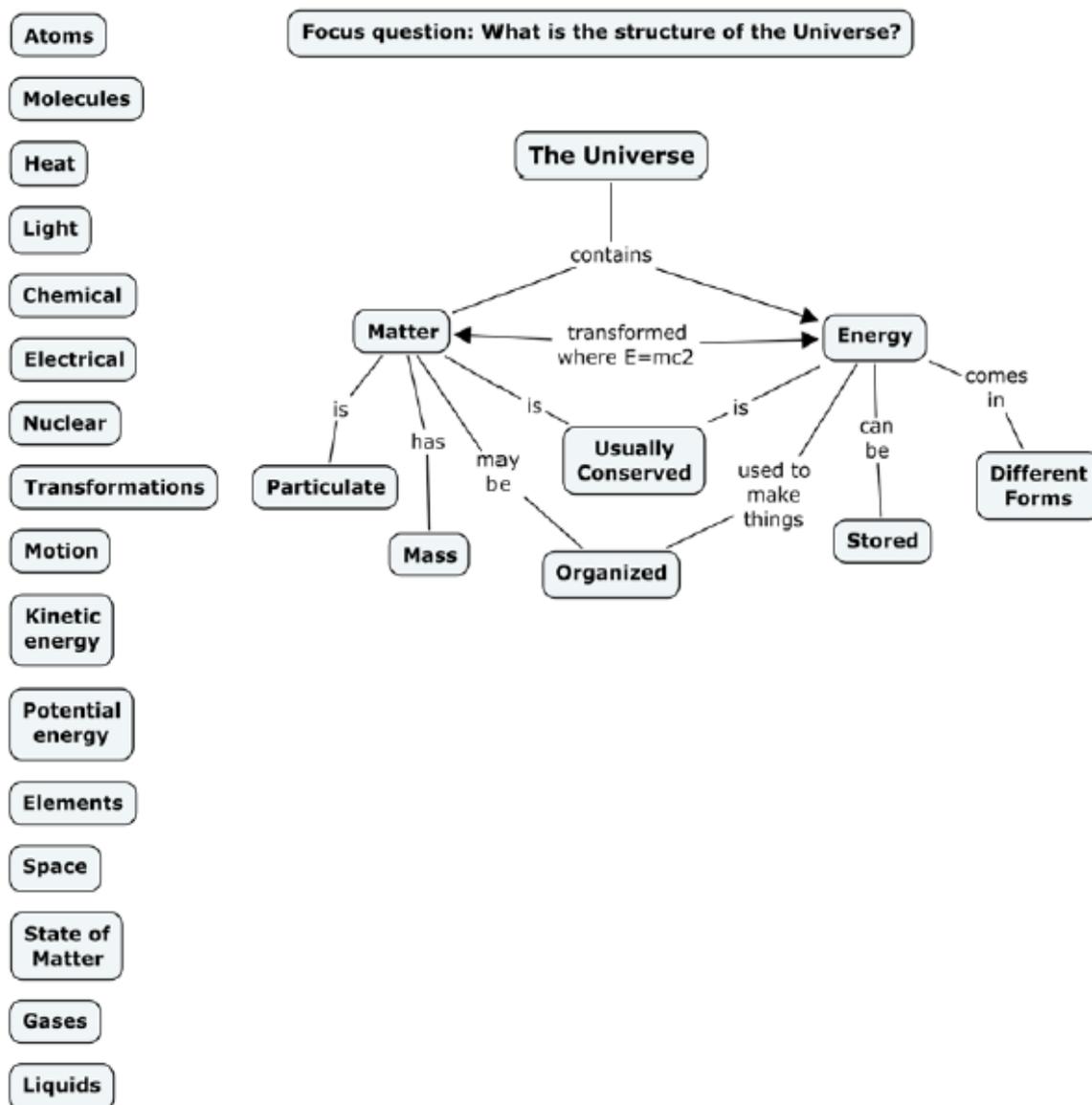


Figure 2.5. The final concept map. Reprinted from “the theory underlying concept maps and how to construct them”, by J. D. Novak, and A. J. Cañas, 2015, p.19.

## **2.10 Concept Maps and Mind Maps**

While concept maps may look similar to many node-linking mapping methods, they are rather distinguished by some key features and way of organisation. Mind maps, for instance, are another popular visual aid to organise ideas and build upon them. Despite the fact that some scholars have provided the basic rules for generating successful concept maps and mind maps, many students cannot realise whether they are dealing with a concept map or a mind map. Even though it is relatively easy to list the similarities than it is the case for the differences, still the distinction between the two can be drawn.

### **2.10.1 The Similarities**

While both tools have several attributes in common, the differences seem to be significant. They are invaluable tools that allow for better planning, organisation, and presentation of information. In both tools, nodes, sketches, and lines are essential components to show relationships among pieces of the whole (Eppler, 2006). However, and most importantly, both tools are represented by distinct structures and serve different purposes. Figures 2.6. and 2.7. illustrate mind map and concept map, respectively. Both diagrams were created from the same subject matter.

### **2.10.2 The Differences**

Concept maps tend to focus on several meaningful ideas /concepts and each may have multiple connectors and lines. That is, a single concept, in a concept map, can have multiple parents and children (Eppler, 2006). On the other side, a mind map tackles a one-focused idea/topic (Eppler, 2006). Besides, all the ideas presented through it may have multiple children but only one parent topic. Even though the lines and links in both tools work on joining concepts together, the major distinction between both charts on this concern is the linking words, which are only shown in concept maps. Furthermore,

concept maps place the central idea on the very top of the map, with related concepts arranged hierarchically below in a downward branching. However, the mind map places it in the centre of the map, with related ideas radiating in all directions (Eppler, 2006).

Although most tasks can be performed on either of the two, certain differences regarding the purpose of each may appear. While concept maps are majorly used for pedagogical functions, as it is the case with knowledge representation and understanding, mind maps represent a variety of tasks (Tuan & Thuan, 2011). Put it differently, mind maps are generally meant to accomplish fewer formal activities, for instance, exploring and generating ideas, note-taking, problem-solving, and brainstorming. Table 2.1 summarises some key elements on the difference between mind maps and concept maps.

Table 2.1

*The key Differences between Concept Maps and Mind Maps*

Concept map	Mind map
Strict rules	Flexible, Less formal
Less pictural in nature	It can use colours, pictures
The use of linking words	No linking words
Top-down	Centre out
Multiple entries reading	Read from centre to peripheral
It takes time to build a real concept map	Fast
Represents academic knowledge. So, its application is more formal	Represents multiple tasks

*Note:* Adapted from The Linkages between Concept Maps and Language Learning, by L. T. Tuan and L. B. Thuan, 2011. *Studies in Literature and Language*, 2 (1), p. 135.

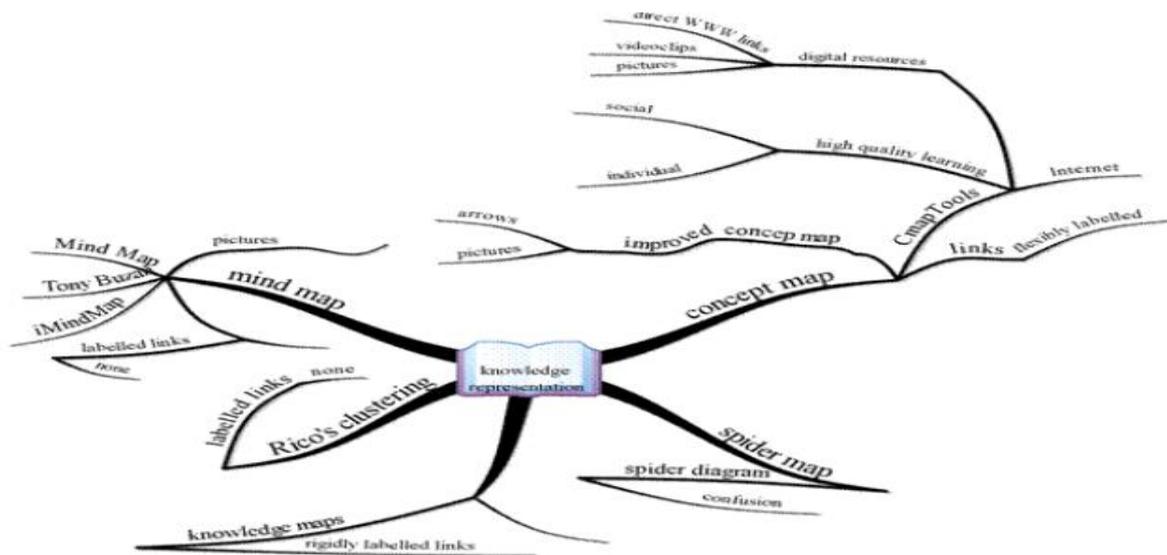


Figure 2.6. A mind map showing knowledge representation. Reprinted from “concept mapping as an empowering method to promote learning, thinking, teaching and research”, by M. Ahlberg, 2013, *Journal for Educators, Teachers and Trainers*, 4 (1), p. 28.

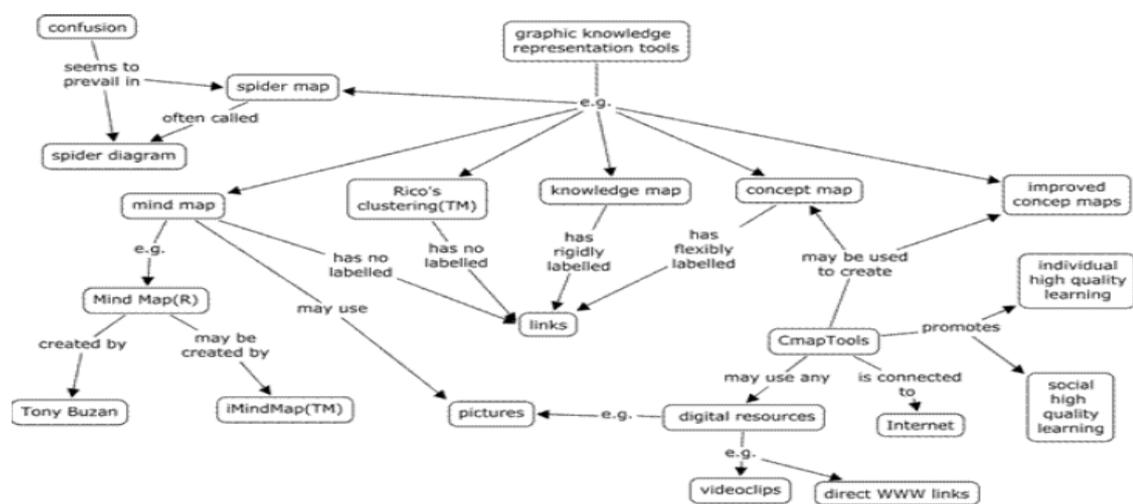


Figure 2.7. A concept map showing knowledge representation. Reprinted from “concept mapping as an empowering method to promote learning, thinking, teaching and research”, by M. Ahlberg, 2013, *Journal for Educators, Teachers and Trainers*, 4 (1), p. 28.

### **2.11 Expert Skeleton Concept Maps**

Though most students are capable of developing effectual and expressive concept maps, waiting for them to generate, extend, and refine concept maps for particular topics while just starting from a blank sheet is quite challenging and intimidating. Building a graphic organiser as advanced as the concept map when the topic is difficult or, about which the students are not very familiar is not an easy task (Novak, 2010; Novak & Cañas, 2015). Scholars introduce several techniques that ought to assist students in expressing their understanding using simple concept maps. One such technique is the expert skeleton concept map (henceforth ESCM).

Novak and Cañas (2015) maintain that ESCM is a map with 6 - 10 concepts. It is a partially-constructed map, serving as a valid starting point for drawing the final concept map. In other words, it would be better for the teacher to bring a previously-prepared ESCM and asks learners to pursue in drawing the map by adding the necessary concepts, resulting in a highly developed final concept map (Novak & Cañas, 2015). To flesh out the ESCM and to search for new and pertinent concepts to be later incorporated, students would essentially rely on different resources, ranging from the internet to class-related resources.

It is important to note that they are the experts on the topic who should build the ESCM as they are highly adept and qualified at selecting a small number of concepts as key to understanding the topic (Novak, 2010). Generally, the parking lot is also provided to fill in the rest of the map. What Novak and Cañas (2015) put forth, as to build understanding through ESCM, results in a strong foundation for learning because it presents a unique opportunity for scaffolding students learning. Also, while it helps students to avoid stress and intimidation caused by a blank concept map, SLCM serves as an advanced organiser which promotes meaningful learning by making connections

between the newly learned concepts and the preexisting or prior knowledge (Novak, 2010; Novak & Cañas, 2015). Over time, and as their level improves, students can move from SKCM to self-generated concept map (Novak & Cañas, 2015).

### **2.12 Potential Applications of Concept Mapping in Education**

Recently, concept maps gained popularity across several fields, among which the literature suggests, business, healthcare, computing, architecture, statistics, and agriculture. However, it is widely used in the field of education to accomplish various tasks. For instance, it can be used to design and plan curricula, to instruct and assess students, and to learn the material.

#### **2.12.1 Concept Mapping as a Curriculum Planning Tool**

Concept maps have also been successfully used in planning course syllabi or even the entire curriculum. In other words, they can be used by curriculum developers, faculty, or teachers. Martin (1994) maintains that concept maps help “teachers design units of study that are meaningful, relevant, pedagogically sound, and interesting to students” (p. 28). In this respect, scholars as Novak, Allen, and Edmondson suggest the implementation of this strategy into planning instruction for it helps in selecting and presenting the appropriate teaching materials, strategies, tasks, and time (Walker Center, n.d.). These can be displayed into a visual framework that is represented through the concepts, connections, and branches in the concept map. In addition to previous benefits, it is worth noting that concept maps encourage the discovery of themes that need to be emphasised in the course of instruction.

In their article, Novak and Cañas (2015) propounded the idea that it is necessary to construct a global “macro map” and more specific “micro maps” in an effort to show the major ideas planned to be taught in the whole curriculum, as well as the knowledge of a

particular part of the instructional programme. In another reference, and in a study, which was conducted with education majors, who were taught and asked to design lesson plans for students, Martin (1994) claims that teachers in the study found it extremely useful to depend on concept mapping in developing course plans. They report, "...concept mapping as giving teachers a more comprehensive understanding of what they are preparing to teach, eliminating sequencing errors, and enabling teachers to develop lessons that are truly interdisciplinary" (p. 27)

### **2.12.2 Concept Mapping as a Teaching Tool**

Even though the lecture method is identified as being useful for communicating theories, ideas, and facts to students, it is still being considered a traditional and old-fashioned instructional method for it does not allow for much discussion and interaction in the classroom. Typically, it enables teachers to merely execute their teaching, illuminating all forms of student involvement and self-direction (Bligh, 1972, as cited in Erasmus, 2013).

Seeking to drive the classroom into being more student-centred, scholars suggest revising the traditional lecture-based teaching method and taking advantage of productive teaching strategies, such as concept mapping (Eshwar & Jain, 2016; Erasmus, 2013). In this quest, they can promote active learning, student achievement, participation, and engagement. The way this strategy is adopted for class use is determined by the purpose of the instructional activity. Farooque (2020) avers that concept mapping can be used by teachers in a variety of ways:

**2.12.2.1 As an activity to introduce new topics.** Concept maps are usable and applicable when the lesson consists of vast amounts of information, allowing the teacher to convey a clear general picture of the topic.

**2.12.2.2 As a small group activity.** The teacher may wish to group students into pairs or small groups of 4-5 students after giving them a problem, case study, or question to be studied. The groups are, then, asked to present their conclusions after creating the concept map that reflects their understanding, analysis, and synthesis of the subject matter.

**2.12.2.3 As a whole class activity.** As a class, the students can be instructed to describe and discuss the relationships among the concepts and ideas presented in the concept map brought by their instructor.

### **2.12.3 Concept Mapping as a Meaningful Learning Tool**

As denoted earlier, when created correctly and thoroughly, concept maps result in high levels of performance and great achievement. Typically, concept maps imply a number of advantages for not only teachers, but also, and most importantly, students. In this respect, Novak and Cañas (2007) state, “many learners and teachers are surprised to see how this simple tool facilitates meaningful learning and the creation of powerful knowledge frameworks” (p. 32). It was repeatedly recognised to have a positive impact on the quality of student learning (Erdoğan, 2016; Marriott & Torres, 2016). Fundamentally, it extends students’ involvement in the process of actively constructing their own knowledge and building their own learning (Novak & Cañas, 2015). This is particularly apparent when the concept maps are created early in the unit and the students regularly return to them for extra elaboration, evidence, and details.

As a visual organiser, the concept map helps students to organise their ideas and plan complex structures and materials by mapping out relationships between concepts or ideas. Importantly, and as it is based on Ausubel’s theory of meaningful learning, concept mapping can work as a way for activating students’ prior knowledge, as well as for

building upon their previous knowledge (Kinchin, Hay, & Adams, 2000; Novak & Cañas, 2015). In addition to it being a tool for enhancing the understanding of an issue or topic, concept mapping also acts as a tool to ease the burden of the cognitive load caused by rote learning (Novak & Cañas, 2015).

Research studies such as the ones undertaken by Kiliç and Cakmak (2013), as well as Kinchin et al. (2000) indicate that concept mapping fulfills several roles such as:

- Encouraging brainstorming, creativity and high-level thinking,
- Acquiring, absorbing information when studying for exams,
- Stimulating the generation of ideas,
- Summarising and comprehending texts,
- Note-taking during the lesson,
- Planning studies, research, and term projects,
- Synthesising information by integrating new and old concepts to better grasp the big picture,
  
- Identifying areas that need further knowledge or review.

#### **2.12.4 Concept Mapping as an Assessment Tool**

It is critical, in the field of education, to demonstrate students' understanding of the subject matter as to provide the necessary subsequent instruction. Concept mapping is one technique for classroom assessment because it demonstrates how well students see the big picture. It was written, "This technique provides an observable and assessable record of the students' conceptual schemata" (*Assessing Science for Understanding*, 2008, p. 19). Principally, it allows the teacher to gain insights into the way students view a topic, allowing him/her to discover the valid understandings and misconceptions students hold in

a particular subject area, as well as the concepts they fail to incorporate (Vodovozov & Raud, 2015).

Concept mapping can be used before actual instruction takes place as to allow the teacher to discover what prior knowledge and preexisting structures students bring to the learning task (Novak & Cañas 2015). Therefore, this helps the teacher to decide about the future content, as well as to spotlight on what might later cause difficulties. While during or after the course of instruction, concept mapping can better assess changes in students' acquired knowledge (Novak & Cañas 2015). Ultimately, in an attempt to emphasise key concepts and relations in a given lesson, the teacher can simply present an expert concept map to the whole class, allowing them to compare it to their own maps and to insert the necessary changes.

### **2.13 Concept Maps and Language Development**

The efficacy of the concept mapping strategy in language development has long been proved and recognised, particularly in areas where writing, vocabulary, speaking, and reading are central. It is worth noting that for students whose L1 is not English, concept maps are especially useful.

#### **2.13.1 Concept Mapping and Writing**

While it has been previously accredited to be indispensable in the fields of assessment, curriculum planning, concept maps have been recently acknowledged of being prolifically successful in developing students' language abilities. Because of its organisation and hierarchical structure, writers, especially those who lack clarity and cohesion, can organise their thoughts, allowing them to flow seamlessly and logically. Scholars, such as Kruchin and Kennedy, suggest the use of concept mapping as a pre-writing activity for it helps the writer to determine the suitable order of ideas, the possible

relationships between ideas, the suitable evidence for each point (“Improve Your Writing by Using Concept Maps”, 2016)

In an attempt to explore the relationship between the use of concept mapping as a pre-writing activity and EFL learners' writing ability, Pishghadam and Ghanizadeh (2006) conducted a study wherein twenty upper intermediate learners were assigned to two groups of ten students each. Unlike the control group that was not instructed to use concept maps, the experimental group was trained to use the concept mapping strategy in the pre-writing phase. In other words and prior to writing, the students of the experimental group constructed concept maps on a given topic, about which essays needed to be developed. The studies' results indicated that there is a significant effect of concept mapping on the writing ability of learners belonging to the experimental group.

Similarly, and in an investigation of the impact of employing concept mapping as a prewriting stage on EFL students' ability to generate better argumentative essays, Al-Shaer (2014) tracked the writing performance of the chosen control group. While the latter received instruction as required in the textbook only, the experimental group received the same instruction; however, it was additionally required to construct concept maps at the pre-writing stage and then compose essays based on the constructed concept maps. The study had a pre-post-test design with 38 participants. The results of this study showed a significant improvement in the experimental group's ability to generate better argumentative essays, including unity, point of view, coherence, organisation, and thinking.

The utility of the concept mapping strategy is best expressed in Gardner's work, in which she worked with fourth-grade elementary school students. She attempted to investigate the effective use of concept mapping as a graphic organiser on the quality of

their persuasive writing compositions (Gardner, 2015). Based on the random assignment of participants, three groups were designed as follows: The concept mapping treatment group (used concept mapping), the four-square treatment group (used the four-square method), and the control group (used no graphic organiser). Though the three treatment groups had the same instruction except for the type of graphic organiser used (concept map, four-square, or none), the concept mapping treatment group scored higher on persuasive content than other groups (Gardner, 2015).

The findings of the abovementioned studies appear to demonstrate that concept maps permit writers to focus on aspects as varied as the organisation, clarity, cohesion, and content, allowing them to work more quickly and efficiently. They also show that there is a significant improvement in students' style and quality of expression.

### **2.13.2 Concept Mapping and Vocabulary**

It is widely recognised that vocabulary teaching and learning is among the tasks that may be particularly challenging for foreign language learners. On this account, therefore, it is more valuable to provide effective vocabulary learning strategies than striving for teaching a large set of vocabulary (Liu, 2016). As concept mapping is literally meant to reinforce students' memorisation and retrieval, it can be effectively used for vocabulary learning and recall. Evidently, scholars declare that concept maps work on facilitating the linkage between words and their meaning, activating the previous vocabulary knowledge, and enhancing the rate and quality of vocabulary acquisition (Liu, 2016; Khoshsima, Saed, & Hakimzade 2015).

To illustrate, Palmer, Boon, and Spencer (2014, as cited in Liu, 2016) compared the effect of two approaches, namely dictionary approach and learner-constructed concept-mapping model on the learning of vocabulary items of four seventh-graders with mild disabilities. As far as the dictionary approach is concerned, the students were required to

first look up the meanings of different words in the dictionary and second to put these words in sentences on notebook paper. The second group, however, were asked to complete concept maps that predominately display the definitions of words and then write down sentences (Liu, 2016). As was hypothesised, results revealed that unlike the students who worked with the dictionary approach, there was a significant improvement for all students following the concept mapping model.

### **2.13.3 Concept Mapping and Presentations**

Although many presenters appear to have a good command of the topic, their presentations end up being failed or untold. Studies on the field of public speaking maintain that the concept map can be a successful way for speakers to express themselves effectively, allowing them to plan and present their work, as well as to control their anxiety. The evidence also suggests that not only does it reinforce the speaker's presentational skills, but it also influences the audience. It can be a way to increase the interest of the audience and grab their attention. This is clearly stated when Triastuti (2006) argues, "the visualisation you have prepared makes your explanation more vivid and well-pictured in your audience's mind. Any visual aid you use to support your presentation will absolutely attract your audience's attention". (p. 53)

### **2.13.4 Concept Mapping and Reading Comprehension**

Despite the great number of books published in an effort to foster reading comprehension, very little have dealt with reading scientifically. Rather, more often, they merely introduce a variety of true-false, multiple-choice, or fill in the blank exercises. To corroborate this, Tabatabaei and Khalili (2014) reveal that even though these tasks play a crucial role in assuring reading comprehension, they are not enough for a successful reading comprehension programme. They also add that it is because of the traditional

methods used by teachers, which emphasise the final product, that students cannot reach high levels of comprehension (Tabatabaei & Khalili, 2014).

It is suggested that for the sake of helping students, especially poor comprehenders, grasp the general meaning and reduce the comprehension difficulties, innovative strategies such as concept mapping should be used (Tabatabaei & Khalili, 2014; Tajeddin & Tabatabaei, 2016). Beydarani (2015) enquires about the influence of concept mapping on the reading comprehension of Iranian EFL learners and whether it impacts persuasive and descriptive texts in the same way. As such, 52 learners were randomly selected and assigned into four groups, among which two groups received persuasive texts, and the two other groups received descriptive texts. Unlike the control groups, the experimental groups received instruction in concept mapping. The analysis of the results indicated that both experimental groups outperformed the two control groups in reading comprehension while also the Learners who received persuasive text performed well than the ones who received descriptive text.

On a similar vein, and in two different studies, Tabatabaei and Khalili (2014), as well as Tajeddin and Tabatabaei (2016) attempted to examine the usefulness of concept mapping as a means of increasing students' reading comprehension. Though the three studies were carried out under different conditions in relation to context, sample groups, and teaching materials, the results of these studies revealed that the participants in the concept mapping groups not only performed better in the post-test than in the pre-test, but also outperformed the control groups.

### **2.14 Concept Maps and Learner Differences**

Though a considerable number of scholars have held the interest of investigating the effect of concept mapping on various aspects, less information is available concerning the relationship between this instructional strategy and learner differences. Whether

concept mapping fits all the students with various learning styles, learning experiences, and proficiency levels is still questionable. Nevertheless, it was clearly indicated that active learning strategies are thought to be effective for all kinds of students and there is no correlation between the students' ability to construct concept maps and their learning styles (Mosley, 2013).

It is worth noting, however, that even in the same subject area, concept maps would be uniquely structured due to each individual's own experience. In this sense, different people would inevitably construct distinct concept maps (Broggy & McClelland 2009). Importantly, Mosley (2013) clarifies that the concept map can be used in any grade level, with students of varying ages, and for all content areas. This is apparent when Laight (2004) states, "a complex learning strategy, such as concept mapping, can be effective for students with all kinds of learning style preferences" (as cited in Mosley, 2013, p. 14). This implies that concept mapping could potentially address the problem of discrepancies in the classrooms.

### **2.15 Concept Maps Scoring**

The scoring mechanism of students' final concept maps is a crucial concern, particularly if they are used as exam tasks. Though scholars have proposed a variety of schemes to evaluate concept maps accurately and consistently, these schemes have been found to be correlated with each other (Anohina-Naumeca & Grundspenkis, 2009; Otieno, 2015). One example is that of Mueller (2007) who devised a scoring scheme that scrutinised the students' maps in terms of legibility (easy to read and free of spelling errors), accuracy (concepts used accurately), completeness (sufficient number of relevant concepts and relationships), and sophistication (meaningful connections between relevant concepts) (as cited in Center for Teaching, n.d.).

Another example is that of Markham, Mintzes, and Jones (1994) (as cited in Otieno, 2015). They proposed a scoring scheme that focuses majorly on six aspects in the student's map. These are the number of concepts presented, concept relationships, branching, hierarchies, cross-links, and examples (Otieno, 2015). According to Otieno (2015), this scheme is guided by the following questions:

Are the most important concepts depicted?

Are the links among concepts scientifically acceptable?

Is the amount of branching, hierarchy, and cross-linking substantial in the map? (p. 22).

#### Conclusion

The present chapter aimed at delineating the varied aspects related to the concept mapping strategy in regard to its definition, features, construction, potential uses, and way of scoring, without forgetting to shed light on the main existing relationship between this tool and learner differences. Moreover, it provided a review of the mostly-recognised applications of concept mapping in language learning. In this chapter, evidence concerning the importance of the concept mapping strategy on students' reading comprehension was also reported. The next point of emphasis will be on providing the theoretical background concerning the adopted methodology and the justification of choices for this research.

### **Chapter Three: The Research Methodology for this Study**

#### Introduction

#### **3.1 Research Methodology: Theoretical Background**

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## Introduction

The present chapter begins with an overview of the commonly known methodological aspects, which constitute the foundation for any systematic research study, including the paradigms, approaches, designs, data collection methods, data analysis procedures, and sampling techniques. It then specifies and describes these aspects in relation to the purpose and methodology of the current investigation along with the rationale of choices. As the issue under-investigation was put into practice, the current chapter also attempts to survey the procedures, through which data were collected, together with the stages of the treatment implementation.

### **3.1 Research Methodology: Theoretical Background**

What follows, in the subsequent sections, addresses the major components of research in terms of methodology including the research paradigms, approaches, designs, data collection methods, data analysis procedures, and sampling techniques.

#### **3.1.1 Research Paradigms in Educational Research**

The reality for the majority of researchers is that conducting a research study can be extremely elusive, tedious, and challenging for that they have not only to deal with the large body of knowledge, but also to justify the methodological choices. Generally, and for many researchers, the latter addresses the selection of a research approach and methods while the research paradigm is left unclear. Based on the fundamental belief that the choice of the paradigm affects the way social research will be conducted, the key aspects of research paradigms would be introduced. More specifically, this section will present the varied definitions of the research paradigm, its components, and types.

The word paradigm has its roots in the Greek philosophy where it means pattern. Originally, it is largely attributed to the work of Thomas Kuhn (1970) who defines it as “the set of common beliefs and agreements shared between scientists about how problems

should be understood and addressed” (as cited in Perera, 2018, slide 5). Simply, a paradigm refers to philosophical positions, beliefs, and assumptions that reflect the way researchers perceive the world and reality (Krauss, 2005). This thinking framework, in return, guides their behaviours and choices. Upon pertinent literature, the paradigm is multicomponent, consisting of four conceptual frameworks, namely ontology, epistemology, methodology, and methods (Rehman & Alharthi, 2016; Dammak, n.d.). Despite this fact, it is abundantly clear that ontology and epistemology are the two main philosophical dimensions used to discriminate between existing research paradigms (Rehman & Alharthi, 2016). While one refers to the study of beings, the other denotes the study of knowledge.

In the first place, ontology, a branch of philosophy, is concerned with the assumptions the researcher holds about the nature of existence, social entities, or reality (Kivunja & Kuyini, 2017). Epistemology, in the second place, is the branch of philosophy that studies the nature of knowledge, the way it can be acquired, and the way it can be communicated. It is important to note that epistemology puts emphasis on the researcher’s understanding and knowledge that can be acquired in an effort to extend and broaden his/her command of the subject of research (Rehman & Alharthi, 2016). In fact, a number of paradigms are distinguished. Positivism, post-positivism, interpretivism, and pragmatism are cases in point.

Pragmatism, for instance, was typically developed to put an end to the two differing opposed worldviews, namely positivism (and post-positivism) as one part and interpretivism as the other part. These philosophical stances usually created what is commonly known as “paradigm wars” (Kivunja & Kuyini, 2017, p.29). For pragmatists, the only possible way to access the ‘truth’ about social phenomena is to depend on the research question (s) in the first place. In addition, they focus attention on non-singular

reality (Kivunja & Kuyini, 2017, p.29), meaning that there is no single reality. This is because of the researchers' unique interpretations of what is deemed appropriate for the studied phenomenon.

In a sense, the pragmatic paradigm considers it inappropriate for the researcher to approach the social phenomena solely by virtue of a mono-paradigmatic orientation. Differently put, it foregrounds practical and pluralistic approaches, arguing that the mixture of both quantitative and qualitative perspectives is needed to understand the complexity and diversity of human behaviour (Creswell, 2009; Kivunja & Kuyini, 2017). Correspondingly, this supports the use of the Mixed-methods research design.

Though positivism, post-positivism, interpretivism, and pragmatism gained widespread acceptance in the field of social science, the quantity of paradigms appears to be steadily increasing. In essence, the term paradigm bears a lot of significance and it is viewed as the departure point of all research. Fundamentally, it is considered as the foundation, upon which the methodological aspects of the research study, including the research design, approach, methods will be selected. Simply, and in addition to its role in framing research, the right selection of the philosophical position (paradigm) guides the behaviour of the researcher. This is because it represents the conceptual lens, through which the researcher orients his thinking about the data collected, as well as the research problem.

### **3.1.2 Research Approaches**

The diversity of paradigms in the field of human and social sciences brings to light the fact that each paradigm is more commonly used with a particular research approach than with others. Before assigning each paradigm into its corresponding research approach, it is pertinent to give an overview of what quantitative, qualitative, and Mixed-methods approaches to research signify.

**3.1.2.1 Quantitative approach.** It is essential to start with the preliminary consideration that quantitative and qualitative approaches are neither opposed perspectives nor distinct categories, but rather as “different ends on a continuum” (Grover, 2015, p. 9). This implies that if a research problem cannot be handled by the quantitative approach, the qualitative approach should be used and vice versa. Since any research can be approached in light of one of the approaches, it is important in the first place to explicate what the term approach denotes in the field of research. Following this, Creswell (2014) defines the research approach as, “plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis.” (p. 31). By these words, he means that the selection of the apt research design, method, and analysis procedure is predominantly determined by the research approach, which implies the theoretical background, upon which the research study would rely.

The researcher may typically need to deal with quantifiable and numerical data to support or refute a claim. This orientation puts him/her under the umbrella of the quantitative approach. Central to this approach is the utilisation of hard data that encompasses numbers, statistics, measurements, and graphs (Symeou & Lamprianou, 2008). With regard to its scientific nature, the quantitative approach is generally limited to positivism and post-positivism.

**3.1.2.2 Qualitative approach.** In most cases, the intent of the researcher revolves around the understanding of a qualitative phenomenon, with the quest of having an in-depth understanding of social or human behaviour. This approach to inquiry is known as the qualitative approach that, in fact, gravitates towards interpreting the participants’ feelings, attitudes, and experiences. It is primarily applicable to the phenomena that can be expressed through soft data, which assume the use of words, descriptions, body language, and pictures (Symeou, 2008). Thereafter, researchers working under this

approach align themselves with the use of the constructivist paradigm. Some scholars still question its efficacy. Some claim that the subjective stand of the researcher may falsify the findings because s/he will unquestionably involve his/her own interpretation and meaning of the issue being studied (Daniel, 2016). Thus, the data collected cannot be as reliable and accurate as when using the quantifiable data.

**3.1.2.3 Mixed-methods approach.** Too often, and since the use of a single approach to reach the desired outcomes is not all the time viable, the incorporation of various approaches becomes requisite. This gave rise to the Mixed-methods approach, which emerged in the mid-to-late 1900s under a variety of names. As such, Dornyei (2007) mentions multimethod research, methodological triangulation, and multimethodological research. The tenet of this approach is the incorporation of both forms of data in one single inquiry (Dornyei, 2007; Doyle, Dublin, & Brady, 2009). In view of this fact, the kind of paradigm that works better with this approach is pragmatism. By way of explanation, to address the research question(s), the researcher ought to collect and analyse numerical data that is originally embedded in the qualitative approach and the narrative data, which is customary for qualitative research.

Though the Mixed-methods approach has much to offer to the credibility of the investigation, the literature accentuates some criticism about its use. Some scholars proclaim that because the quantitative and qualitative approaches yield different philosophical underpinnings and use multiple procedures, they cannot be compatible, and therefore, cannot be mixed within the same study (Williams, 2007). In addition, taking the consideration of time, resources, and effort, Johnson and Onwuegbuzie (2004) elucidate that it is truly difficult for one researcher to handle and carry out the distinct phases of this research (Doyle, et al., 2009). Rather, it requires a search team who must

possess a substantial amount of knowledge on the principled constituting parts of the Mixed-methods approach.

### **3.1.3 Research Design(s) / Strategy (ies)**

Unquestionably, in any research, achieving valid findings is confined not only to the amount of knowledge the researcher holds about the research problem, but also, and most importantly, to the awareness of basic steps in the research process. One of these steps is to decide about the research design that if carefully and practically selected, would generate adequate and thorough answers to the research questions. Too often, the research design is termed as the research strategy. The latter is being referred to by Kumar (2011) as, “a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically” (p. 96) while by Selltiz (1962) as, “A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure” (as cited in Kothari, 2004, p. 31).

It is apparent that the research design reflects the study’s decisions in respect of the what, where, when, and how. A good research design should manifest in addition to the data collection methods and analysis procedures, the reasons and justification that shape the choices. Particularly, the choice of the research design should be in congruence with the purpose of the study, as well as the research requirements. That is to say, it should be suitable, feasible, and ethical (Hoadjli, 2019). Regarding its types, the research design can be categorised into qualitative, quantitative, or Mixed-methods.

**3.1.3.1 Qualitative research strategies.** It should be pointed out that there is an enormous variety of study designs that are originally embedded within each category. As an illustration, ethnography, grounded theory, case studies, phenomenology are designed to be used with qualitative research studies. As for this study is concerned, the case study

design is of interest to diversified fields, such as business, psychology, political science, medicine, and law. Above all is the field of education that has had numerous attempts to provide a clear single definition to this strategy.

For a better understanding of this design, it is widely accepted that the definition of 'case' should precede the definition of 'case study'. Overall, Gerring (n.d.) defines a case in these words, "a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time" (as cited in Hayes, Kyer & Weber, 2015, p. 2). This gives a brief explanation that a case is a differently-sized single instance chosen for a particular purpose at a given time in a particular place. It may represent an individual, a group of people, an organisation, a process, or an event.

It is of either paramount importance to note that the case study design deploys either a single, a few, or many cases. At this point, the literature reveals that the case study design refers to the research study that closely investigates a limited number of units (subjects) in a limited or prolonged period of time (Zainal, 2007; Hayes et al., 2015). Substantially, in the case study design, the cases should be investigated within their natural real-life context (Harrison, Birks, Franklin & Mills, 2017). This research design is qualitative in nature; it is capable of addressing the limitations of the quantitative approach. Providing such an in-depth investigation into the behaviours of the social actors would rather corroborate the quantifiable data and the statistical results.

**3.1.3.2 Quantitative research strategies.** Since quantitative research and qualitative research are meant for purposes that are drastically different, they would utilise different research designs. Typically, the quantitative research design may embrace pre experimentation, quasi-experimentation, true experimentation, single-subject research design, descriptive research, causal-comparative research design, and correlational research design.

Probably the most credible research design in terms of accuracy and precision is the true-experimentation, which bases its course of action on statistical and mathematical procedures. This is generally meant to test the hypothesis (Rogers & Revesz, 2019). In light of its characteristics, the experimental design can be easily distinguished from other designs. These characteristics are the use of at least one control group (one or more), one or more experimental groups, one or more treatments, random assignment of participants into control and experimental groups, manipulation of only the independent variable, pretest of the groups, posttest of the groups to see the effect on the dependent variable (Cohen, Manion, & Morrison, 2007). If one of these features is dropped, then it is not a true experiment. Instead, it is a quasi-experiment. That is to say, the true-experimental research design is not very often used in social sciences.

Quasi-experimentation is often described as pre-post treatment studies. Like many designs, the quasi-experimental design examines the effect of a specific treatment on the study's participant group (Rogers & Revesz, 2019). With regard to its principles, the quasi-experimentation is the closest design to the true-experimentation; nevertheless, it takes place outside the laboratory (Cohen et al., 2007). This is because it involves the process of manipulating the independent variable for the sake of investigating its effect on the independent variable. Too often, this design does not particularly use a purely random process to form the experimental group (ultimately receives the treatment) and the control group (no treatment). However, central to this design, the researcher does not randomly assign participants (Thyer, 1012).

Often time, in quasi-experimentation, the researcher may not necessarily have a true control group as s/he may work with preexisting constructed groups, such as classes in a given school (Quantitative research methods, 2016); therefore, this design is more appropriately used in academic settings. Importantly, this design is viable and effective

when the researcher wishes to assess causal relationships pertained to a given treatment. Furthermore, it has long been recognised that the quasi-experimental design should be used in situations when randomisation is unethical, difficult, unsuitable, or even impractical, as is often the case with social sciences. Following this, scholars often maintain, “in situations where random assignment is not feasible, quasi-experimental research designs are advantageous” (Quantitative research methods, 2016, p. 132).

It is important, in this respect, to shed light on the fact that the quasi-experimental design incorporates a set of designs that are as follows: The one-group pre-test-post-test, the one-group post-tests only, the post-tests only non-equivalent groups, the pre-test-post-test non-equivalent group, and the one-group time series (Cohen et al., 2007). The one-group pre-test-post-test design, for instance, is applicable when the aim of the research is mainly to test the effect of a new teaching strategy or technique. This design uses only one group of participants who should ultimately be tested to measure the dependent variable before the treatment is implemented. Afterward, a post-test should be carried out to measure the same independent variable, seeking any difference or measurement among scores.

**3.1.3.3 Mixed-methods strategies.** Both quantitative and qualitative research strategies have already been introduced. For now, if the nature of the study requires the use of the Mixed-methods approach, then, the Mixed-methods research design will be the most convenient for the study. In its simplest, the Mixed-methods research design brings out the best of both designs, requiring the combination of at least one quantitative design along with one or more qualitative designs. This combination, thereby, allows for the mixture of a range of possible data collection methods.

### 3.1.4 Data Collection Methods

Unquestionably, every single research step, starting from the statement of the problem to reporting the findings is rudimentary. Still, some researchers presume that the data collection stage is the most important phase of the research process. Data collection methods are instruments used in the course of collecting and gathering data from participants. Generally, while the quantitative research approach makes use of testing and close questionnaires, the qualitative approach employs the interview, focus group, observation, journals, documentation, collection of narratives, think-aloud method, and open questionnaires. On the other side, the Mixed-methods approach may utilise the semi-structured questionnaire and/or the combination of tools from both trends.

The questionnaire, as an example, is a widely used data collection tool that typically consists of a number of previously constructed questions or other forms of prompts that seek information from respondents. In his definition of questionnaires, Brown (2001) maintains, “questionnaires are any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers” (as cited in Dornyei, 2003, p.6). The questionnaire, which can be used in quantitative, qualitative, or Mixed-methods research designs, may make use of a variety of items. Instances of these items are true/false questions, multiple-choice, Likert scale, rating scale, semantic differential scale, and rank order items.

Oftentimes, the questionnaire incorporates three types of data that address the respondents’ state of fact, behaviour, and attitude (Dornyei, 2003). As for the factual questions, the researcher requires fact-based answers about who the respondents are (Dornyei, 2003). That is, s/he eventually asks questions concerning their gender, age, race, religion, marital status, residence, level of education, and occupation, etc. The

behavioural questions, as a subsequent type of question, aim to uncover the respondents' habits, personal history, and actions (Dornyei, 2003). Clearly, they attempt to know about their previous and current course of action. Finally, the attitudinal questions inquire about their beliefs, interests, opinions, attitudes, and values (Dornyei, 2003).

Importantly, and broadly speaking, a good questionnaire should be carefully constructed in terms of the general form, question sequence, and question formulation and wording (Dornyei, 2003). Regarding the first element, and depending on the pattern of the questions employed, methodologists distinguish three types of questionnaires (Dornyei, 2003). While the structured questionnaire ultimately includes close-ended questions, the unstructured one contains open-ended questions. In addition, the semi-structured questionnaire combines both forms of questions.

The proper order of various items would most likely result in a logical smoothly-moving questionnaire which should logically and gradually move from the easiest to the most difficult questions. This is for the simple reason that it maintains the ease with which respondents will answer the questions (Dornyei, 2003). As long as question formulation and wording are concerned, the simple language, as well as the clear determination of instructions would contribute to the elimination, or at least the reduction of misunderstandings, thereby collecting concise and rich data.

One of the most common methods of data collection in social sciences is the interview. The latter refers to the extendable conversation between the researcher and the chosen participants. Burns (1997) defines the interview as, "a verbal interchange, often face to face, though the telephone may be used, in which an interviewer tries to elicit information, beliefs or opinions from another person" (as cited in Kumar, 2011, p. 137). Based on this definition and what the literature often suggests, the interview is generally a face-to-face interaction that can be conducted via the internet, telephone, or emails. In

such a method, the respondents, who often rely on using their own words and ideas without being constrained by the choice of words or categories offered by the researcher, are viewed as experts on the topic (Kothari, 2004). That is, the researcher aims to understand the topic from the participants' point of view.

In a broader sense, three types of interviews are oftentimes carried out. The structured interview is when the interviewer prepares the content and the procedure ahead, aiming to ask the same set of questions to all interviewees. The researcher, then, uses a pre-prepared interview schedule which incorporates the sequence of close-ended questions intended to be asked (Dornyei, 2007; Kumar, 2011). However, the unstructured interview is more to be an open situation where much flexibility and freedom are required. Though the interviewer's talking time (his/her treatment) should be limited, s/he is permitted to only provide probes, which seek feedback, clarification, and reinforcement (Dornyei, 2007; Kumar, 2011). Notably, no detailed interview schedule is prepared in advance, but the researcher can think of some open-ended questions.

The semi-structured interview, as the final type, is the most widely used interview type in applied linguistics. This type combines some features from both the structured and unstructured interviews. Substantially, the researcher is directed and guided by the set of open-ended questions s/he prepares at the outset (this represents the "structured" part of the name) (Dornyei, 2007). However, much freedom and flexibility are offered to the interviewee who may elaborate on the questions s/he initially received (this represents the "semi" part of the name) (Dornyei, 2007).

Another common data collection method is testing which refers to the practical procedure of discovering the reliability of an issue or what someone knows. In research, it is usually the case to decide whether the independent variable affects the dependent one. In respect to the efficacy of tests in providing mathematical data, Cohen et al. (2007)

assert, “in tests, researchers have at their disposal a powerful method of data collection, an impressive array of tests for gathering data of a numerical rather than verbal kind” (p. 414).

Several types of statistical tests are at the disposal of researchers; nevertheless, not all would serve the same purpose of research. Nor would they be used for the same type of data. Miller (1984) maintains that the research design, as well as the nature of the dependent variable are the two major factors that determine the suitability of the test. In the broadest sense, statisticians have introduced two types of tests, each with its subcategories. In the first place, the parametric tests require data that is measured on the interval or ratio scales. Instances of these test are paired t-test, unpaired t-test, Pearson correlation, and one-way analysis of variance (Miller, 1984). In the second place, the non-parametric tests use data measured on the nominal or ordinal scales. Some examples are the Wilcoxon signed-rank test, the Mann-Whitney test, and Spearman correlation (Miller, 1984).

The choice of data collection instruments should be, unquestionably, dependent upon the purpose of the study. Thereafter, it should be compatible with the research approach chosen. For the sake of the credibility and validity of the research, the researcher needs to consider both the strengths, as well as the limitations of each tool.

### **3.1.5 Data Analysis Procedures**

After having collected the necessary data, the researcher has to describe, classify, and summarise them in a process Brown (2001) describes as the other half of the battle (as cited in Kothari, 2004). Scholars conceptualise data analysis differently; nevertheless, they collectively agree that it is the process whereby explanation, understanding, evaluation, structure, and order are brought to the mass of collected data (Kothari, 2004).

This process is eventually accomplished using a variety of specific procedures and methods, which should be chosen in compliance with the nature of the study, research questions, as well as the type of data being gathered. Therefore, quantitative and qualitative data would be analysed by quantitative and qualitative data analysis procedures, respectively. In this respect, data analysis in the Mixed-methods design would eventually employ the mixture of both trends. That is, data would be analysed by means of quantitative and qualitative procedures.

It is worth mentioning that while quantitative data analysis is in the form of numerical and mathematical relationships, the qualitative data analysis uses textual and verbal data. A variety of statistical research procedures can be used to analyse quantitative data, but the most basic ones are descriptive and inferential statistics (Dornyei, 2007). Descriptive statistics, according to Kothari (2004), do not strive for making inferences, generalisations, or predictions. Rather, it seeks to merely present and report the findings, allowing for a “well-rounded description of the scores” (Dornyei, 2003, p. 114).

Seeking descriptive statistics, the researcher needs to work out various measures. The latter are classified into two categories, the first of which refers to the measures of central tendency. They are values that seek to describe a set of data by identifying the central position within this set of data. These are the mean, median, and mode (Dornyei, 2003; Kothari, 2004). As for the subsequent category, it represents the measures of variability (dispersion) which show how the scores are varied and distributed referring to the mean. These measures are the range, variance, and standard deviation (Dornyei, 2003; Kothari, 2004).

Notably, descriptive statistics is also common in qualitative research. However, in the quantitative approach, researchers tend not to stop at this level while they need to

pursue calculating the inferential statistics. The latter is the most crucial phase because it aims at testing the hypothesis, making inferences and predictions, drawing conclusions, and comparing groups (Dornyei, 2007). Substantially, if the researcher seeks to test the statistical significance, the inferential statistics comes into play. In light of the utility inferential statistics yields, Kothari (2004) maintains, “inferential analysis is concerned with the various tests of significance for testing hypotheses in order to determine with what validity data can be said to indicate some conclusion or conclusions” (p. 131).

The literature shows that inferential statistics is less valuable and standardised than descriptive statistics for it being relatively imprecise. However, both maintain a complementary role, especially in such complicated research studies as surveys and correlational research. The researcher cannot decide which hypothesis should be rejected using descriptive statistics solely. However, the latter manifests the standard preliminary phase, based on which the inferential approach to data analysis will be accomplished.

Among the enduring problems related to the qualitative approach is the huge amount of written data, as well as the several interpretations that may come up when explaining the chunks of language. Therefore, data reduction, organisation, and interpretation should be the ultimate objective of Qualitative data analysis. There is no one single predefined correct way to analyse data qualitatively, but what would be chosen should essentially “abide by the issue of fitness for purpose” (Cohen et al., 2007, p. 461). One way for achieving this is the content analysis which is “a process by which the many words of texts are classified into much fewer categories” (Weber, 1990, as cited in Cohen et al., 2007, p. 461).

Content analysis is commonly known as document analysis whose aim is the analysis of any written document either digital or physical. This may range from media products to interviews. Cohen et al. (2007) define it as, “a systematic series of analyses,

including coding and categorisation” (p. 461) while Dornyei (2007) as, “an analytical method of examining written texts that involves the counting of instances of words, phrases, or grammatical structures that fall into specific categories” (p. 245). Content analysis is a systematic well-defined procedure of summarising, analysing, examining, and reporting written data through the reduction of large quantities of text into manageable chunks in a form of categories. More strictly speaking, Ezzy (2002) explains the procedure of content analysis, which is as follows:

Content analysis starts with a sample of texts (the units), defines the units of analysis (e.g. Words, sentences) and the categories to be used for analysis, reviews the texts in order to code them and place them into categories, and then counts and logs the occurrences of words, codes and categories. From here, statistical analysis and quantitative methods are applied, leading to an interpretation of the results. Put simply, content analysis involves coding, categorizing (creating meaningful categories into which the units of analysis – words, phrases, sentences etc. – can be placed), comparing (categories and making links between them), and concluding – drawing theoretical conclusions from the text (as cited in Cohen et al., 2007, p. 476).

This implies that the purpose of content analysis is to organise the text into retrievable sections that would subsequently be coded for themes. These categories should not emerge from the material itself. Rather, they should be constructed from the theoretical basis or area of interest prior to the analysis process (Cohen et al., 2007; Dornyei, 2007). Importantly, content analysis analyses the text qualitatively and quantitatively as well. The qualitative basis is in terms of the determination and interpretation of semantic relationships, messages, purposes, and meanings of words and concepts (Cohen et al., 2007). The quantitative basis, however, is thought of in terms of

the determination of the frequency of specific words, concepts, expressions in the text (Cohen et al., 2007).

### **3.1.6 Sampling Techniques**

As regards time, effort, financial resources, conducting research on a broad scope, or using the completely targeted population seems rarely possible. Thus, the selection of some items has to be made. This is simply termed as sampling. The latter denotes the procedure whereby a suitable small group or subset of the total population is chosen for conducting the research. A good sample, according to Dornyei (2007), should closely reflect and represent the general characteristics of the whole population, such as age, gender, ethnicity, educational background, and social class.

There are two commonly used methods of sampling. Probability sampling is a technique that is rooted in the theory of probability. This method is highly based on chance and nothing else; therefore, it reduces the researcher's bias (Dornyei, 2007; Cohen et al., 2007). To create the sample, it seeks random selection, allowing every individual in the population to have an equal chance of being included in the study. Essentially, this type of sampling is less often employed in applied linguistics because it "involves complex and expensive procedures that are usually well beyond the means of applied linguist" (Dornyei, 2007, p. 97). Some of the probability samples are simple random samples, systematic samples, stratified samples, cluster samples, stage samples, and multi-phase samples.

The non-probability sampling refers to the set of techniques that allows the researcher to select units from the population-based on his/her subjective judgment, rather than random selection. The core characteristic of these techniques is that they collectively dismiss the possibility of equal chances of picking (Kothari, 2004; Dornyei, 2007; Cohen et al.). In such cases, and since the researcher deliberately chooses participants, there is

always the problem of bias. Therefore, the results cannot be generalised to a wider scope (population). Nor can the sample be representative of the whole population. Still, this category is mostly employed in applied linguistics because it is less complicated and inexpensive (Cohen et al., 2007). Instances of the non-probability sampling techniques are convenience sampling, quota sampling, dimensional sampling, purposive sampling, and snowball sampling.

### **3.2 Research Methodology for this Study: Choices and Rationale**

#### **3.2.1 Research Paradigms**

Since it is abundantly clear that the philosophical worldview is the main dimension used to frame research, the conceptual orientation of the current inquiry serves to discriminate it from various research studies. Clearly, it shaped our ontological, epistemological, and methodological choices. In this research, the choices made by the researcher depended heavily on the study's purpose which is to gauge the effectiveness of using concept mapping as a teaching strategy on learners' reading comprehension. Hence, a mixture of both quantitative and qualitative data, which could not be mutually exclusive in this study, was required. With regards to the nature of the study, and because pragmatism allows the use of multiple methods that, in conjunction, enabled the researcher to better understand the social phenomenon, the pragmatic paradigm was more suited for the present study. For this reason, the selection of the Mixed-methods approach best met the needs and purposes of this investigation.

#### **3.2.2 Research Approach (es)**

Reflecting on the nature of the study, neither the quantitative approach nor the qualitative approach could be used to address the research questions. Accordingly, the present inquiry was based on the mixture of both approaches that served to collect diverse

types of data. That is, this research study operates under the Mixed-methods approach, which strived to provide a deep understanding of the research problem. Fundamentally, this conveys the importance of focusing attention on testing the impact of concept mapping on students' reading comprehension, as well as discovering the teachers' and students' attitudes regarding the use of concept mapping.

### **3.2.3 Research Design(s) / Strategy (ies)**

The current study operated under the Mixed-methods approach, thereby, employing the Mixed-methods strategies. In specific terms, and to provide a comprehensive analysis of the research problem, which comprised both quantitative and qualitative perspectives, a case study design along with the quasi-experimental design were used. These strategies were emerged and used side by side to redound and reinforce the purpose of the investigation which attempted to investigate the effect of using the concept mapping as a teaching strategy on students' reading comprehension, as well as discovering the teachers' and students' attitudes regarding the use of this strategy. Clearly, the nature of the inquiry is what stood behind our choices that, in turn, abided by the research requirements.

With respect to time, cost, availability of participants, which may have a substantial effect on the credibility of the results, it was impractical for the current investigation to embrace a large-scale sample. As long as the case study design investigates a limited number of units (subjects) in a limited or prolonged time, it was deemed the most suitable qualitative design for this study. Besides, since the current research was more feasible if conducted in its original environment, which was the classroom, the case study was more suited for this requirement, especially that it advocates exploring the subjects within their original environment.

To delve into the study's problem and to answer the third research question (to what extent does the use of the concept mapping strategy influence students' reading comprehension?), the quasi-experimental design was adopted. In spite of its accuracy and precision in assessing causal relationships, the true experimental design was far less likely to be used in this study. This is because it seeks generalisability that is more convenient for large-scale studies. In order for it to generalise the results into a broader category or scope, the participants, who must be randomly assigned into control and experimental groups, should be investigated in a field setting or laboratory where the extraneous variables are accurately controlled.

None of the aforementioned true experimental design tenets served the purpose of the investigated issue. In our situation, which was rather a small-scale study, the results were not, by no means, intended to be generalised to the whole population. Nor were they intended to be used to generate a theory or law. In light of what proceeds, as well as the traits of human nature that are difficult for measurement purposes, the quasi-experimental design was chosen to elaborate and conduct the treatment.

### **3.2.4 Data Collection Methods**

As far as the current investigation is concerned, four data collection tools were chosen in the course of collecting and gathering data. This incorporated the students' pretreatment questionnaire, the tests, the post-treatment questionnaire, and the teachers' interview.

**3.2.4.1 The students' pretreatment questionnaire.** One of the data collection instruments chosen to collect the necessary data to answer the research questions under the current investigation was the pretreatment questionnaire (see Appendix 4). As its name implies, the pretreatment questionnaire was administered to the participants before the

main study took place. That is, they had to first fill in it in order to be able to attend the treatment sessions.

**3.2.4.1.1 Structure and aim.** This instrument was meant to collect concise and accurate data regarding the state of the reading skill. The latter was mainly in terms of the varied reading difficulties, the factors affecting comprehension, and the reading comprehension strategies. Crucial to the purposes of our study, this semi-structured pretreatment questionnaire was mainly designed to gain a detailed exploration of the students' familiarity and use of instructional concept maps. This questionnaire incorporated three types of data that were literally reflected in the factual, behavioural, and attitudinal questions. Table 3.1 demonstrates the structure of the questionnaire, along with the objectives of each section.

**3.2.4.1.2 Piloting and validation.** Piloting and validation are integral in any research study since they ensure the determination of the study's reliability and credibility of the results. Therefore, they seek any improvement that may likely produce a comprehensive and pertinent final version of the data collection tool. The questionnaire was validated by two teachers who are supposed to be experts in the field. In an attempt to get a logical smoothly-moving questionnaire, their remarks regarding the layout, wording of instructions, and formulation of questions were taken into account. This questionnaire subsequently underwent the piloting stage wherein six students belonging only to the population were asked to respond to the questions and provide feedback. None of the students, as a result, showed irrelevancies.

Table 3.1

*The Pre-Treatment Questionnaire Sections and their Objectives*

Section	Item	Content	Objectives
Section one	1-4	General Information	To unravel who the respondents are (for instance in terms of their sex and language proficiency).
Section two	5-20	Reading Comprehension	To uncover the participants' experience about reading comprehension
Section three	21-24	Concept Mapping	To inspect students' familiarity with the concept mapping strategy and how much it is being used in their classes.

**3.2.4.2 The tests.** To achieve the goals of the study that focused, to a large degree, on examining the effect of implementing concept mapping as a strategy on EFL learners' reading comprehension, tests were also used as data-gathering instruments. This involved a pretest and a posttest which were run prior to and following the treatment sessions, respectively.

**3.2.4.2.1 Structure and aim.** The aim of the pretest was twofold. Firstly, as outlined in the sampling section, it worked as a placement test for it assisted the researcher to determine the student's current level and skill, thereby selecting the sample that best fits the study's objectives. Secondly, it sought to measure the participants' prior ability in reading comprehension before the practical implementation of the study's treatment. The pretest involved two parts; therefore, its items fell into two types. The first type, which

comprised three various tasks, dealt with reading comprehension. The latter, however, was followed by a written production practice, which represented the second part.

Subsequently, while the text used in the pretest was entitled ‘Employment in Japan’, the one utilised in the posttest was entitled ‘Universities in Britain’. The purpose of the latter was to check whether there is any significant improvement in the reading comprehension ability after the application of the concept mapping strategy. Choosing both texts with a similar structure was important for the credibility of the results. That is to say, the text employed in the post-test too involved two sections. While one revolved around reading comprehension, the other was concerned with a written production. To clarify, the first three activities asked them, respectively, to choose the correct phrase that best corresponded to each given paragraph, to answer the questions with words taken from the reading passage, and to assign abbreviations to their matching descriptions.

**3.2.4.2.2 *Piloting and validation.*** Because we were limited by time, a piloting group could not be formed. Nevertheless, the issue of validation needed to be achieved. Both tests were originally selected from the set of IELTS reading tests, which are the world’s most popular English language proficiency tests. Addedly, the content validity was also assessed and revised by two teachers who maintained that the tests’ themes, language, and instructions were appropriate for the test-takers who were master students.

**3.2.4.3 The post-treatment questionnaire.** As our study involved the practical implementation of the concept mapping strategy on the reading comprehension of students who were not initially well acquainted with it, uncovering their attitudes and perceptions by means of a post-treatment questionnaire was crucial.

**3.2.4.3.1 *Structure and aim.*** A semi-structured questionnaire was administered online targeting precisely the students who attended almost all the treatment sessions and sat for the pretest. Therefore, it sought not only to describe the way (how) concept

mapping helped them in comprehending different texts, but also to depict the satisfactions, hindrances, and challenges resulting from its use. As depicted in table 3.2, three sections with different intentions were integrated into this final questionnaire.

**3.2.4.3.2 Piloting and validation.** To ensure that the post-treatment questionnaire used the appropriate question formulation, wording, and order, we had not to directly administer it without the piloting and validation stages. In this respect, and to come up with the final version, this instrument was reviewed and revised by our supervisor who found that no changes were required.

Table 3.2

*The Post-Treatment Questionnaire Sections and their Objectives*

Section	Item	Content	Objectives
Section one	1, 2	The Lesson Presentation and Implementation	To decide about the aspects of lesson presentation and implementation the participants were mostly satisfied with.
Section two	3-10	Concept Mapping Application	To discern the benefits of instructional concept maps To determine the respondents' attitudes, feelings, and opinions regarding the issue under investigation.
Section three	11, 12	Challenges and Further Suggestions	To reveal the difficulties and challenges the participants encountered in the course of receiving the treatment.

**3.2.4.4 The Teachers' interview.** The interview was another data collection tool used in this investigation, but it was majorly meant to address the teachers who are in charge of the reading course.

**3.2.4.4.1 Structure and aim.** With the guidance of our supervisor, four face-to-face meetings were arranged to interview four teachers who showed genuine interest in the topic of our inquiry, thereby accepting to participate and be recorded. The major aim of the interview was to achieve a deep understanding of the phenomenon under investigation. More specifically, it addresses the third research questions (what are the reasons that apprehend teachers from integrating concept mapping into their instruction?), as well as the fourth one (what are the attitudes and perceptions of students, as well as teachers towards the use of the concept mapping strategy?). Substantially, since this interview was semi-structured, it was guided by the combination of close-ended and open-ended questions. Therefore, it incorporated three sections each with a given title and purpose as demonstrated in table 3.3.

**3.2.4.4.2 Piloting and validation.** In pursuance of reducing obscurity, vagueness, and redundancy that may emanate from the interview items, this tool too had to be validated. It was emailed as a word document to two teachers who were deliberately selected to pilot it since one is supposed to be an experienced teacher while the other is in charge of the reading course. Both teachers reported no major changes. Exceptionally, and to come up with the final version of the interview, one of them suggested the addition of one single question to produce a reasonable and seamless order of questions.

Table 3.3

*The Interview Sections, Items, and the Reasons for their Inclusion*

Section	Item	Content	Objective
Section one	1-3	General Knowledge	To gain some background knowledge about the teachers' profiles.
Section two	4-9	Teachers' Practices in the Teaching of Reading Comprehension	To discover the way reading is being taught, students' reading difficulties, and the instructional strategies used to overcome these difficulties.
Section three	10-12	Concept Mapping	To point out the reasons that hinder the adoption of concept maps into instruction and reading classes. To uncover the attitudes of students and teachers vis-à-vis the implementation of the concept mapping strategy To determine if they have any further suggestions.

### 3.2.5 Data Collection Procedures

Based on ethical considerations and research requirements, the acceptance of the conduction, as well as the participation in the current investigation had to be confirmed by means of signed informed consent. The latter firstly addressed the head of the section and the department of English who expressed their consent and permission for the carrying out of the treatment with master students and secondly the participants who made informed decisions about their willingness to participate as the targeted sample in this research study. The letters contained brief information about the topic and the purpose of the study, the required tasks, and the guaranteed rights, especially in relation to anonymity, privacy, and identity.

The setting for this study was, throughout the treatment, not static. Rather, it was changeable according to which class was found unoccupied. The design of this study consisted of three phases: (a) pre-testing and a pre questionnaire, which preceded the actual instruction, (b) the study sessions that were meant to deliver the principled parts of different lessons, and (c) post-testing and a post questionnaire, which directly followed the treatment sessions. Finally, the process of data collection had been terminated by the conduction of the teachers' interviews.

### **3.2.6 Data Analysis Procedures**

In the interest of understanding the complexity of the studied phenomenon, the mixture of both quantitative and qualitative perspectives was needed. Clearly put, since the current investigation operated under the Mixed-methods approach, the data analysis phase needed to be conducted by means of combining analysis procedures from both trends. Initially, quantitative data analysis, which is in the form of numerical and mathematical relationships, was accomplished through the exertion of descriptive and inferential statistics that hold complementary, yet different roles. That is, the presentation of the findings and the description of the scores we provided were maintained through descriptive statistics. However, the accepted hypothesis and the conclusions we reached were sought through inferential statistics.

As far as the qualitative aspect of data is concerned, and based on what the literature suggests about the process of examining non-numerical information, content analysis was specifically adopted for the interpretation of textual and verbal data collected, especially from the interview. Following the guidelines of (Cohen et al., 2007), we engaged in a set of procedures that originally strived to add meaning to the transcribed interviews. After the transcribed data have been filtered, they were set for coding (indexing) wherein different chunks of the language were marked using numbers and

colours as well. Afterward, the coded pieces of information were put into categories before they would be related and collapsed into retrievable themes.

### **3.2.7 Population / Sampling Technique**

Since the intention of our study was not to generalise the results into a wider scope, a suitable small group or subset of the total population was chosen to conducting the research. Following this, master one EFL students at Biskra University and instructors of the reading comprehension course constitute the population of this study. In congruence with the purpose of the study, four teachers were deliberately chosen to be interviewed so that for us to be able to better gain an in-depth understanding of the studied phenomenon, especially with regard to the teaching practices.

Our targeted sample was selected based on the non-probability purposive sampling technique, under which “the main idea is to pick out the sample in relation to some criteria” (Hoadjli, 2019, p. 61). This implies that we did not rely on the random selection of participants. Rather, we used our subjective judgment. Within this framework, the total number of 26 students were purposefully chosen as the sample of the current investigation because they have been studying English for more than three years. This brings to light the fact that they should, by this level, have possessed considerable knowledge of the basics of English and literacy skills. Besides, they were more likely to deal with and be exposed to a variety of reading tasks in the mastery of the language course. Importantly, we tried to avoid high reading comprehension achievers since they most often seem to develop good strategic behaviour and speedy reading skills.

### **3.3 Study Description and Rationale**

The current inquiry endeavoured to examine the effect of implementing concept mapping as an instructional strategy on EFL learners' reading comprehension. As noted earlier, a Mixed-methods approach with one pre-post-test group was adopted to meet the general and specific aims. Fundamentally, and before delving into describing the educational phenomenon, its implementation, stages, and procedures, it is important to note that the sample was instructed by the researcher herself. We tried as much as possible to create a welcoming, relaxing, and non-threatening atmosphere throughout all the study sessions by putting the participants at ease, as well as by giving them the freedom to choose the timing that suits them best.

#### **3.3.1 The Treatment Implementation / or the Educational Phenomenon Description**

As far as the treatment implementation is concerned, and with the guidance of one of the teachers who is supposed to be an expert, scholarly, and erudite instructor who enlightened us with some major tips into how to design syllabi, we elaborated a five-lesson mini-syllabus that was delivered in eight sessions (including the pretest and post-test sessions). Because of several constraints, especially that of time limitations, it was almost impossible for us to carry out this study in a large time span. As a result, and with the help of the participants who were mostly collaborative, we had to recommend two to three one-hour class sessions per week. This truly allowed for the possibility of proceeding faster.

The designed mini-syllabus was not only theoretical, but also, and most importantly, practical since it deliberately strived to provide the participants with the necessary lessons, as well as practices concerning the use and implementation of the concept mapping strategy. It is important to note that we tried our best to deliver

understandable and intelligible lessons that may likely accommodate the students at various proficiency levels. This target was tried to be realised through varied instructional tools, such as the blackboard, handouts, and the data show. Along the treatment, the session's objectives decided about whether the participants will be set to work individually or in pairs. Though individual sessions were designed to meet specific objectives that were clearly and constantly demonstrated in the mini-syllabus (see Appendix 5), they collaboratively work on training the participants to practically use concept mapping in comprehending the written material.

### **3.3.2 The Stages / or the Procedures**

This research project took place over a period of three weeks wherein all the sessions the participants had were originally conducted outside regular class time. At the outset, and after the informed consent letters had been collected, the 26 participants who initially attended the first session were asked to complete the one-hour pretest. The latter which was about 'Employment in Japan' was regarded as somewhat lengthier, yet can be handled easily by master students. Therefore, it was essential for test-takers to complete it in the allotted time. Afterward, and within the same session, the participants were asked to fill in the pretreatment questionnaire as soon as they are done with the pretest.

In the six subsequent 60-minute sessions, the students formally received introductory instruction, through which all the specifics of the concept mapping strategy were introduced. Practices such as distributing handouts and introducing the new lesson's objectives were regularly sought in each session. Addedly, starting each lesson with a brief review and recapitulation which served as warming up was among the strategic plans in the study sessions. This essentially helped the students to review former lessons' critical points, as well as tap into their prior knowledge. Ensuring the understandability of

the current content before the presentation of the new one was also of great importance to the successful delivery and completion of each lesson.

The arrangement of sessions was in line with the three P's Model of lesson planning. The presentation of lessons through this model proceeds in a linear sequence wherein the presentation stage is followed by practice and production, respectively. While the presentation stage reflects the teachers' talking time when gradually presenting and eliciting the subject matter, practice and production, respectively, denote the opportunities given to students to practice the new aspects of the lesson exactly as they were taught, and the set of activities that permit the students to input and employ their own ideas.

#### Lesson One:

To get the absolute best understanding of the relationship between concept mapping and reading comprehension, the students needed to primarily be introduced to the basic concepts and aspects in relation to reading, the thing that was exactly targeted in the first session. In this respect, we elicited information concerning the definitions of reading and reading comprehension, the types of reading, and the strategies of reading comprehension. Importantly, and since reading comprehension embodies a set of skills and abilities, we desired to present its components via a concept map. The latter, thus, was thought to facilitate students' conceptual understanding of these elements, as well as to provide a holistic picture of this innovative diagram (the concept map).

#### Lesson Two:

To avoid introducing much information than what can possibly be grasped, we intentionally devoted two separate sessions for the second lesson. In the first one, we conducted a formal presentation of the definition of concept mapping, its origins, along with the steps that can be followed to construct it successfully. As for the second part, we presented further samples of simple and complex concept maps and encouraged the

participants to take part in the process of discussing their structure and content. In addition, and before receiving the correction, the participants were given two simple activities wherein they were requested to individually finish a non-complete concept map on 'carbohydrates' (the first task) and to work in pairs to draw the concept map of the given passage 'cardiovascular disease' (the second task).

#### Lesson Three:

Students received handouts that included concept map structures, its benefits, and possible domains where it can be used. While the teacher needed to read, explain, and present these aspects, the students were required to listen and intervene whenever needed as such for clarification or addition. This theoretical part of the lesson was followed by a practice exercise tackling the topic of 'sponges'. Initially, and in an attempt to activate their prior knowledge, each participant was asked to construct a basic concept map that represents what s/he knows about sponges. Later, and on the same topic, they received a short passage, based on which they had to complete their previously constructed diagrams.

Key to this lesson was the issue of concept mapping assessment. To foster autonomy and add a sense of thrill to the lesson, we asked each pair of students to exchange and correct individual final concept maps. Though there are a variety of grading procedures originally designed to score this visual diagram, the final marks of our participants' concept maps depended heavily on the marking grid presented in appendix 6. This rubric was developed by the researcher following the guidelines provided by Novak and Cañas (2015). Chiefly, the points were awarded based on how many elements demonstrated in the grid were present, correct, and valid. This includes the main and subconcepts, propositions, links, crosslinks, labeled propositional lines (linking words), degree of hierarchy, organisation, spelling/grammar, and the degree of understanding the

topic. Therefore, the more these criteria were met, the higher the concept map will be scored.

#### Lesson Four

The last two lessons (four and five) are of a practical nature. It was sought, throughout the fourth lesson, to teach the students to activate their prior knowledge on the topic of the passage before constructing the matching concept map. For this quest, a number of guidelines were set out to them starting from brainstorming and ending up with answering the comprehension questions. The participants were left free to ask for assistance whenever needed. Obviously, this made the process of monitoring students, as well as providing feedback critical. To conclude the session, and in an effort to foster what has been communicated so far during all the sessions, we provided them with an assignment, the answer of which was given in the subsequent session.

#### Lesson Five

We started off this session by reviewing the homework. While one student was drawing her map on the board, we tried to lead a class discussion whereby we endeavoured to offer the opportunity to a great number of students to portray their responses utterly and to listen and comment on their classmates' responses as well. As far as the objective of this lesson was concerned, the students were driven to convert a medium-length reading passage into a thorough and comprehensible concept map that, in turn, assisted them in answering the follow-up reading comprehension questions. In addition, this task served as further training in the use of concept mapping.

Though the constituting parts of each of the previously described lessons served to foster a given aspect in the whole treatment, the designed syllabus was set flexible, accepting any modification, addition, deletion, and adjustment. For this reason, the participants were regularly instigated, precisely at the end of each session, to offer

suggestions regarding the content matter, as well as the conduct of the lesson. At the conclusion of the treatment, and after receiving an introductory instruction and training in the use of the concept mapping strategy, a posttest that required the employment of the studied strategy in answering the questions had to be completed. Besides, the post-treatment questionnaire had to be filled in. However, and for the sake of the credibility criteria, these tools addressed only, and largely, the participants who showed up to class for at least five sessions. Therefore, the ones who did not meet this condition were only allowed to sit for the test as they wished to do so; nevertheless, their posttest marks were not considered.

#### Conclusion

This chapter strived at highlighting the basic methodological aspects needed to well ground any inquiry starting with the research paradigms and ending up with the sampling techniques. Following this, it elicited information concerning the methodological choices that best fit this study. In the interest of communicating a better portrayal of the studied phenomenon, the present chapter depicted the set of stages, steps, as well as procedures that were carried out by the researcher in the course of collecting the data and applying the treatment.

## **Chapter Four: Results and Data Analysis**

Introduction

**4.1** Results of the Study

**4.1.1** Results of the Students' Pretreatment Questionnaire

**4.1.2** Results of Tests

**4.1.2.1** The pre-test and post-test results

**4.1.2.2** The paired sample t-test

**4.1.3** Results of the Post-treatment Questionnaire

**4.1.4** Results of the Teachers' Interview

**4.2** Discussion and Summary of the Findings

Conclusion

Introduction

The current chapter intends to report the findings of the current investigation, especially that the portrayal of the varied methodological aspects corresponding this study, was systematically achieved in the previous chapter. This substantially encompasses the numerical, as well as the verbal data that were collected from the students’ pretreatment questionnaire, the tests, the post-treatment questionnaire, and the teachers’ interview. Subsequently, and following the analysis of each instrument’s collected data, this chapter attempts to provide a detailed discussion and summarisation, along with the synthesis of the findings by visiting the initially raised research questions.

**4.1 Results of the Study**

**4.1.1 Results of the Students’ Pretreatment Questionnaire**

Section One: General Information

**Item 1.** Would you specify your gender:

Table 4.1

*Gender Distribution*

Option	Number	Percentage (%)
a) Male	03	12%
b) Female	23	88%
Total	26	100%

It is not uncommon to include such a question about gender since there is some evidence that females are over-represented in a variety of disciplines. More precisely, this question was designed expressly to elicit gender distribution in the study under investigation. Table 4.1 indicates that out of 26 participants, 23 (88%) were females and

three (12%) were males. This means that the former outnumbered the latter or simply that female enrolment rates have surpassed that of male. This indicates that language courses are less preferred by males, thereby making language learning a more female-targeted field. In this regard, Xiong (2010) argues that “girls’ internal motivation is stronger than boys’ in the foreign language studying and most of the girls aim at gaining English knowledge” (p. 1).

**Item 2.** Applying for the master degree was:

Table 4.2

*The Choice Concerning the Application for Master Degree*

Option	Number	Percentage (%)
a) Your own choice	24	92%
b) Your parents’ choice	2	8%
c) Someone’s advice	0	0%
Total	26	100%

This question was simply included to inquire about whether the respondents’ application for the master’s degree emanates from external advice, parents’ choice, or personal inclination. Table 4.2 suggests that roughly 24 students who are represented by 92% were more inclined to their personal choice while only two (8%) were governed by their parents’ choice and decision. Surprisingly, none of the respondents followed someone’s advice (0%). This may imply that the majority of students are thought to have the willingness and motivation to learn and ameliorate their level of English as to what is suggested by the subjects in their master’s programme. Besides, the second proportion assumes that the two students, who initially pursued their master’s studies based on parental choice, may have less desire and motivation to improve their English; thereafter, this may detract from their language proficiency.

Table 4.3

*The Reasons behind the Application for Master Degree*

Option	Number	Percentage (%)
a) Raising the educational level	7	29%
b) Job opportunities	7	29%
c) For research purposes	10	42%
d) All of them	0	0%
Total	24	100%

This part served as a follow-up question that ultimately addressed the respondents whose application for the master's degree was tied to personal choices. Therefore, this question aimed chiefly to explore these underlying reasons. The latter were raising the educational level, getting job opportunities, and achieving research purposes. Though it was thought that job opportunities would be the major possible drive for choosing to pursue further studies, table 4.3 denotes another concern. The most important reason which students most frequently gave was “for research purposes” (42%). Raising the educational level, getting job opportunities were considered equally important as they came in the second place with a proportion of (29%).

**Item 3.** How did you find learning at the master level?

Whatever your answer would you please justify.

Table 4.4

*Students' Attitudes towards Learning in Master Level*

Option	Number	Percentage (%)
a) The same as it was in license level	3	11%
b) Easier than it was in license level	1	4%
c) More difficult than it was in license level	22	85%
Total	26	100%

This item appeared to allow the respondents to exhibit their attitudes towards learning at the master level. Clearly, in table 4.4, 85%, which represents a total number of two students, found that the master's degree is more difficult than the license degree. However, one student found it less difficult, and three students saw they are equally difficult. As a completion to this question, they reported various reasons that stood behind their viewpoints. One student reported, "...in addition to the great effort we should always make, we feel obliged to attend every single session compared to what we are accustomed to do in license" while another, "...because it needs more hours to revise lessons than in license and there is a plenty of tasks that put me under pressure". Furthermore, a master's degree usually demands problem-solving skills, reasoning, and critical thinking. One student responded as follows, "at this degree, we are required to develop critical thinking and read several books to enrich our knowledge."

## Section Two: Reading Comprehension

**Item 4.** How do you consider the reading skill?

Table 4.5

Students' Opinions about the Importance of the Reading Skill

Option	Number	Percentage (%)
a) Very important	19	73%
b) Important	7	27%
c) Not important at all	0	0%
Total	26	100%

**Item 5.** In your academic context, do you believe that reading is giving as much importance as other skills?

Table 4.6

*The Importance of the Reading Skill Compared to other Skills*

Option	Number	Percentage (%)
a) Yes	17	65%
b) No	9	35%
Total	26	100%

**Item 6.** How often does your teacher ask you to read texts and answer their activities in class?

Table 4.7

*The Frequency of Teachers' Reading Assignments*

Option	Number	Percentage (%)
a) Always	0	0%
b) Often	6	23%
c) Sometimes	19	73%
d) Never	1	4 %
Total	26	100%

**Item 7.** How often does your teacher ask you to read materials outside the classroom?

Table 4.8

*The Frequency of Asking the Students to Read Materials outside the Classroom*

Option	Number	Percentage (%)
a) Always	4	15%
b) Often	11	42%
c) Sometimes	10	39%
d) Never	1	4%
Total	26	100%

Tables 4.5 and 4.6, respectively, report the participants’ opinions about the importance of reading and whether, in their academic context, it is equally important to other language skills. As suggested in table 4.5, reading was considered by participants as either important (27%) or very important (73%). As far as the second question was concerned, the majority of participants (65%) viewed that, in their academic context, reading is given as much importance as other skills, and only nine participants (35%) reported the opposite. To confirm the claim of the majority, two further questions were raised; the results were represented in tables 4.7 and 4.8.

Table 4.7 displays the frequency of teachers’ in-class reading assignments. Clearly, the answers range from ‘often’ (23% representing 6 students), sometimes (73% representing 19 students), and never (4 % representing only one student). This implies that reading, as an in-class activity, is solely taught from time to time. Additionally, table 4.8 shows that 10 students (39%) were sometimes asked to read materials outside the classroom while 11 students (42%) were often asked to do so. Yet four students (15%) were always asked to read materials outside the class and only one student (4%) claimed

that s/he has never been requested to do so. Grouping the aforementioned body of facts, we can conclude that, at least for our sample, reading was regarded as pivotal since it holds an equally important position to other language skills. Despite its significance as being a central element in English, it is not casually done as an in-home activity. Nor is it regularly exercised as an instructional practice.

**Item 8.** In which language do you mostly prefer to read?

Table 4.9

*The Language Students Mostly Prefer to Read in*

Option	Number	Percentage (%)
a- Arabic	10	38 %
b- French	1	4%
c- English	14	54 %
a+c	1	4 %
Total	26	100%

**Item 9.** Do you enjoy the time you spend on reading?

Table 4.10

*Students' Enjoyment for Reading*

Option	Number	Percentage (%)
a) Yes	21	81%
b) No	5	19%
Total	26	100%

**Item 10.** How often do you read in English?

Table 4.11

*The Frequency of Reading in English*

Option	Number	Percentage (%)
a) Always	2	8%
b) Often	8	31%
c) Sometimes	16	61%
d) Never	0	0%
Total	26	100%

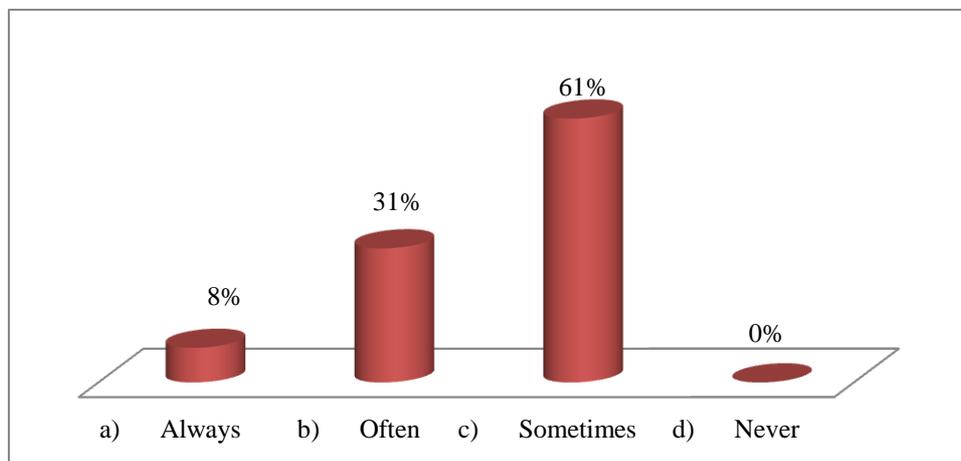


Figure 4.1. The frequency of reading in English

Items 8, 9, and 10 collectively sought to explore the participants' tendency towards reading, in general, and reading in English, in particular. The results are shown in tables 4.9, 4.10, and 4.11. It was indicated that the participants preferred to read not only in English, which constitutes the highest proportion (54 %), but also in Arabic (38 %) and French (4%). One student (4%) added that s/he reads in Arabic and English as well. Being English majors, they would reasonably read materials in English extensively compared to other languages. Despite the evidence that the majority of participants, as table 4.10 denotes, appear to enjoy the act of reading (81%), only two of them tend to read all the time, followed by eight who often do so. In this respect, a great number of students

(61%) reported that they rather read occasionally. This can be clearly demonstrated in Figure 4.1.

**Item 11.** Please specify why do you usually tend to read in English? (Others)

Table 4.12

*The Reasons behind Reading in English*

Option	Number	Percentage (%)
a) For pleasure	1	4%
b) As part of an assignment	3	11%
c) To enrich your vocabulary	4	15%
d) To increase your knowledge of the language	6	23%
e) All of the above	8	31%
a+b	1	4%
a+b+c	1	4%
a+c+d	1	4%
c+d	1	4%
Total	26	100%

The intension of this question was clearly to probe into the possible reasons that commonly instigate the act of reading. Apparently, according to table 4.12, different rates are tied up to a variety of drives. Nevertheless, three students (11%) tend to read if it is a part of an assignment while four (15%) to enrich their vocabulary. However, six of them (23%) are driven by the desire to increase their knowledge of the language while only one (4%) finds that s/he reads only for the sake of pleasure. Overall, the majority of participants, who hold the highest percentage (31%), are driven by all the motives initially proposed in the list of choices. That is to say, the most common incentives for students to

read may cover either seeking information (accomplishing an assignment, enriching vocabulary, and increasing the knowledge of the language) or enjoyment (reading for pleasure). This goes along with what Harmer (1991, as cited in Chouaf, 2009) often calls as reading for usefulness and reading for interest.

**Item 12.** Do you have any reading comprehension difficulties?

If yes, what kind of difficulties

Table 4.13

*The Existence of Students' Reading Comprehension Difficulties*

Option	Number	Percentage (%)
a) Yes	18	69%
b) No	8	31%
Total	26	100%

Table 4.14

*Types of Reading Comprehension Difficulties*

Option	Number	Percentage (%)
a) The inability to recognise the types of text and/or the unfamiliarity with the topic of the text	0	0%
b) The inability to connect the background Knowledge with the new one	3	17%
c) The inability to understand complex language forms (words, sentences, etc)	0	0%
d) The inability to understand new vocabulary	1	5 %
e) The inability to know the writer's intentions	0	0%
f) Lack of attention	1	4%
g) All of them	1	4%
a+d	1	4%
a+c+d+f	1	4%
b+d	2	11%
b+e	1	4%
c+d	4	22%
c+e	1	4%
c+f	2	11%
c+d+e	1	4%
Total	18	100%

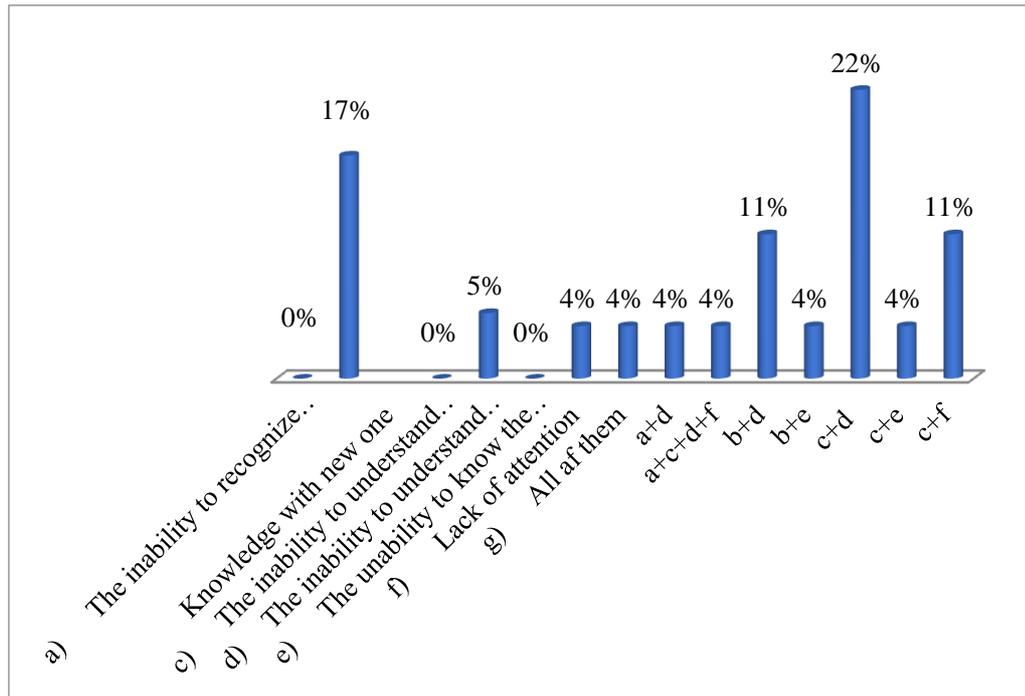


Figure 4.2. Types of reading comprehension difficulties

This question sought to know if the students under the current investigation possess any difficulties regarding reading comprehension and if ever this is the case, which difficulties they can reveal. According to table 4.13, the large majority of students, representing 69% of the respondents, confessed that they have some reading comprehension difficulties while only 31% have not. This implies that more than half of the respondents find it difficult or rather challenging to read and understand English materials. Therefore, we can truly consider this issue a serious problem.

Afterward, and to generate depth data, the students were additionally asked to elaborate on the answer given within the closed question. As indicated in table 4.14 and Figure 4.2, all the options were chosen at least once including the inability to: recognise the types of text and/or the unfamiliarity with its topic, connect background knowledge with the new one, understand complex language forms, understand new vocabulary, know the writer’s intentions, and Lack of attention. Nevertheless, almost the majority of students (four students, 22%) face problems in understanding complex language forms

(words, sentences, etc.), as well as in comprehending new vocabulary, followed by 17 % who expressed that they face difficulties in connecting background knowledge with the new one. This denotes that despite having similar learning experiences, the participants do not necessarily manifest exactly the same problems. Nor do they acquire the reading skills at the same rate.

**Item 13.** Would you specify the main reasons for students’ reading difficulties? You may choose more than one answer.

Others.....

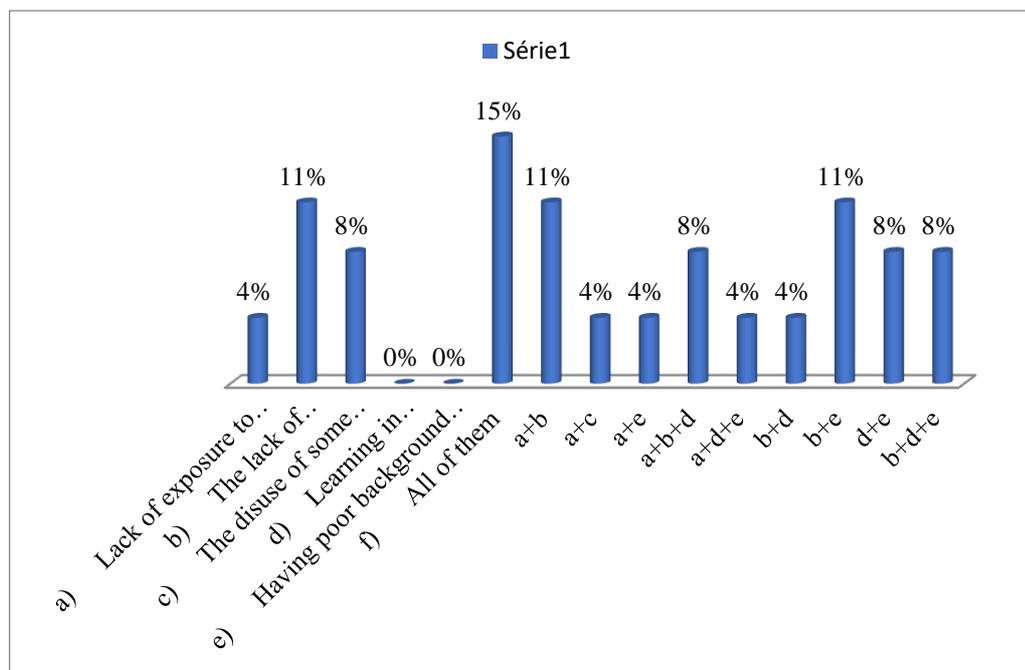


Figure 4.3. Factors leading to students’ reading comprehension difficulties

Table 4.15

*Factors Leading to Students' Reading Comprehension Difficulties*

Option	Number	Percentage (%)
a) Lack of exposure to different text genres and different text structures	1	4%
b) The lack of opportunities for practicing reading	3	11%
c) The disuse of some effective reading strategies	2	8%
d) Learning in overcrowded, disorganised and noisy classrooms	0	0%
e) Having poor background knowledge	0	0%
f) All of them	4	15%
a+b	3	11%
a+c	1	4%
a+e	1	4%
a+b+d	2	8%
a+d+e	1	4%
b+d	1	4%
b+e	3	11%
d+e	2	8%
b+d+e	2	8%
Total	26	100%

The intention of this question was obviously to probe into the factors leading to students' reading difficulties, especially for those who proclaimed having particular challenges regarding reading. The answers are displayed in table 4.15. Since most students do not share the same viewpoint, a bar chart such that in Figure 4.3 would best display the divergence of answers. Still, the great majority (15%) regarded that the collection of the suggested factors including the lack of exposure to different text genres

and text structures, lack of opportunities for practicing reading, disuse of some effective reading strategies, learning in overcrowded classrooms, and poor background knowledge play a role in apprehending reading comprehension.

Interestingly, around 14 students claimed that the lack of opportunities for practicing reading constitutes a cardinal reason for students’ reading difficulties while eight saw that the learning in overcrowded and disorganised classrooms, along with the other factors that hinder the act of comprehending different materials. Despite the importance of reading strategies, only three students clarified that the materials may not be sufficiently comprehensible if some pivotal reading strategies are not being used. That is to say, as outlined by Gilakjani and Sabouri (2016), the factors affecting reading comprehension are indeed classified into reader variables, text variables, context variables.

**Item 14.** Once you decide to start reading a passage, do you plan out in advance to use a given strategy or technique?

Table 4.16

*Students’ Implementation of before Reading Strategies*

Option	Number	Percentage (%)
a) Yes	6	23%
b) No	20	77%
Total	26	100%

**Item 15.** While reading a text, what do you usually do to comprehend its parts and relations better?

Others.....

Table 4.17

*Students' while-Reading Strategies*

Option	Number	Percentage (%)
a) Use visual organisers as diagrams, tables, or maps	4	15%
b) Summarise the text on a separate paper	12	46%
c) Use questioning	1	4 %
d) Use prediction	3	12%
e) Use Inference	5	19%
f) Do nothing, just keep the information in mind	0	0%
b+c	1	4%
Total	26	100%

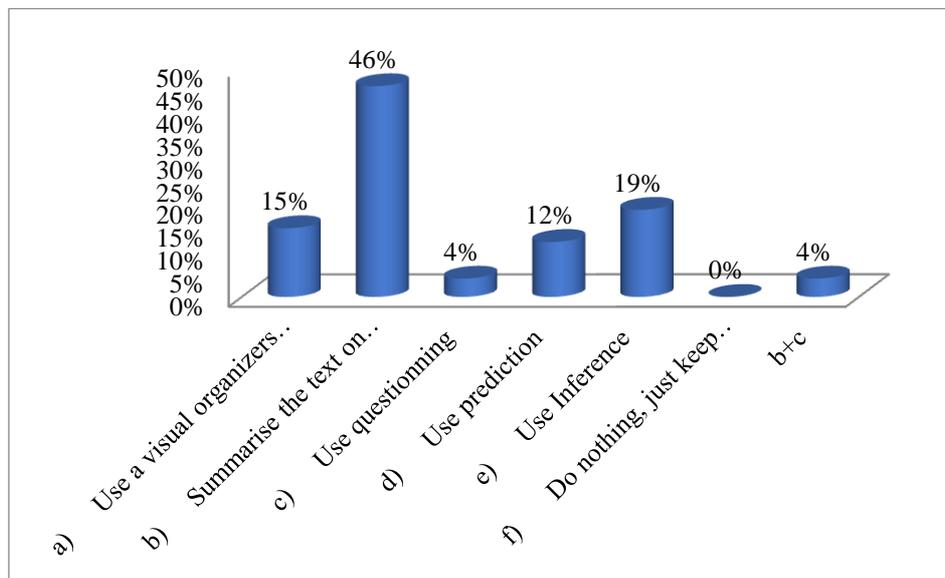


Figure 4.4. Students' while-reading strategies

Items 14 and 15 are to be grouped together since they are interdependent. While the first question set out to discover whether the participants plan out in advance to use a given strategy or technique before they embark on reading, the second question strove to uncover what they regularly do to comprehend better the text's varied parts and relations. The value of the latter question was to bring to light their while-reading strategies. From

table 4.16, it is obvious that most of the respondents' do not plan out in advance to use a given strategy or technique, which makes a percentage of 77% (comprising 20 students of the total population). However, the rest (23%), which represent only six students, seem to do so.

Following the first part of this item, table 4.17 and Figure 4.4 clarify that, during reading, none of the respondents just keeps the information in mind, without applying a strategy to better comprehend the text. The supremacy of participants (46%) reveals that they summarise the text on a separate paper. This is immediately followed by (19%) who reported using inference. While 15% identified using visual organisers (diagrams, tables, or maps), 12% specified prediction. Surprisingly, questioning could scarcely be used by these participants as just (4%) make use of it. It is important to note that only one student reported that s/he avails herself of using both summarisation and questioning. This implies that an immense number of respondents do not utilise any of the before-reading activities. Nevertheless, to adequately comprehend the text's relations, they mostly make use of a variety of during reading strategies, with supremacy given to the summarisation of texts on separate pieces of paper.

**Item 16.** When you read a text, and in order to understand it, do you usually refer to what you already know as background knowledge of the text's topic?

Table 4.18

*Students' Use of their Background Knowledge*

Option	Number	Percentage (%)
a) Yes	22	85%
b) No	4	15%
Total	26	100%

**Item 17.** How much do you agree that background knowledge has great importance in reading comprehension?

Table 4.19

*The Importance of Background Knowledge in Reading*

Option	Number	Percentage (%)
a) Strongly agree	16	61%
b) Agree	8	31%
c) Neutral	2	8%
d) Disagree	0	0%
e) Strongly disagree	0	0%
Total	26	100%

**Item 18.** Does your instructor use particular strategies to activate your prior knowledge or to make you understand the text better?

If yes, does s/he use:

Table 4.20

*The Use of Strategies to Activate Background Knowledge*

Option	Number	Percentage (%)
a) Yes	19	73%
b) No	7	27%
Total	26	100%

Table 4.21

*The Strategies Used to Activate Background Knowledge*

Option	Number	Percentage (%)
a) Discussion	4	21%
b) Visual aids (pictures)	0	0%
c) Questions and answers	2	11%
d) Visual organisers (mind maps, etc)	2	11%
e) Prediction	1	5%
a+b	1	5%
a+c	6	31%
a+e	1	5%
c+e	2	11%
Total	19	100%

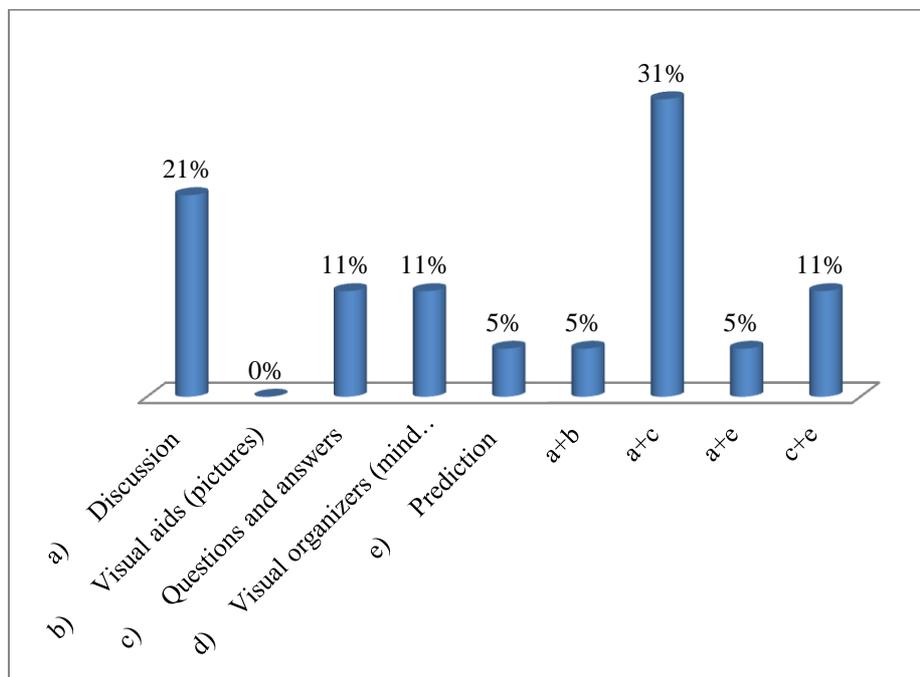


Figure 4.5. The strategies used to activate background knowledge

Items 16, 17, and 18 collectively sought first to explore the number of respondents who usually refer to their text-related background knowledge and second to probe into the degree of agreement regarding the importance of prior knowledge. In addition, these items bring to light the set of strategies instructors often employ to activate students' background knowledge. Table 4.18 portrays that, except for four students, almost all the students (85%) use their prior knowledge for a better comprehension of texts. Concerning the degree of agreement in respect of the importance of background knowledge in reading, the answers range from 'agree' (31%) to neutral (8%), with supremacy to strongly agree (61%).

The fact that the majority of participants conceive that background knowledge contributes to language comprehension shows the need to introduce them to a variety of instructional strategies. This is illuminated in table 4.19. Apparently, table 4.20 and 4.21, as well as Figure 4.5 display that the majority of teachers employ strategies in an effort to activate students' prior knowledge when necessary. As far as the choice of strategies is concerned, six participants (31%) reported that their teachers make use of discussion, as well as question-answer relationships while four (21%) claimed that they use discussion solely. The evidence also suggests that question-answer relationships (11%), visual organisers (11%), prediction (5%) are also being used. It is important to note, then, that visuals organisers are not a widely employed instructional strategy in activating students' prior knowledge.

### **Section Three: Concept Mapping**

**Item 19.** Are you familiar with the concept mapping strategy?

In case you are familiar with it, in simple words, please indicate what it is.

Table 4.22

*The Familiarity with Concept Mapping*

Option	Number	Percentage(%)
a) Yes	7	27%
b) No	6	23%
c) I heard about it, but I do not know what it is	13	50%
Total	26	100%

**Item 20.** How often does your instructor use it in his/her class?

Table 4.23

*The Frequency of Using Concept Mapping in Class*

Option	Number	Percentage (%)
a) Always	0	0%
b) Often	4	15%
c) Sometimes	14	54%
d) Never	5	19 %
e) No answer	3	12%
Total	26	100%

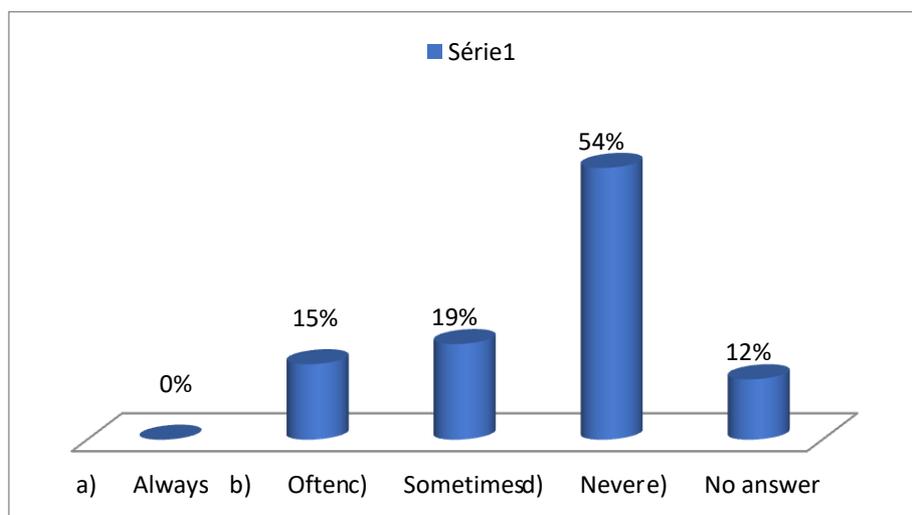


Figure 4.6. The frequency of using concept mapping in class

Via posing the questions in items 19 and 20, we intended to potentially inspect students' familiarity with the concept mapping strategy. We specifically sought answers regarding the frequency of instructors' use of concept mapping in their classes. As displayed in table 4.22, the most common response was, 'I heard about it, but I do not know what it is' with the highest percentage of 50% (13 students). The second highest response was 'yes' (27%), meaning that they were well acquainted with it, followed by 23% whose choice was 'no', denoting that they were utterly unfamiliar with it.

To substantiate the aforementioned claim that 27% were conversant with the concept mapping technique, we further had a look at the definitions respondents ultimately provided concerning concept mapping. Reasonably, the definitions should at least bear some degree of correctness and fit with what is typically suggested in the literature. Some definitions were as follows:

*Def 1: "A concept map means to make a map to organise your information."*

*Def 2: "It is a strategy that helps students to better understand the text but through providing pictures related to a topic."*

*Def 3: "It is to use a schema or diagram."*

*Def 4: "It is to use a mind map while reading."*

*Def 5: "It is a mind map in which we can organise the ideas of the text."*

*Def 6: "It means to organise your thoughts in the shape of a map through the use of bubbles with directed arrows that are linked to each other."*

These definitions were expressed differently, yet share a common ground. Almost all the respondents, in definitions 1, 2, 5, and 6, acknowledged that concept mapping displays information in an organised way; therefore, it can be used to achieve a better understanding of materials. The participants who provided the definitions 4 and 5 seem to relate concept mapping to mind mapping that is not the case. The last definition (*def 6*)

appears to be much closer to what a concept map truly is, especially when the respondent mentioned two major concept map features (bubbles and arrows). Therefore, we can deduce that these respondents were not very oblivious to this strategy. Though they seem to understand concept maps superficially, the definitions they provided bear some degree of appropriateness.

The students' unfamiliarity with the concept map may be because most teachers do not regularly use it in their classes. The evidence for this claim was presented in table 4.23 and Figure 4.6. As expected, the majority of students (54 %) reported that their instructors had never used such an instructional strategy in class. While five participants (19%) asserted that this strategy was sometimes used in their classes, only four (15%) proclaimed that it was often used. Meanwhile, for unknown reasons, three (12%) left the question unanswered. Consequently, we can discern that the respondents' instructors do not frequently use concept mapping in their classes.

**Item 21.** Do you think that applying the concept mapping strategy could contribute to easy and fast comprehension of texts?

Table 4.24

*Students' Perceptions about the Contribution of Concept Mapping in Reading Comprehension*

Option	Number	Percentage (%)
a) Yes	25	96%
b) No	0	0%
c) No answer	1	4%
Total	26	100%

**Item 22.** Knowing that the concept mapping strategy works on clarifying the confusing parts of the text and monitoring students’ understanding of the content, how excited are you to have the opportunity to be taught using this innovative strategy?

Table 4.25

*The Excitement about the Participation in the Concept Mapping Class*

Option	Number	Percentage (%)
a) Very excited	7	27%
b) Excited	16	61%
c) Moderate	1	4%
d) Not excited	0	0%
e) No answer	2	8%
Total	26	100%

Items 21 and 22 share the same intention. They collectively sought to unravel the participants' perceptions towards this strategy, which was not very familiar to many of them, before the treatment. What is evident in table 4.24 is that almost all the students (25 representing 96%) viewed that the application of the concept mapping strategy could contribute to easy and fast comprehension of texts. Yet only one student (4%) was uncertain; the question was left unanswered. In this respect, table 4.25 portrays their excitement with regard to the participation and attendance in the concept mapping study sessions. Seemingly, the majority of students were either ‘excited’ (16 students representing 61%) or ‘very excited’ (seven students representing 27%). While only one student (4%) chose ‘moderate’, others preferred not to answer it. Overall, we can say that the majority expressed a sense of thrill that may provoke them to take the sessions more seriously, and produce high-quality work.

#### **4.1.2 Results of Tests**

**4.1.2.1 The pre-test and post-test results.** The information recorded in the following table aims to illustrate the participants' performances across the two essential treatment phases, with the focus on assigning individuals to the scores truly obtained.

Table 4.26

*The Students Pretest and Posttest Scores*

Student number	The pretest			The posttest		
	Part one score	Part two score	The final score	Part one score	Part two score	The final score
1	6.5	2.5	9	8	3.5	11.5
2	6	0.5	6.5	9.5	3	12.5
3	10.5	1	11.5	12	4.5	16.5
4	7.5	0.5	8	10.5	4	14.5
5	10	1.5	11	11	3	14
6	7.5	0.5	8	11	3	14
7	10.5	3.5	14	11	4.5	15.5
8	6	1	7	11	2	13
9	9.5	2.5	12	13.5	3.5	17
10	8.5	0.5	9	10	2.5	12.5
11	9	1.5	10.5	12	3	15
12	8	1.5	9.5	12	3	15
13	2	1	3	12	2	14
14	8.5	2	10.5	8	3.5	11.5
15	7	0.5	7.5	12	4	16
16	9.5	2	11.5	11	2.5	13.5
17	1	1	2	11	3.5	14.5
18	8.5	2.5	11	12	4	16

Table 4.26 displays the pretest and posttest scores of the participants who were substantially assessed on how well they met the criteria presented in the marking grade (see Appendix 5). An inspection regarding these scores shows that there is a variation, which is especially apparent in the posttest. Most students in the pretest failed in both parts (reading comprehension activities, written production), ending up getting low test scores. The latter range from 2, as the lowest mark, to 14, as the highest mark.

However, these data reveal that a total number of 10 students (56%), which is significant to be highlighted, are below the average (the mark 10) while only 8 out of the 18 students were successful in the pretest. This is a proportion of 0.44 ( $8/18 = 0.44 = 44\%$ ). This stands as an indication that most participants suffer from problems associated not only with reading, but also with writing. Thereafter, the task of the treatment was mainly to reduce this proportion (56 %).

A closer inspection of the second part of the table demonstrates that the scores in the posttest are far higher than the pretest since the majority did well in the reading comprehension part and the writing part as well. Unexpectedly, it is noticeable that none of the students scored below the average. Besides, we find that roughly 12 students scored above 14, which was initially obtained by only one participant in the pretest. Seemingly, the participant who got 17, as the highest score, showed a dramatic improvement regarding the reading-related activities (9.5 in pretest improved to 13.5 in posttest) but did not for the written production (no significant improvement between 2.5 in pretest and 3.5 in posttest). Overall, what stands out in this table is the apparent improvement in the scores between the pretest and posttest.

Since tables can be directly converted into graphical representations whereby the inspection of social phenomena would be easy, this improvement can be further noticed if

both sets of scores are represented within a single chart. The resulting display is shown in Figure 4.7.

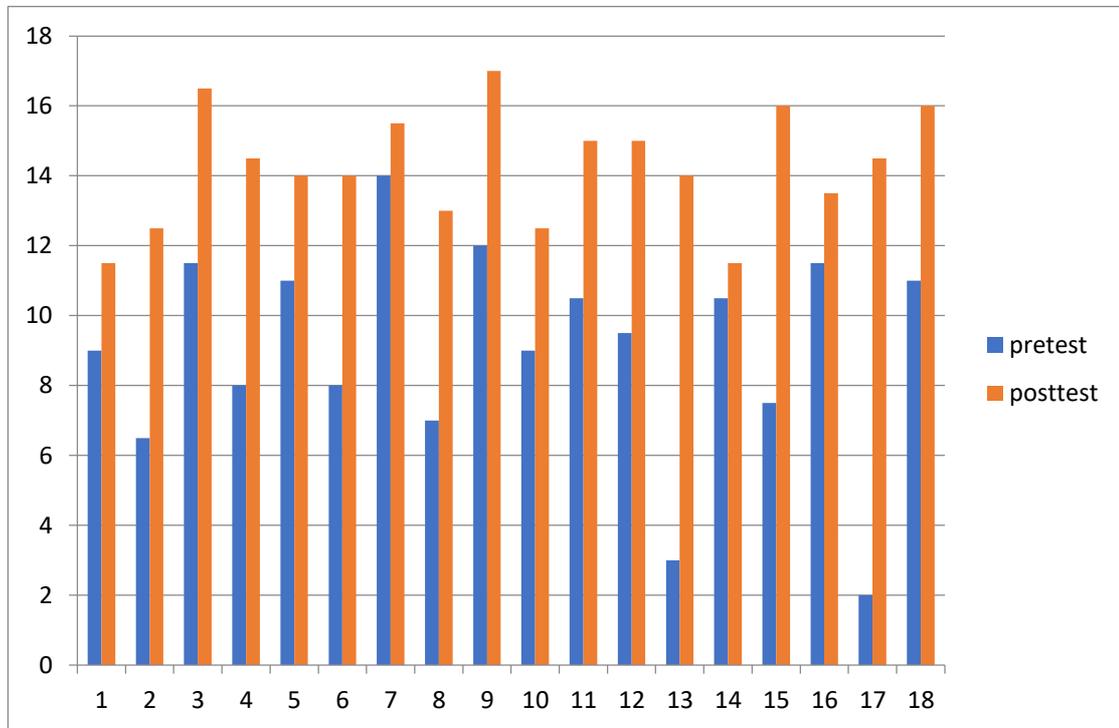


Figure 4.7. The pretest and posttest scores

The bar chart 4.7 illustrates the participants’ obtained pretest (represented by blue) and posttest scores (represented by red). From the graph, we notice that the scores are rather turbulent with many ups and downs. On one side, the pretest scores show a great discrepancy with a peak of 14 (highest mark) and a difference of 12 points (12 is the distance between the highest mark and the lowest mark or simply the range). On the other side, the posttest scores are near to each other with a peak of 17 (highest mark) and a difference of 5.5 points, which is a small number compared to its previous counterpart. This denotes that unlike the pretest, the posttest scores are much homogeneous.

Statistically, one common method for comparing distinct numerical data sets is through the comparison of both means. The mean ( $\bar{x}$ ) refers to the average of the scores. As a measure of central tendency, it is a typical number that somehow represents the

centre or the middle of all numbers. It is calculated by summing up all the values in the data set and then dividing by the total number of values as is shown in the following formula:

$$\bar{x} = \frac{\sum x}{N}$$

Where:

$\sum x$  is the sum of the scores

$N$  is the sample size.

The final results are precisely portrayed in table 4.27 and graph 4.8.

For the above-mentioned purpose, we need to calculate the pretest mean, posttest mean, mean difference.

1. The pretest mean:

$$\bar{x}_{pre} = \frac{\sum x}{N}$$

$$\bar{x}_{pre} = 8.9722$$

2. The posttest mean:

$$\bar{x}_{post} = \frac{\sum x}{N}$$

$$\bar{x}_{post} = 14.2500$$

3. The difference mean  $\bar{x}$  Dif:

Table 4.27

*The Mean Difference*

Pretest mean	Posttest mean	Mean difference
$\bar{x}_{pre} = 8.9722$	$\bar{x}_{post} = 14.2500$	$\bar{x} \text{ Dif} = \bar{x}_{post} - \bar{x}_{pre}$
		$\bar{x} \text{ Dif} = 5.2778$

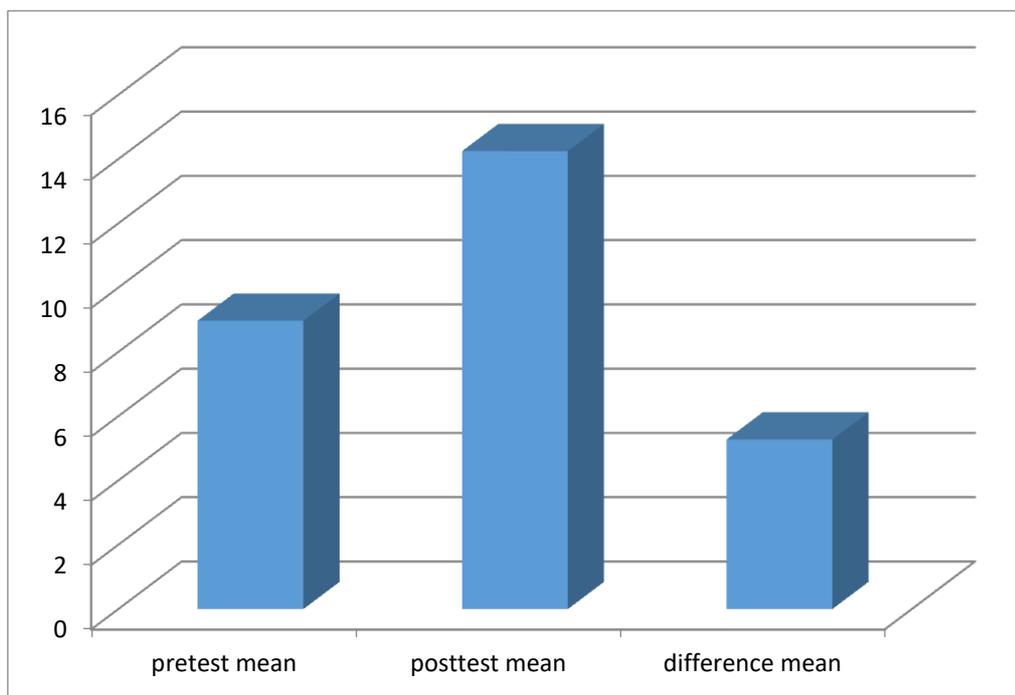


Figure 4.8. The difference mean

From table 4.27 and Figure 4.8, it is apparent that the posttest mean is higher than the pretest mean ( $\bar{x}_{post} > \bar{x}_{pre}$ ). This is an increase of nearly 6 degrees. Besides, we observe that the mean difference is greater than zero (a positive number). Therefore, we can deduce that posttest scores are statistically higher than pretest scores. To this point, we can initially infer that students performed better in the posttest due to the application of the study's treatment.

Though the mean has long been proved viable in comparing varied groups of items, it can neither provide the whole picture about the obtained data nor about the studied phenomenon. It is for this reason that the mean is not practically sufficient to draw inferences about whether the difference between both tests is statistically significant. Nor can it help to come up with a conclusion regarding which hypothesis to accept. On that account, we need not to stop at the level of descriptive statistics but pursue calculating the inferential statistics that is concerned with the various tests of significance. The latter, in turn, would tell how significant the differences between the groups are.

A key issue that should normally precede the selection of the appropriate statistical test, which is in this study the paired sample t-test, is the decision on the distribution of data. A normally distributed data has a bell-shaped density curve that is symmetric by its mean and its spread is determined by the standard deviation. Though it is assumed that large samples held normally distributed data and so require the use of parametric tests, we still need to verify whether the obtained data are normally distributed.

To do so, some numerical outputs and visual diagrams need to be investigated (Lofgren, 2013).

1. As for the numerical outputs, the skewness and kurtosis z-values of both the pretest and posttest must be somewhere in the span of (-1.96 to +1.96), reflecting a normal distribution of data. These values are calculated by dividing the measure (the skewness and kurtosis) by its standard error.
2. As for the visual diagrams, the histograms and Q-Q plots should indicate that our data are approximately normally distributed.
  - A. The numerical outputs are as follows:

Based on the SPSS software package (see Appendix 12), we found out that:

The skewness of the pretest = -0,855

The kurtosis of the pretest = 0,756

The skewness of the posttest = -0,138

The kurtosis of the posttest = -0,750

Therefore,

The skewness z-value of the pretest = -1.59

The kurtosis z-value of the pretest = 0.72

The skewness z-value of the posttest = -0.25

The kurtosis z-value of the posttest = -0.72

We observe that all the four values are neither below -1.96 nor above +1.96, meaning that they are within the interval.

B. The visual diagrams (they were inserted using SPSS) are as follows:

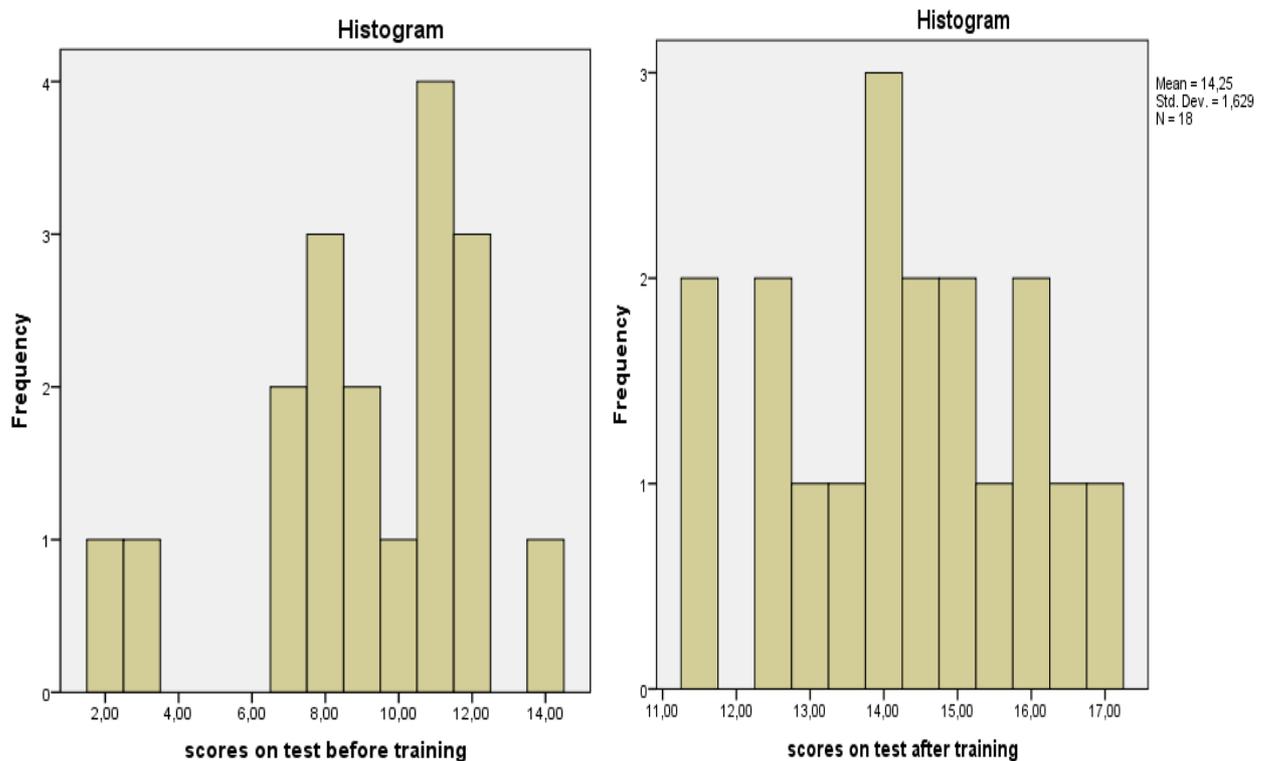


Figure 4.1. Histograms revealing the pretest and posttest scores

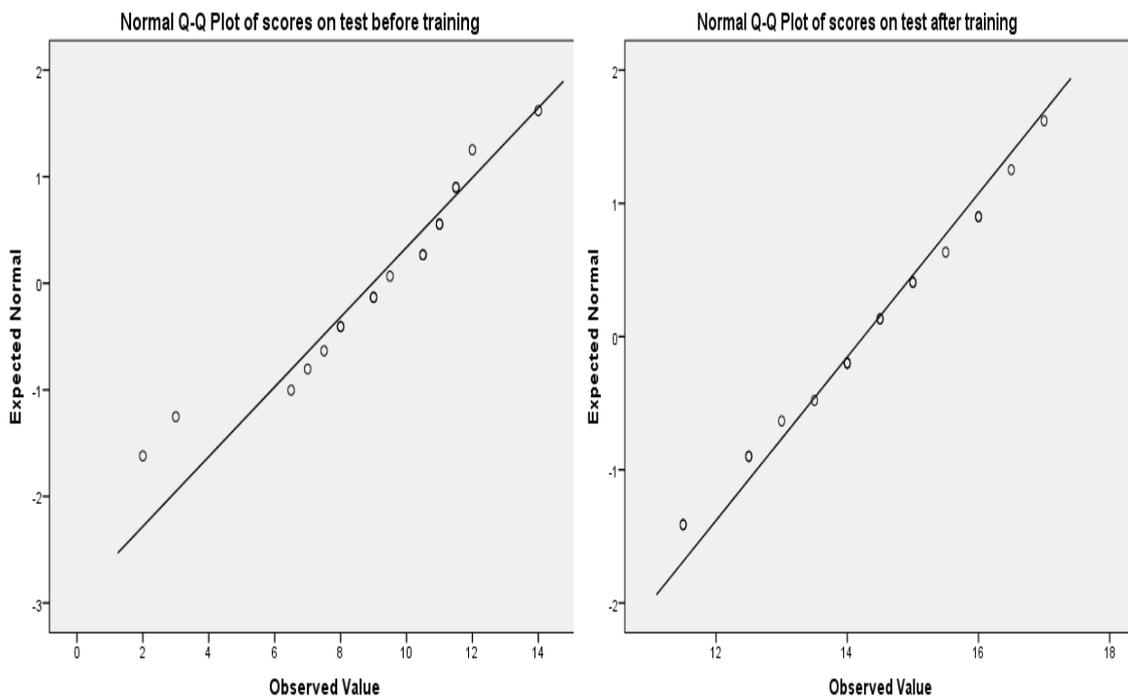


Figure 4.2. Q-Q plots showing the distribution of values

While the histograms in Figure 4.9 represent the frequency of scores, the Q-Q plots in Figure 4.10 demonstrate the distribution of the values in both pretest and posttest. After inspecting both histograms, we notice that they have an approximate shape of a normal curve. Besides, the dots in both Q-Q plots are along the line. Therefore, these observations indicate that our data do not differ from normality, thereby choosing the paired t-test as a parametric test is the right decision.

**4.1.2.2 The paired sample t-test.** The paired sample t-test (also known as the dependent samples t-test. A parametric test strives to compare two sets of scores obtained from the same sample. That is, each entity is measured twice (before and after). This test was originally run to address the study’s third research question (to what extent does the use of the concept mapping strategy influence students’ reading comprehension?). In this regard, it aimed at determining whether concept mapping post-test scores were significantly higher than pre-test scores. As regards the previously mentioned purpose,

this test sets out two hypotheses (the null hypothesis and the alternative hypothesis). After working out various measures, only one hypothesis would be accepted. These hypotheses are as follows:

$$H_0 : \bar{x}_{\text{post}} = \bar{x}_{\text{pre}}$$

$$H_1 : \bar{x}_{\text{post}} > \bar{x}_{\text{pre}}$$

- The null hypothesis ( $H_0$ ) assumes that the mean of the pretest is equal to the mean of the posttest. That is the real mean difference is equal to zero.
- The alternative hypothesis ( $H_1$ ) assumes that the mean of the post-test is higher than the mean of the pretest. That is, there is a difference between the means of the two sets of scores and the real mean difference is higher than zero.

It is important to stress that if the null hypothesis is supported by the results of the paired sample t-test, it would be deduced that there is no true relationship between the independent and dependent variables. Therefore, no statistical significance is noted and the treatment had no effect. The t-test value, which would later be compared to the critical value, was computed manually following these steps:

1. Subtracting posttest scores from their corresponding pretest scores ( $d$ ).
2. Summing the scores of the difference ( $\sum d$ ).
3. Squaring the difference of each score ( $d^2$ ).
4. Summing the squared difference ( $\sum d^2$ ).
5. Applying the formula to get the t-static.
6. Comparing it to the critical value.

The preceding steps are numerically displayed in table 4.28. To confirm the manually obtained results, this test was run again in SPSS (see Appendix 12).

Table 4.28

*The Pre and Posttest Scores with the Difference and Difference Squared*

Student number	The pretest scores (x)	The post test scores (y)	Difference D= x-y	Difference squared (d <sup>2</sup> )
1	9	11.5	-2.5	6.25
2	6.5	12.5	-6	36
3	11.5	16.5	-5	25
4	8	14.5	-6.5	42.25
5	11	14	-3	9
6	8	14	-6	36
7	14	15.5	-1.5	2.25
8	7	13	-6	36
9	12	17	-5	25
10	9	12.5	-3.5	12.25
11	10.5	15	-4.5	20.25
12	9.5	15	-5.5	30.25
13	3	14	-11	121
14	10.5	11.5	-1	1
15	7.5	16	-8.5	72.25
16	11.5	13.5	-2	4
17	2	14.5	-12.5	156.25
18	11	16	-5	25
N = 18			$\sum d = -95$	$\sum d^2 = 660$

The previously obtained results should be used in the following formula to compute the t-value:

$$T = \frac{\frac{\sum d}{N}}{\sqrt{\frac{\sum d^2 - \frac{(\sum d)^2}{N}}{N(N-1)}}$$

$$T = \frac{\frac{95}{18}}{\sqrt{\frac{660 - \frac{95^2}{18}}{18(18-1)}}$$

$$N = 18$$

$$Df = N-1 = 18-1 = 17$$

$t = 7.331$
-------------

The critical value, according to the t-distribution critical values table, is 1.739. The obtainment of this value will depend on (1) the degrees of freedom, and (2) whether the prediction is one- or two-tailed. Table 4.29 summarises the results:

Table 4.29

*Summary of the Results*

Pretest mean	Posttest mean	Mean difference	P-value	T-test	Degree of freedom	Critical value (cv)
$\bar{x}_{pre} = 8.9722$	$\bar{x}_{post} = 0.2500$	5.2778	0.05	7.331	17	1.739

As displayed in table 4.29, at probability value  $\alpha = 0.05$  in social sciences, the t-value is greater than the critical value ( $t > cv$ ). Therefore, based on these results, we reject the null hypothesis in favour of the alternative hypothesis and conclude that the results are due to the applied treatment. In this respect, we can deduce that there is a significant difference between the two groups' mean. That is, the posttest gained scores are higher than the pretest obtained scores. Overall, there is a true relationship between the dependent variable (reading comprehension) and the independent variable (the concept mapping teaching strategy). These findings correlate favorably well with Tabatabaei and Khalili (2014), Beydarani (2015), as well as Tajeddin and Tabatabaei (2016).

**4.1.3 Results of the Post-treatment Questionnaire**

Section One: Lesson Presentation and Implementation

**Item 1.** Please specify which of the following aspects you were most satisfied with:

Table 4.30

*The Items Participants were most satisfied with*

Statement	Number	Percentage
a) The organisation and preparation of lessons	5	26%
b) The clear determination of the lesson objectives	3	17%
c) The teacher-student interaction	3	17%
d) The materials used during the sessions	1	6%
A+b	2	11%
a+c	1	6%
a+d	1	6%
a+b+c	2	11%
Total	18	100%

This item intended to capture the primary facets related to the concept mapping class. Principally, we aimed to discern which of the aspects related to lesson presentation and implementation the participants were most satisfied with. Based on table 4.30, it is evident that each suggested element was chosen more than once, yet at different rates. It is indicated that the top three areas the students reported were the lesson organisation and preparation (26%), the clear determination of the lesson objectives (17%), and the teacher-student interaction (17%). Out of 18 participants, six chose to couple two or three choices. Therefore, we can understand that the concept map-related lessons delivered across class sessions were well-thought of in terms of organisation, presentation, objectives, and interaction, yet they were not designed by means of personalised learning. This explains why only two students were satisfied with the materials used during the sessions (d).

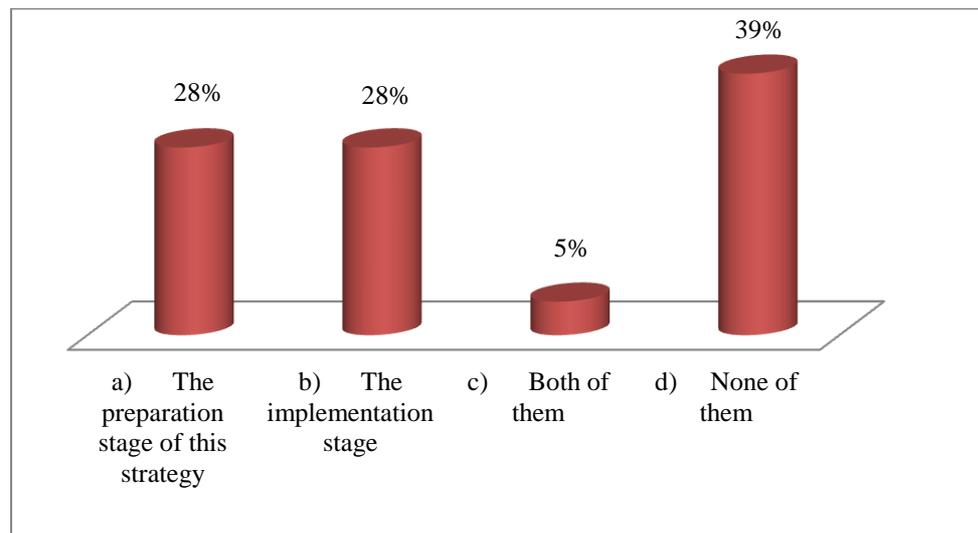
**Item 2.** When it comes to concept mapping, which of the following did you find most difficult?

Whatever your answer, please justify

Table 4.31

*Students' Most Difficult Stages in Concept Mapping*

Statement	Number	Percentage
a) The preparation stage of this strategy	5	28%
b) The implementation stage	5	28%
c) Both of them	1	5%
d) None of them	7	39%
Total	18	100%



*Figure 4.11.* Students' most difficult stages in concept mapping

Unquestionably, implementing instructional strategies for the first time may likely engender some degree of difficulty on the part of students. It is for this reason that we posed this question which aimed typically at pinpointing the most difficult stage (s) of the concept mapping strategy for students. The theoretical foreground related to concept mapping including its definition, characteristics, steps, and scoring served as the

preparation stage while the practical application of this theoretical basis into a concrete diagram represented the implementation stage. Evidently, as shown in table 4.31 and Figure 4.11, five out of 18 students (28%) reported that it was the preparation stage of this strategy that they found most difficult whilst the other five participants identified the implementation stage. One more student (5%) found that both stages were equally difficult. Interestingly, however, the majority (39%) found difficulty neither in the preparation stage nor in the implementation stage.

To elaborate on the answers given within the closed question, we further asked them to provide justifications, which served us to uncover what went wrong or at least what was missing in the course of delivering the lessons. It is important to note that most respondents seemed to like or rather enjoy the way the lessons were delivered, starting from the warming up and presentation stages to the practice and production phases. Nevertheless, the respondents who regarded the preparation stage as the most difficult phase agreed that they needed more time for practice. We see that this response appeared critically important because of the small number of treatment sessions (only 5 sessions).

Concerning those who specified the implementation stage, most responses did not differ from what we depicted earlier; however, and more importantly, they extended their answers revealing that the concept mapping strategy required much focus and attention. A respondent asserted, "I have to focus so much in order to make links that help me design the concept map later" while another reported, "it needs more concentration on the deep details". Furthermore, some viewed that it was time-consuming, maintaining, "it is somehow difficult because it takes time, especially when it is implemented with long texts. However, with short texts, I found it very easy to be applied".

On the other side, the ones who rather found both the preparation stage and the implementation stage quite easy appeared content with the number of sessions they had, as

well as the amount of practice they went through. Besides, they seemed to manage time quite well in accordance with the tasks they ought to accomplish. While one respondent said, “once you start writing the main ideas, the rest just flow smoothly. It was not hard at all to finish it all”, another put, “concept mapping is a good strategy that helped me a lot in summarising texts and take the main ideas in an organised way. The latter lets you gain more time, especially when you answer the text-related questions. So, I did not find any difficulties”.

Section Two: Concept Mapping Application

**Item 3.** Please, tick (✓) the appropriate box.

Table 4.32

*The Benefits of Instructional Concept Maps*

Statements about the use of instructional concept maps	Yes		No	
	N	%	N	%
a) It is easy to construct concept maps	15	83%	3	17%
b) The use of concept maps helps students to summarise the text, determine the main and sub-ideas, and draw connections among them.	18	100%	0	0%
c) Concept mapping helps link the different parts of the text (concepts, ideas, explanations, examples) together	18	100%	0	0%
d) The use of concept maps helps in improving students’ reading and diminishing the deficiencies in reading comprehension	18	100%	0	0%
e) Concept mapping stimulates students to read analytically and independently.	16	89%	2	11%

This question intended to pinpoint the aspects concept mapping serves to foster. We wanted to appraise its efficacy with respect to such elements as the ease of construction, the summarisation of text, and the linkage of ideas. We also sought to ascertain whether it fosters analytical reading and diminishes the deficiencies in reading comprehension. Table 4.32 shows that the majority of participants responded positively to all the suggested elements. Interestingly, without any exception, the entire sample chose to answer with 'yes' (100%) when it came to 'construction, summarisation of text, and linkage of idea'.

More precisely, the use of concept maps helped them to summarise the text, determine the main and sub-ideas, draw connections between its different parts, and diminish the deficiencies in reading comprehension as well. Concerning its construction, 83% of the participants, which is ultimately a high percentage, found that the creation of such a diagram was easy while only 17% found the contrary. This discrepancy majorly emanates from the fact that the former participants were well-trained to draw concept maps due to their regular class attendance (the treatment sessions). As far as the analytical reading is concerned, 89% felt that concept mapping stimulated them to read analytically and independently while only 2 (11%) did not as they responded with 'no'.

**Item 4.** While using the concept mapping technique, have you noticed that your prior knowledge of the topic of the reading material has been activated?

Whatever your answer, please say how?

Table 4.33

*Concept Mapping and Prior Knowledge*

Statement	Number	Percentage
Yes	18	100%
No	0	0%
Total	18	100%

The intention of this item was to affirm that the concept mapping strategy makes students consciously capable of activating their prior knowledge related to the topic of the reading material. Unexpectedly, as shown in table 4.33, this assumption has been confirmed by the total number of respondents (18 students representing 100%) who opted for 'yes'. It seems that they were able to link the pieces of information presented in the print with their preexisting structures. Some stated the following: "My background knowledge came into use in order to clear up any ambiguous parts related to the topic of the text", "it assisted me linking my knowledge and the new one which is presented in the reading material", "I started linking what I already had in mind to what was in the text. Then, I added both in the concept map", "my ideas about the topic were activated and remembered which allowed me to link them to the new information I was reading".

Another student annotated, "as soon as the process of mapping starts, the related background knowledge starts to be activated, the thing that might help the reader make a relevant representation about the subject (topic) of the text. Therefore, prior and new ideas can be linked together for a more accurate and detailed representation". Through their answers, some students drew our attention to an additional benefit of concept mapping. That is the generation of ideas. While one put, "it helps to better generate the ideas", another annotated, "I noticed that I unconsciously added some ideas which

were not mentioned in the reading material in the concept map”. This brings to light what Novak and Cañas (2015) regarded as the importance of concept mapping in activating prior knowledge that constitutes the foundation of meaningful learning.

**Item 5.** By using the concept mapping technique, have you noticed any improvement in your ability to remember the ideas of the text after finishing reading it?

Table 4.34

*Concept Mapping and Information Recall*

Statement	Number	Percentage
Yes	18	100%
No	0	0%
Total	18	100%

The current question aimed at examining whether or not the concept mapping strategy serves to reinforce the students’ remembering of information initially presented in the text. As displayed in table 4.34, the whole sample (100%) agreed on the response ‘yes’, meaning that they noticed an improvement in their ability of remembering the ideas of the text after finishing reading it. One respondent denoted that it was only after applying the concept mapping strategy that s/he could recall the details of the text even after a period from reading it. On this account, s/he put, “unlike before, I can now remember the texts’ ideas after a long time from reading it”.

Additionally, further participants made it clear that recalling information from their own constructed concept maps was much more effective than recalling it from the written material. A respondent revealed, “I found it easier to recall almost all the details from the map than from the text; therefore, I did not have to read the text again”. This ease of remembering stems mainly from the fact that its hierarchical structure helps the

brain to store pieces of information in an intertwined and connected form, making it accessible for future recall. These results go in accordance with what the literature (such as Azarnoosh & Naeini, 2008. and Johnson, n. d.) often suggests regarding the potentiality of concept mapping in enhancing students' memorisation and retrieval.

**Item 6.** How did you find the use of the concept mapping strategy?

By incorporating this question, we meant specifically to determine the respondents' attitudes and feelings regarding the issue under investigation. That is, we endeavoured to give them an extra chance to manifest their thoughts and voice their opinion about the used strategy. More specifically, we were driven by the desire to uncover how they found the use of the concept mapping strategy. Importantly, through the inspection of their answers, the respondents appeared to share common responses, yet expressed differently. Interestingly, some acknowledged that in addition to it being supportive to the act of reading, it was also advantageous to stress-reduction that, up to the present time, has never been empirically investigated as an effect of employing concept maps.

Some expressed that it would be quite upset if they were to deal with long texts without any strategy to be applied. This is because they keep on checking the text incessantly in order to answer its reading comprehension questions. Therefore, concept maps lower stress levels since they tend to summarise the whole text in one single diagram. This was clearly and distinctively expressed through the words of one participant who initially preferred not to employ this strategy in answering the reading comprehension questions of the posttest. S/he said:

I thought I could answer the questions following the text without the help of concept mapping. However, I was totally mistaken because I lost exactly 35 minutes just rechecking and referring back to the text. Then, I could not link the ideas. Nor could I know what is wrong or right. I was in real trouble and stress. Afterward, I drew my concept map and answered the whole test in just 20 minutes.

Another issue that emerged after the inspection of their answers was the joy this strategy brings about to the reading task. One respondent maintained, “Concept mapping is not only helpful in reading and understanding the text, but also so enjoyable when used to answer the activities”. We additionally observed during the treatment sessions that this strategy was truly great fun for them. This is because it was in their best interest to personally choose the relevant concepts, nodes, arrows, and crosslinks without the treatment of the teacher. This observation may also draw our attention to another important concern that concept maps work on to foster. This revolves around autonomous learning which can be manifested when participants took the responsibility of creating, monitoring, and assessing their own concept maps.

In this respect, it seems worthwhile to note that we further observed, during the treatment application, that collaborative learning was, to some extent, achieved. Most participants appeared to solidify what had been read across texts by means of collaborative activities. Additionally, the exchange of ideas and maintenance of relationships generally took place when they were assigned varied tasks. Therefore, we can say that the majority of participants had a positive attitude towards the use of the concept mapping strategy.

**Item 7.** After trying this strategy, describe the way (how) this strategy helped you in comprehending different texts.

The issue behind this question was to assure the researchers that all relevant issues regarding the way concept mapping promotes the comprehension of different texts have been covered. We strived to allow the respondents to identify other possible advantages that were not captured in item 3 (section 2) and have a close relation with reading comprehension. Almost all the answers turned around the previously mentioned themes, namely the summarisation of texts, the linkage of the varied parts, and the activation of prior knowledge. Nevertheless, a few answers called our attention to an extra matter that can be truly consolidated through the implementation of instructional concept maps.

It was revealed that this strategy contributed to their critical thinking. One respondent maintained, “it allowed me to reflect on the ideas of the text and the ones I would add”. Based on the need for determining the main, sub-ideas, as well as for drawing the adequate connection between them, the participants reported that they were able to figure out some facts and form particular judgments based on them. For instance, one added, “as I started writing the main ideas and linking the details in the concept map, I found that I helped myself in grasping the gist of the text and constructing a mental image that helped me later drawing conclusions”. Another participant summed up the benefits of concept mapping as follows, “it helps saving time, organising ideas, fostering the discovery of new concepts, sparking creativity, absorbing information faster, and consolidating knowledge during the learning process and much more”.

**Item 8.** With regard to the deep understanding of the text, did you find that concept mapping is:

Please justify.....

Table 4.35

*Concept Mapping and Traditional Ways of Approaching a Text*

Statement	Number	Percentage
More useful than the traditional ways of approaching a text.	16	89%
Less useful than the traditional ways of approaching a text	0	0%
Equally useful to the traditional ways of approaching a text	2	11%
Total	18	100%

**Item 9.** Do you prefer the use of the concept mapping strategy in teaching other courses?

if yes, which courses?

Table 4.36

*The Frequency of Using Concept Mapping in Teaching other Courses*

Statement	Number	Percentage
Yes	17	94%
No	1	6%
Total	18	100%

**Item 10.** Will you use concept mapping in studying other courses (when necessary)?

Whatever your answer, please justify.

Table 4.37

*The Possibility of Using Concept Mapping in Studying other Courses*

Statement	Number	Percentage
Yes	18	100%
No	0	0%
Total	18	100%

Items 8, 9, and 10 were grouped together. They sought, respectively, to figure out how useful this strategy was compared to traditional ways of approaching a text, whether the respondents preferred it to be employed in other courses, and whether they intended to utilise it for studying other courses. To begin with, table 4.35 demonstrates that, except for two respondents (11%) who regarded that concept mapping was equally useful to the traditional ways of approaching a text, 16 students (representing 89%) considered it to be more useful than the traditional ways of approaching a text. While one student maintained, “this strategy is more useful than traditional ways because it is a real shortcut to deep understanding”, another reported, “...because I was able to answer all the questions without the need to refer back to the text”. That is to say, their answers ranged from ‘equally useful’ to ‘more useful’. This clearly explains the effectiveness this strategy yields.

Subsequently, table 4.36 signifies that, except for one student, all the participants in the sample (94%) preferred the utilisation of the concept mapping strategy in teaching other courses. The later, as had been suggested, will be courses such as pragmatics, literature, learning theories, communication, and applied linguistics. We notice that what is commonly shared among these courses is the huge amount of information they incorporate; they may lead to cognitive overload. As represented in table 4.37, the total number of students agreed on the future use of concept mapping. They portrayed that they will mainly use it for memorising lectures, retrieving information, preparing for

the examination, making summaries to lessons, outlining presentations, and planning for research projects.

### **Section Three: Challenges and Further Suggestions**

**Item 11.** Did you face any challenges and constraints during the process of constructing different concept maps?

This section was included to provide the respondents with the opportunity to reveal the difficulties, as well as the challenges they encountered in the course of receiving the treatment, thereby allowing us to unravel the limitations of the proposed strategy and/or the chosen teaching materials as well. The latter were to be inspected in terms of the selection of texts and activities. Concerning the selected materials, none of the problems was so far reported. Nevertheless, the sole issue a few students agreed upon was the difficulty of applying such a strategy with moderately long texts. The majority, on the other side, highlighted that it was extremely beneficial not only for managing time, but also for summarising lengthy texts.

**Item 12.** Do you have any suggestions or comments concerning the better implementation of concept maps to assist students in overcoming the reading comprehension difficulties they usually encounter?

The current section served to offer the respondents the chance to voice their opinion for the better application of the concept mapping strategy in the field of teaching and learning. Noticeably, most of the students annotated that it was such a rewarding and gratifying experience they ever had. As such, one student reported, “I am thankful for being introduced to concept mapping. I wish I knew about this strategy earlier than this” while another put, “I do not have particular suggestions, but I found it an extremely interesting and amazing experience”. In a similar vein, another

respondent explained that s/he felt a remarkable improvement in his/her ability to comprehend varied texts.

Most importantly, a considerable number of students (around eight) suggested the implementation of this strategy as a means of explaining and outlining lessons. A respondent asserted, “it should be included as a part in pedagogy” while another, “I wish it would be implemented in EFL classes as an essential part of the courses”. To them, for the sake of avoiding confusion and achieving a high degree of success, the best way this strategy should be taught is through the step-by-step explanations. In this respect, a respondent reported, “I hope it will be implemented in classrooms as soon as possible. However, it should be introduced to students just like you did with us. This means to move gradually and step by step, starting from the shortest and simplest materials to the longest and most difficult ones”.

**4.1.4 Results of the Teachers’ Interview**

**Section One: General knowledge**

**Q01.** Would you specify your degree?

Table 4.38

*Teachers’ Degree*

Option	Number
Doctor	1
Magister	2
Master	1
Total	4

**Q02.** How long have you been teaching English at university?

Table 4.39

*Teachers' Period of Teaching*

Interviewers	Span (years)
A	5
B	12
C	3
D	6

It has long been established that the teacher's profile has a cumulative effect on students learning outcomes, which is why we started by these questions. Since we intentionally interviewed teachers who are in charge of the reading course, we thought that posing such questions with regard to their degree and period of teaching would help us to figure out whether these elements affect their decisions, as well as the way of teaching reading in the classroom. As shown in table 4.38, the four teachers do not hold the same degree as one has a doctorate, two have a magister degree, and only one has a master's degree. Besides, and as demonstrated in table 4.39, they have been teaching English at the university level for a period that ranges from 3 to 12 years. That is to say, this variation is beneficial to collect and attain wealth and varied data that may likely help us answering the research questions.

**Q03.** How do you find teaching reading?

Before we dive deeper into the way interviewees approach reading in their classrooms, it is essential to realise how they generally regard or rather find teaching the course of reading. As suggested by their answers, the four teachers considered the process of teaching reading neither easy nor difficult, but rather challenging. As this consensus

was not expected, we found the issue rather critical. Therefore, we asked them to clarify why they believed so. The majority appeared to agree on one major theme, namely learner differences.

They assumed that their classes are homogeneous, embedding students who have different learning styles, experiences, learning strategies, motivation levels, and language aptitude. Therefore, this makes the unification or rather the selection of instructional practices an overwhelming and daunting task. Teacher B said, “choosing one reading material does not all the time suit the interest of individual students”. She also added, “to settle the issue down, I often ask them to suggest some topics for future readings, but still, they cannot agree on one”. Furthermore, teacher C explained that choosing a text with a relatively suitable level of difficulty could not generally be achievable, maintaining, “Good students seem to get bored easily when the text does not meet their expectations. Consider the other way around, average or low achievers usually give up completely if they find the text is rather difficult”.

### **Section Two: Teachers’ practices in the teaching of reading comprehension**

#### **Q04. How do you teach reading?**

Since classroom observation was not a data collection tool, this question was meant to identify the plan of action or simply the procedures teachers too often seek to practically teach reading. Their answers were outlined in table 3.43.

Table 4.40

*The Procedure of Teaching Reading*

Interviewers	Procedure
A	<p>I provide a theoretical framework for reading.</p> <p>I raise their attention to the benefits of reading.</p> <p>I provide texts, then ask them to answer the reading comprehension questions, then I provide the correction.</p>
B	<p>Based on a given purpose and students’ interests, I select a text.</p> <p>They next read and answer the questions.</p> <p>I sometimes use before, during, after reading strategies.</p>
C	<p>I give the students texts to be read,</p> <p>We discuss the text,</p> <p>We answer the comprehension questions,</p> <p>I give them the chance to discuss additional points about the text.</p>
D	<p>I teach some theoretical concepts</p> <p>I allow the students to practice reading passages and answer their questions.</p>

Table 4.40 shows that the four teachers seem to have diverse plans, yet share a number of points. Providing a theoretical framework that incorporates the diverse definitions, types, and benefits of reading forms the basis for building a considerable knowledge of this skill. This was mainly highlighted by teachers A and D. In essence, the common practice among teachers was to give students some reading materials, ask them to answer the follow-up questions, and provide the correction afterward. Though this course of action usually pertains to the course of reading, it does not all the time make a rewarding reading experience. Importantly, teacher C depends heavily on discussion, allowing the students to further grasp the text and react to the content. Even more

importantly, teacher B made an interesting point; she makes use of a variety of reading strategies, among which, she mentioned, the pre-reading strategies (introducing the topic through question-answer relationships), during reading strategies (summarising the text), and after reading strategies (class discussion).

**Q05.** Do your students have any reading comprehension difficulties?

If yes, would you please specify them.

This question sought to uncover the utmost reading comprehension difficulties encountered by students but from the standpoint of teachers whose answers were summarised in table 3.42.

Table 4.41

*Students' Reading Comprehension Difficulties*

Interviewers	Reading difficulties
A	Comprehending new vocabulary
	Guessing the genre of the text
	Connecting the ideas of the text
	Lacking attention
B	Understanding vocabulary
	Understanding the overall hidden message
C	Understanding vocabulary
	Calling necessary background knowledge
D	Decoding
	Understanding the foreign culture

Table 4.41 illustrates that the most common reading comprehension problem for students is the limitation or insufficiency of vocabulary knowledge, which was reported in the first place by teachers A, B, and C. Unsurprisingly, having limited vocabulary would affect the ability of comprehending what is being read. It was also shown that other obstacles may include not only the failure to keep focused, but also the inability to determine the text's genre, to interpret the underlying meaning, to bring about the relevant background knowledge, and to connect the ideas of the text. More importantly, all these elements were so far foregrounded by the simple view of reading (SVR) under the umbrella of word recognition skills and language comprehension ability. Chiefly, it must be noted that teacher D further spotlighted that students also had trouble understanding the cultural elements of the foreign language. Unquestionably, language reflects a unique cultural background. Therefore, cultural unfamiliarity stands as a hurdle in comprehending the semantic or pragmatic meanings of individual words and/or expressions.

**Q06.** What do you think are the reasons behind students' reading comprehension difficulties?

Since the teacher is a valuable source of information and is the more knowledgeable member of the classroom, the four instructors were also chosen to reply to this question wherein the intension was to uncover the causes, based on which students' reading comprehension difficulties may germinate. The responses were demonstrated in table 4.42.

Table 4.42

*The reasons behind Students' Reading Comprehension Difficulties*

Interviewers	Reasons
A	Lack of in-class and out class reading practices. Overcrowded classes.
B	Lack of practicing reading in class and out of class. Showing no intension to read. No clear and appropriate instruction about how reading should be done. Overcrowded classrooms.
C	Lack of practice. No enough knowledge of different issues.
D	Lack of reading. Overcrowded classes.

Though the responses gathered are clearly varied, they can be assorted into three basic recurrent themes. The latter are the lack of practice, overcrowded classes, and inadequate teaching.

**Lack of practice**

The four teachers considered that the lack of practice stands as a barrier to successful reading. Obviously, the more students read, the better they become fluent in such a skill. Therefore, it is necessary for teachers to maximise their time working on creating multiple practice opportunities. Nevertheless, this is not enough to alleviate reading-related problems. While teacher A claimed, “Students can seize the opportunity to read outside the classroom too”, teacher B asserted, “Dedicating whole sessions to

reading was and still is impossible. Therefore, they can develop this skill on their own”. This brings to light the issue of students’ autonomy that will also set them up for reading success.

### **Overcrowded classes**

The issue of overcrowded classrooms has long instigated researchers to carry out thorough research studies inspecting its impact on students’ academic success. This is exactly why the four teachers highlighted it as a source of reading difficulties. Teacher B portrayed, “overcrowded classrooms for learning, in general, is never good and for reading is worst”. In view of the fact that reading is not only limited to the skill of word recognition, but also to the interaction of a number of elements, namely background knowledge, vocabulary, language form, language content, and language use, the noise level will relatively be disrupting, thereby hindering students from maintaining focus. Besides, this kind of classroom will affect not only the performance of students, leading them to spend more time off-task, but also the progressive activities designed by teachers. Through the provided answers, we came to the realisation that overcrowded classrooms hinder teachers from listening to individual students while they are reading passages, from providing the necessary feedback, and from maintaining an effective classroom discussion.

### **Inadequate teaching**

It has long been argued that the instruction that lacks quantity and/or quality may likely bring forth several obstacles and entrain relatively low academic gains. This is exactly what teacher B calls our attention to. One of the biggest downfalls in the process of teaching reading is sticking to providing the conceptual framework including its definitions, types, characteristics without incorporating some simple procedures that enable students to bring the dull text to life. Teacher B affirmed, “one of our roles as

teachers of the course of reading is to introduce students to a variety of reading strategies, especially that we have many strategies related to writing and speaking”. That is to say, making some effective and practical methods and strategies known to students is of prime importance.

**Q07.** What kind of support do you usually give to learners who are low achievers in terms of reading comprehension?

Table 4.43

*Teachers’ Support to Low Achievers*

Interviewers	Reasons
A	Providing some vocabulary learning strategies (guessing from context).
B	Encouraging them to read outside the classroom. Providing links to books and websites.
C	Reading and practicing more to enlarge their vocabulary.
D	Ordering them to read inside or outside class. Showing them how to understand the overall ideas of a text and not every word given. Showing them the art of skipping insignificant ideas or passages.

Since there are various approaches and patterns that can possibly be used to reduce the reading obstacles, posing such a question, whose results were summarised in table 4.43, in such a study was pivotal. This was meant to point out the ways these teachers usually seek to assist their students to be better able to comprehend texts. The assistance

of teachers A and C seems to centre on vocabulary extension since what they usually give as support revolves around providing opportunities for vocabulary learning. However, for foreign language learners, the acquisition of new items is a never-ending task. This explains why teacher D recognised the way towards understanding the holistic meaning of the text and disregarding the unnecessary parts as a focal point. Substantially, teacher B along with teacher D attempted to support low achievers in terms of reading comprehension by encouraging them to do further reading outside the classroom.

**Q08.** Do you encourage students, especially the ones with reading comprehension difficulties, to use particular strategies in order to overcome these difficulties?

If yes, what kind of strategies?

Table 4.44

*The Teachers' Encouragement for the Use of Reading Strategies*

Interviewers	Reasons
A	English-English dictionaries
B	Guessing before reading
	Summarisation
	Using the clues in the text
C	Nothing
D	Skimming
	Scanning
	Using dictionaries
	Summarising
A	Paraphrasing

As we strived to go into the specifics about the kind of instructional support, this question was meant precisely to identify the set of strategies used by the interviewees of this study to overcome the foregoing reading comprehension difficulties. As shown in table 4.44, while other teachers seem to utilise at least one strategy, teacher C appears to use none. The methods that featured comprised the following: English-English dictionaries, guessing before reading, summarisation, using the clues in the text, skimming, scanning, and paraphrasing. As shown in the previous questions, teacher A has a tendency towards vocabulary instruction; it is for this reason that his usage of instructional reading strategies is limited to English-English dictionaries. Substantially, teacher D seems to employ skimming, scanning, dictionaries, summarising, and paraphrasing. Whereas teacher B takes advantage of summarisation, guessing before reading, and using the clues of the text. Remarkably, this teacher was using prediction and making inferences unknowingly.

**Q9.** Do you employ graphic organisers in your reading classes?

If yes, please say which one do you usually make use of?

Table 4.45

*The Possibility of Using Graphic Organisers in the Reading Class*

Interviewers	Yes/no	Which one?
A	No	/
B	No	/
C	No	/
D	Yes	Concept mapping

In agreement with the literature, graphic organisers are frequently used strategies to mitigate the obstacles faced by students while reading. This is exactly why we chose this question. The latter attempted to unravel whether or not the four informants are aware of and use such an instructional tool. It appears, in table 4.45, that only one out of four teachers makes the most of graphic organisers in his classroom. More specifically, he utilises the concept mapping strategy. Essentially, his answer was truly of prime importance since what he employs in his classroom was the issue under investigation.

**Q10.** Do you use concept mapping in your reading classes?

If yes, please say why?

Our concern was remained as to whether the teachers know the concept mapping and utilise it practically in their reading classes or not. Since in the proceeding question a total number of three teachers argued that they never applied graphic organisers in the course of teaching reading, reasonably, in this question, they would answer negatively. That is, they completely do not make use of this strategy to help their students in their reading comprehension difficulties. Nonetheless, teacher D; as already noted, seems to do so. In this way, he was the only one to answer the follow-up question (if yes, please say why?). He notified, “I use concept mapping because it helps students to understand meticulous features about the text we are dealing with. It allows the teacher to categorise different patterns, such as personalities, events, plot, protagonists, antagonists, etc. This strategy helps learners to draw a clear image of the text”. What emerges from his response is that he is well aware that concept mapping is a good way to visualise not only the key and sub-ideas in the text, but also the relationships existing among them.

**Q11.** If no, what are the reasons that hinder you from adopting and using graphic organisers, especially concept maps into your instruction, in general, and your reading classes, in particular?

Table 4.46

*The Reasons that Hinder the Adoption of Concept Mapping*

Interviewers	Reasons
A	Time is not enough  I have no idea concerning concept maps
B	Time restriction  I am not aware of this strategy
C	Time limitation  I did not know about it
D	/

We embraced this question for the simple reason which was our expectation that there will be some interviewees who show complete disuse of such strategy. Chiefly, as portrayed in table 4.46, the majority of teachers seem to agree that the primary reasons that hinder them from adopting and using graphic organisers, especially concept maps into their instruction, in general, and reading classes, in particular, are time restriction, as well as the unfamiliarity with this strategy. They acknowledged that these diagrams required much class time in order for them to be constructed, organised, and checked. We also came to the realisation that these teachers did not come across concept mapping through their own readings. Nor did they have the opportunity, throughout their career, to be introduced to it.

**Q12.** What do you think about the use of the concept mapping strategy to reinforce students' reading and reduce their comprehension difficulties?

Though the majority of teachers were not acquainted with concept maps, we attempted, through this question and the explanations we provided, to uncover their opinions about its implementation for promoting students' reading and reducing their comprehension difficulties. What emerged from their responses was that they had a positive attitude towards its application in the classroom. They viewed it may likely be a resourceful strategy, especially that it keeps one's attention to the key ideas high, as well as maintains students' focus and engagement in the reading task. In light of this, teacher B reported, "I will think about it in my future lessons since it keeps students attentive".

#### **4.2 Discussion and Summary of the Findings**

Unlike the foregoing section that was solely confined to the summarisation and display of data originally obtained from the four data collection tools mainly the pretreatment questionnaire, the quasi experimentation, the post-treatment questionnaire, and the teachers' interview, the present part includes a summary of the findings along with discussion and conclusions. Therefore, it was vital to revisit the fundamentals constituting the subject under investigation.

This research was initiated as an attempt to enhance the reading comprehension of master students at Biskra University with the concept mapping teaching strategy. More specifically, it was undertaken to explore the paramount reasons leading to reading comprehension difficulties and to examine the effectiveness of using concept mapping as a means to improve reading comprehension. In addition, it attempted to discern the factors that preclude teachers from integrating concept maps in the process of instruction, as well as to specify the attitudes and perceptions of both teachers and students regarding the use of this strategy.

Within this framework, and as our study did not reflect a purely qualitative or quantitative perspective, but rather the combination of both, pragmatism was adopted as the research paradigm. In conformity with this paradigm, a Mixed-methods approach was employed to address the research questions. There were four principal research questions addressed in this study. These questions along with the matching constructed hypotheses will be discussed in the subsequent section.

Research Question 1: What are the main reasons that may cause students' reading comprehension difficulties?

The first question inquired about the leading causes of students' reading comprehension difficulties. The hypothesis developed, accordingly, considered that potential reasons may be the lack of opportunities for practicing reading and the disuse of effective reading strategies. To get more meaningful answers, a pretreatment questionnaire, which was later analysed by means of tabular and graphical presentations, was administered to a large number of students (26 participants) in an effort to receive as many relevant responses as possible. Seeking insightful comments, this instrument incorporated in addition to multiple-choice questions and Likert scale, typical open-ended questions.

It was revealed that the majority of respondents, in the interest of research purposes, were personally inclined to pursue their master's studies. The latter have been substantially regarded as more difficult compared to license degree. Expectedly, the master's degree rests on how committed the student is; it requires a substantial effort and working full-time. Essentially, it demands from the students to broaden their knowledge, requiring them to intellectually conceptualise and synthesise information. The difficulty lies also in the necessity to optimise the capacity of decision making, as well as the skills of reflection, research, and reasoning. More importantly, this advanced degree can never

be easily realised for it does not only require the digging deeper into an area of knowledge, but also the integration of the previously learnt structures into the new one.

The fact that a great number of participants assumed that, in their academic context, reading was giving as much importance as other skills was not consistent with the data collected in the subsequent questions. Notably, the frequency of both the in-class assignments and homework did not have a high percent, meaning that these students were not regularly and steadily asked to accomplish some reading tasks. Addedly, it was also understandable that though their answers reflected great levels of enjoyment for reading, in practical terms, the majority of respondents lacked intrinsic motivation to read since they seemed to occasionally do so. These facts, in turn, impede the growth of the reading skill, making the reduction of the embedded difficulties sound even harder.

This point was well-documented when the participants were asked to reveal their comprehension difficulties which, according to their view, were confined to the inability to recognising the type/topic of text, connecting background knowledge with the new one, understanding complex language forms, understanding new vocabulary, knowing the writer's intentions, and failing to keep focused. Besides, in the conducted interview, these obstacles were exactly noted by teachers, who are originally and for the time being in charge of the reading course of freshmen. Markedly, to them, the limitation or insufficiency of vocabulary knowledge is set to become the major hindrance in reading.

Reasonably, if the words within the same passage are not well-understood, the reader cannot make sense of what s/he reads. It is important to note that, in order for vocabulary development to accommodate the requirements for the academic year the student is in, vocabulary instruction should start as early as the foreign language starts to be taught. One of the teachers lent support to this point when s/he reported the provision of some vocabulary learning strategies. Crucial to these facts is our inspection of the pre

and posttest results. With respect to what the participants reported concerning the ease of the linguistic forms used in both tests, it was surprising to find out that their scores of the posttest were much higher than the pretest. Consequently, it can be argued that vocabulary knowledge does not necessarily assure reading comprehension.

To detect the potential reasons behind students' reading comprehension difficulties, we discussed the matter based on different sources. In the case of students, the lack of exposure to different text genres and structures, the lack of opportunities for practicing reading, the disuse of some effective reading strategies, the learning in overcrowded classrooms, and the poor background knowledge were identified as the main hindrances to the act of comprehending different materials. In this sense, teachers also detected some of these causes, namely the lack of practice, overcrowded classes, and inadequate teaching. Inadequate teaching is in the sense of irrelevant instructional practices. To clarify, whenever required, introducing students to some effective instructional strategies that would essentially help them for a better comprehension of texts is an example of adequate reading instruction.

As pointed out earlier, the lack of practice stands as a barrier to successful reading. Regular reading practices, especially if guided, would help to enhance the sub-elements needed to gain word recognition skills and language comprehension ability. Owing to the fact that students do not have similar learning experiences, their weaknesses in reading cannot be justified by means of a single cause. Following this interpretation, it can be concluded that the same reading hurdle does not necessarily bear the same cause. We can say, therefore, that the foregoing causes, including the lack of opportunities for practicing reading and the disuse of effective reading strategies will inevitably impair specific aspects concerning the reading behaviour.

Research Question 2: To what extent does the use of the concept mapping strategy influence students' reading comprehension?

This question was designed expressly to probe the effect of using concept mapping as a strategy on students' reading comprehension. It was hypothesised that the use of concept mapping may work on enhancing students' reading comprehension. As far as this part of the study that involved the process of manipulating the independent variable was concerned, quasi-experimentation with one-group pre-test-post-test design was used as the research design for this investigation. Following this design, the participants were tested before and after the implementation of the treatment by means of pre and posttest, respectively.

In reliance on the presented scoring scale, it was demonstrated that the scores of the posttest are far higher than the pretest. Addedly, after carrying out the comparison between both tests' mean value, the posttest mean was proved to be higher than the pretest mean. As a preliminary conclusion, these findings stood as a signal for the students' better performance in the posttest compared to the pretest. To redound and reinforce the purpose of this question, these findings had to be statistically corroborated. Since the data were checked for normality, the paired samples t-test was chosen to measure the same independent variable, seeking any difference among the scores.

Consequently, and reflecting on the t-value which was greater than the critical value, the null hypothesis was automatically rejected in favor of the alternative hypothesis. Correspondingly, we can say that the concept mapping post-test scores were significantly higher than pre-test scores. In this regard, we can shed light on the real association existing between the dependent variable (reading comprehension) and the independent one (the concept mapping teaching strategy), stressing out that the results, which were so far gained, were due to the implemented treatment and not extraneous variables or the chance.

That is to say, the statistical significance was noted and the treatment had an effect. It was accordingly clear, then, that the implementation of the concept mapping as a reading strategy yielded positive outcomes.

The participants' open-ended responses in the post-treatment questionnaire seemed to be consistent with these statistical findings; consequently, they further validated the usefulness and the practicality of this strategy concerning reading comprehension. Referring back to the post-treatment results' section, almost all the participants underlined that the used strategy markedly allowed them to summarise the text, link its parts, and organise its ideas. This argument is very plausible since this instructional tool makes use of a variety of shapes, such as nodes and circles to demonstrate the different relations among a set of connected concepts and ideas belonging to the same topic. In this respect, it is worth mentioning that if successfully constructed, concept maps encourage the discovery of the main themes and/or ideas that need to be emphasised in the text, the thing that may likely help students save time when answering the subsequent reading comprehension questions.

Likewise, it was also delineated that this visual display worked as a trigger for prior knowledge activation. This can be justified by the fact that its hierarchical structure stimulates the cognitive correlation between the preexisting structures serving as the old knowledge and the information presented in the text serving as the new one. This process, according to Novak and Cañas (2015), will eventually be accompanied with the synthesis of information. The latter, for him, occurs through the integration of old concepts into the new ones that help the reader to better grasp the big picture. The latter was another benefit the participants reported concerning the utility of concept maps in reading comprehension.

Practically speaking, because it summarises the whole text, which can most often be lengthy, in one single visual diagram, the readers, who are in our case the participants, would be able to absorb information faster, thereby grasping the gist of the text easily. Following this, valid understandings and misconceptions students hold before, while, and after reading the material would be revealed. In this quest, and though it is not deliberately done, mapping out the different relationships existing among the concepts and/or ideas within a given text would lead to the subconscious storage of these relations. Therefore, the remembrance of the ideas of the text can be maintained even after finishing reading it, which is what the majority of respondents exactly revealed when answering the corresponding question in the post-treatment questionnaire.

It is also important to note that while correcting their pre and posttest written productions (the paragraphs), we noticed that, apart from their style and quality of expression, the participants showed great development in their ability to maintain the organisation, relevancy, and consistency of their written language in the posttest compared to the pretest. To clarify, the lack of clarity, cohesion, organisation were apparent in the pretest paragraphs. Furthermore, the inability to maintain, highlight, and explain the key and sub-ideas stood as an obstruction against producing comprehensive pieces of writing. Subsequently, in the posttest, and after the treatment was carried out, the participants' paragraphs reflected high levels of organisation, clarity, and relevancy, as they were based solely on their own constructed concept maps. Besides, the main and sub-ideas were relatively pointed out, allowing them to flow seamlessly and logically. The overall remark was that the concept mapping strategy is viable as it fosters the ability of reading with understanding, as well as the capacity of writing with clarity.

Research Question 3: What are the reasons that apprehend teachers from integrating concept mapping into their instruction in general and reading classes in particular?

This question was designed expressly to uncover possible causes that may likely stand against the integration of concept mapping in the teaching of different aspects. Accordingly, it was hypothesised that the basic reasons may stem from the huge number of students per class, time restriction, and teachers' unfamiliarity with this strategy.

Since this question was closely correlated with classroom teaching practices, the interview as a data collection tool was the most suitable choice for it allows the researcher to better seek clarification and further details. Owing to the fact that most classes are mixed-ability and reading is a complex act, the success of which requires proficiency in several skills and abilities, the four teachers were of the opinion that 'teaching reading is challenging'. In this sense, the unification and selection of the reading materials and activities become even more arduous.

As revealed earlier, concerning the way reading has been taught in their classes, the four teachers discerned that reading had undergone theoretical, as well as practical phases. The former has a direct linkage to the presentation stage of the lesson wherein the teacher introduces students to the conceptual and theoretical basis related to reading including its definitions, types, and benefits. The latter, on the opposite side, is correlated with the practice stage of the lesson that involves the students' role in reading and answering some reading tasks.

Nevertheless, it was found that in order to support learners who often show particular reading comprehension hindrances, these teachers did not virtually employ the same arsenal of instructional reading strategies. In addition, only one of them truly appeared to implement graphic organisers, namely concept maps in his/her classroom.

This is a good reflection that these teachers do not work in a coordinated fashion and are so far non-collaborative.

Following the analysis of the interview, the teachers, who briefly responded to our question concerning the reasons that hinder the adoption of graphic organisers, especially concept maps in their instruction, pinpointed that one factor represents their limited knowledge of such visual organisers, in general, and the unfamiliarity of the innovative concept mapping strategy, in particular. Time restriction turns out to be another factor the informants portrayed. It was accordingly clear to them that having the final mapped diagram finalised requires a great deal of time. Therefore, allowing ample time for any possible main and/or sub-concepts, as well as the relations among them detracts from the time originally dedicated to explanation, reflection, and discussion. Addedly, one consideration that should be noted is that overcrowded classrooms were not highlighted by the interviewees as a factor that may stand against the integration of such strategies in their instruction. Briefly, this is a genuine reflection that these teachers regarded graphic organisers workable even for classes with a huge number of students

Research Question 4: What are the attitudes and perceptions of students, as well as teachers towards the use of the concept mapping strategy?

This final question was designed to disclose the attitudes of both the participants who consented to the participation in the current inquiry, and the teachers who originally agreed to be interviewed. In light of the ample literature that manifests the varied benefits concept mapping yields, it was hypothesised that the teachers and students may have positive attitudes vis-à-vis the implementation of this strategy. Chiefly, though not all informants appeared to be informed of and conversant with this visual diagram (teacher C revealed his familiarity with concept maps), they all emerged to have positive attitudes towards its application in academic settings including the classroom.

After the treatment had been completed, the analysis of the students' post-treatment questionnaire responses depicted that the top three aspects participants were mostly satisfied with were the lesson organisation and preparation, the clear determination of the lesson objectives, and the teacher-student interaction. Since our sample has been introduced to the concept mapping strategy for the first time, it was seemingly necessary to give prominence to their effective features and degree of interest. Predominantly, the majority of participants, during the treatment sessions, demonstrated a genuine interest in the content and the learning activities we incorporated. Moreover, they were motivated by the way they were grouped (either in pairs or groups) and asked to develop collaborative concept maps that coupled the ideas, assumptions, and viewpoints of all the concept mappers. Consequently, many of them regarded it to be more useful than the traditional ways of approaching a text. Summing up, we can conclude that the majority of participants had a positive attitude towards the use of the concept mapping strategy.

### Conclusion

The present chapter strove for displaying, classifying, and summarising data that were originally obtained from the previously mentioned data collection tools. Subsequently, and to communicate the final results in light of the quantitative and qualitative analysis procedures, the set of steps followed by the researcher in order to provide a description for the scores, to analyse the numerical and textual data, as well as to work out various measures were eventually accentuated. Last, a detailed discussion and synthesis of the findings, along with the processes of testing the hypothesis, making inferences, and drawing conclusions were additionally brought to the mass of collected data.

### **General Conclusion**

In contemporary teaching, especially with the intent of building a well-rounded user of the language, equipping students with the necessary skills of independence and self-reliance, as well as providing many opportunities for them to exchange information are put into priority. As clarified earlier, and as a rudimentary language skill, reading undergoes a complex procedure, thereby demanding higher-ordered cognitive skills, such as the skills of analysis, synthesis, negotiating meanings, and constructing new ones. On that account, reaching higher levels of comprehension requires the coordination of word recognition skills involving phonological awareness, decoding, and sight words, as well as the language comprehension ability entailing background knowledge, vocabulary, language form, language content, and language use.

In addition, in an attempt to secure deep learning, the tertiary level dictates good reading skills, thereby allowing for the generation of the intended meaning from the print, as well as the matching between the pre-existing knowledge and the new one. In this regard, and as we observed that the majority of master students at Biskra University did not seem to possess adequate reading comprehension skills, we suggested the use of an active and interactive visual strategy known as concept mapping. Practically speaking, and following the non-probability purposive sampling technique, 26 master one EFL students at Biskra University were chosen as the sample for conducting the current investigation. Besides, four instructors of the reading comprehension course further constituted our targeted sample.

Philosophically speaking, and concerning the nature of the study, pragmatism was chosen as the main dimension and worldview to frame this research. Correspondingly, the Mixed-methods approach was well suited in this case to gain a deep understanding of the research problem. To redound the purpose of the investigation, which inquired about the

effect of using the concept mapping as a teaching strategy on students' reading comprehension, as well as discovering the teachers' and students' attitudes regarding the use of this strategy, a case study design along with quasi-experimentation with the one-group pretest-posttest design were used.

Striving to provide a deep understanding of the research problem and to gather relevant data on the subject, four data collection methods, namely the students' pretreatment questionnaire, the tests (pretest and posttest), the post-treatment questionnaire, and the teachers' interview were utilised. Seeking the reliability and credibility of the results, none of these tools was practically employed without piloting and validation that, in turn, served to produce a comprehensive and pertinent final version of the data collection instrument. In the interest of providing a comprehensive analysis of the collected data and since the current investigation operated under the Mixed-methods approach, quantitative analysis procedures along with qualitative analysis procedures were conjointly applied. This encompassed descriptive statistics, inferential statistics, and content analysis.

It was revealed, through the tabular and graphical presentations of the pretreatment questionnaire results, that the main reading comprehension difficulties were the inability to recognising the type/topic of text, connecting background knowledge with the new one, understanding complex language forms, understanding new vocabulary, knowing the writer's intentions, and failing to keep focused. Importantly, and since the comprehension difficulties cannot be justified by means of a single cause, the existence of such kind of hindrances was attributed to a number of causes. Therefore, these represented the lack of exposure to different text genres and structures, the lack of opportunities for practicing reading, the disuse of some effective reading strategies, the learning in overcrowded classes, and the poor background knowledge.

In addition, it was found that the treatment was helpful and yielded positive outcomes since it engendered a noticeable increase in the posttest scores that were statistically higher than the pre-test scores. Besides, the practicality of the concept mapping strategy was further reflected in their responses to the open-ended questions. Markedly, it was proved to draw salutary outcomes in respect of the summarisation of texts, the linkage of different parts, the organisation of ideas, and the discovery of the main themes. Likewise, it was conducive to the grasping of the text's big picture, the activation of prior knowledge, and the remembrance of the text's main and sub-ideas.

This simply explained why most participants revealed a positive attitude vis-à-vis the use of the concept mapping strategy, thereby regarding it to be more useful than the traditional ways of approaching a text. Subsequently, and in spite of the multiple and discrete causes that may likely stand against the integration of graphic organisers in the teaching of varied aspects, the teachers that had been interviewed in this study emerged to be satisfied with the specificities of this innovative strategy, reflecting positive attitudes towards its application in academic settings including the classroom.

### **Implications and Recommendations**

The utility of the concept mapping strategy was practically reflected in previous sections, revealing that it yielded positive outcomes with respect to a number of aspects, particularly, the activation of prior knowledge, the summarisation of texts, and the linkage of different parts. Inspired by the overall study results, the following abridged list of recommendations was drawn to represent some serious considerations and guidelines that should be taken into account to improve the state of reading and to use the concept mapping strategy for learning and instructional purposes.

- Both teachers and students should be aware of the vital role the reading skill plays in education, in general, and the overall language competence, in specific.

- Prior to the phase of designing the syllabus for the reading course, it is rudimentary for teachers to diagnose and identify each student's weaknesses, as well as strengths with respect to the act of comprehending the print so that to address them with the suitable remedy. In doing so, teachers may rely on a given evaluative procedure by devising a variety of tools, such as diagnostic tests, classroom observations, questionnaires, interviews, and discussions.
- In-class close observations of students while immersed in the act of reading is cardinal in providing evidence for the reading behaviours, on the one hand, and whether students are reading with understanding, on the other hand. In this way, deciding on the type of the reading comprehension difficulty would be much easier.
- Teachers should arrange for collective and one-to-one regular meetings with the learners showing particular comprehension hindrances in an effort to provide optimum solutions for them.
- Teachers should be consciously aware of the multiple variables that may likely affect the comprehension of varied written materials (reader variables, text variables, and context variables).
- Following the previous point, it is imperative to maintain a calm, productive, and controlled learning environment, thereby maximising students' self-efficacy, excitability, concentration, and comprehension levels.
- Aside from the concept mapping strategy, teachers need to be aware of or at least conversant with the diverse active and interactive learning strategies that possibly result in meaningful learning, as well as an active approach to reading.

- Teachers need to familiarise their students with a variety of before, during, and after reading comprehension strategies from which they would likely select what works better for them.
- The introduction of the concept mapping strategy, especially if it is presented for the first time and/ or the students are new to its process, should run smoothly and gradually. That is, it should be taught through the step-by-step explanations, starting from its definitions and characteristics to its benefits and potential applications. Nevertheless, a substantial amount of time should be allotted to the implementation stage, thereby bridging the gap between theory and practice.
- Since it was found, at least at the level of our sample, that concept maps are neither well known nor widely adopted for practical use, seeking a better explanation and presentation of the new content should be executed using some engaging ways, for instance, pictures, illustrations, and videos.
- Working collaboratively when it comes to planning the lessons of the reading course is a requisite for ensuring the same kind of instruction, as well as creating equitable classroom experience for all the students from different classes.
- The concept mapping strategy is at the disposal of teachers who may likely employ it as an activity to introduce new topics, or as a small group activity, or as a whole class activity. It can substantially assist the ones who may wish to effectively present a detailed body of knowledge, discover the themes that need to be emphasised in lessons, plan the syllabi of courses, and get their students' attention.
- To bring the fact that the concept mapping strategy yields benefits and works well for different types of texts with varied levels of difficulty, teachers need to be eclectic and vary text types for differentiated content-areas.

- Integrating assignments and homework on a regular basis in the course of instructing reading and enticing students to employ the concept mapping strategy in answering them is necessary to increase the opportunities for practicing this tool, as well as fostering the skill of reading.
- In the interest of saving time and avoiding hand-drawn concept maps, some programmes as varied as CmapTools, EdrawMax, and Lucidchart can potentially be used by teachers, as well as students for the sake of generating concept maps automatically.
- The more students are committed to reading and can make it a daily habit, the better it will help them in their academic attainment and language proficiency.
- Students should develop independence and self-reliance in that they should not wait for the teacher's in or out of class assignments as a way of boosting the reading skill. Instead, and generally speaking, they should seek out theoretical knowledge and instructional guidelines from their teachers. Nevertheless, they should create further opportunities for practice, thereby improving the skills and abilities that come together to contribute to the act of reading. This is also to get rid of the struggles they usually exhibit regarding reading comprehension.
- Constantly seeking students' feedback at the end of each session is crucial as a means for updating the content of lessons, as well as assessing the reading course's success.
- The fact that reading is a complex language skill that entails underlying single skills and abilities does not qualify any instructor to take responsibility for this course and teach it as a subject. In this respect, in-service training programmes/seminars need to be organised for instructors with the aim of

improving their efficiency, capacity, and knowledge, as well as inciting them to acquire innovative instructional skills and strategies.

- Because knowledge acquisition necessitates the act of reading which is, aside from the fact that it enables students to access the breadth of many academic areas, the cornerstone to writing, the researcher suggests the integration of regular reading sessions with varied focuses in all educational levels. As for tertiary education, the majority of subjects taught require good reading skills; therefore, intensifying reading instruction should be stipulated.

### **Limitations and Suggestions for Further Research**

The limitations of any research study tend to reflect the characteristics or issues that emerge as challenges during the study, thereby necessitating a full appraisal of their impact. These constraints may relate to issues such that of the unavailability of resources, generalisability, treatment application, and inaccessibility of participants. Since the study's limitations can influence the interpretation of the final findings, they would potentially contribute to the issue of making a more valid set of suggestions for future research. Although the objectives of the current investigation have so far been attained, its shortcomings should still be acknowledged.

The first issue, which turned out to be a real obstacle in the course of implementing the treatment, arose from situations related to the participants themselves. It represents the inaccessibility of the study's sample. Due to several reasons, the core of which was, according to them, the already overloaded timetable. The latter did not permit the majority of them to show up consistently to class. On this account, out of 26 participants, only 18 could regularly attend the study sessions.

Addedly, while the small sample size is regarded viable when related to the case study design as it brings to light the advantage of obtaining rich and meaningful data, it is

often considered a weakness when pertained to quasi-experimentation. For this reason, and as the current investigation did not embrace a large-scale sample, the statistical results could not be generalised and transferred into a larger scope. Nor could they be used to generate a theory or law. Another substantial limitation was the period in which the study was conducted. This research project took place over a period of only three weeks that is relatively a short span to examine and gauge the effectiveness of the treatment on the participants' performance.

Based on the limitations discussed above, it would be more apposite for future concept mapping projects to be conducted over an extended period so that the participants would better develop the skill of mapping. Furthermore, the effect of this strategy would more easily be observable. Hence, a longitudinal type of study is recommended. Besides, and for the sake of generalising the findings into a wider context, the current research study can be replicated with a larger number of participants. Lastly, the current investigation, which focused on the utility of concept maps on reading comprehension, invigorate a wide range of related studies to consider the efficacy of this innovative instructional strategy in relation to other academic areas, such as writing, public speaking, and vocabulary acquisition/retention.

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Appendices

**Appendix 1: Participant Informed Consent**

**Informed Consent**

Dear Participant,

I am conducting a research study in which you are kindly asked to participate in. Aiming to help you take a decision on what concerns your participation, this letter attempts to briefly explain what the study is about, the tasks you are required to do, and the rights you have as a research participant.

This study also aims at examining the effects of using concept mapping as a teaching strategy on learners' reading comprehension. Precisely, and based on the research purpose and aims,

I will be carrying a treatment on master students in order to examine the efficacy of the aforementioned strategy on reducing their reading difficulties.

In this respect, you are invited to take part in this research which will be conducted over six one-hour class sessions (including the pretext & post-test sessions). In addition, and to provide more details and evidence on the studied strategy, questionnaires will be administered.

Essentially, your anonymity, privacy, and identity will be protected. Your participation in this research is entirely voluntary. Your consent can be withdrawn at any time.

If you accept to participate in this study, please sign the attached consent form. Your cooperation will be highly appreciated.

For further questions regarding this research project, you are welcome to contact the researcher.

Yours sincerely,

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

**Researcher Contact Details:**

Meriem Henouda

Email: henoudameriem9@gmail.com

Mohamed Kheider University of Biskra

Faculty of Letters and Foreign Languages

Section of English

I have read and clearly understood the researcher's request. I consent to volunteering as a participant in the research project being undertaken by Meriem Henouda

Name:.....

E-mail:.....

University:.....

Faculty:.....

Department:.....

Section:.....

Date:.....

**Appendix 2: Consent Letter for the Head of the Section of English**

**Informed Consent**

Dear Head of the English Section,

At present, I am conducting a research study examining the effects of using concept mapping as a teaching strategy on learners' reading comprehension. Essentially, I will be carrying a treatment on master students in order to investigate the utility of the aforementioned strategy in enhancing their reading skills and reducing their reading difficulties.

Therefore, I am looking for your consent to teach a group of master students over a period of around 6 weeks. Withing this period, 6 one-hour class sessions (including the pretest and post-test sessions) will be held. In addition, questionnaires aiming to provide more details and explanation will be administered.

Essentially, anonymity, privacy, identity, and data gathered throughout the process of conducting this research will be protected.

If you consent to the participation of these students in this study, please sign the attached consent form.

I highly appreciate your permission and help.

For further questions, you are welcome to contact the researcher.

Yours sincerely,

**Researcher Contact Details:**

Meriem Henouda

Email: henoudameriem9@gmail.com

Mohamed Kheider University of Biskra

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Faculty of Letters and Foreign Languages

Section of English

I have read and clearly understood the researcher's request. I consent to the participation of master students at the section of English in the research project being undertaken by Meriem Henouda.

Name:.....

E-mail:.....

University:.....

Faculty:.....

Department:.....

Section:.....

Date:.....

Signature:

**Appendix 3: Consent Letter for the Head of the Department of English**

**Informed Consent**

Dear Head of the English Department,

At present, I am conducting a research study examining the effects of using concept mapping as a teaching strategy on learners' reading comprehension. Essentially, I will be carrying a treatment on master students in order to investigate the utility of the aforementioned strategy in enhancing their reading skills and reducing their reading difficulties.

Therefore, I am looking for your consent to teach a group of master students over a period of around 6 weeks. Withing this period, 6 one-hour class sessions (including the pretest and post-test sessions) will be held. In addition, questionnaires aiming to provide more details and explanation will be administered.

Essentially, anonymity, privacy, identity, and data gathered throughout the process of conducting this research will be protected.

If you consent to the participation of these students in this study, please sign the attached consent form.

I highly appreciate your permission and help.

For further questions, you are welcome to contact the researcher.

Yours sincerely,

**Researcher Contact Details:**

Meriem Henouda

Email: [henoudameriem9@gmail.com](mailto:henoudameriem9@gmail.com)

Mohamed Kheider University of Biskra

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Faculty of Letters and Foreign Languages

Section of English

I have read and clearly understood the researcher's request. I consent to the participation of master students at the section of English in the research project being undertaken by Meriem Henouda.

Name:.....

E-mail:.....

University:.....

Faculty:.....

Department:.....

Section:.....

Date:.....

Signature:

**Appendix 4: The Pre-Treatment Questionnaire**

Dear Volunteer Participant,

You are kindly requested to respond to the following questionnaire, which serves as a data collection method for a study, entitled “The Effects of Using Concept Mapping as a Teaching Strategy on Students’ Reading Comprehension”. As for the general aim, this research study is an endeavor to foster the reading comprehension of master students through the use of the aforementioned strategy and assist them in reducing their reading difficulties. Your responses/ data will be anonymous and will be used for research purposes only. Please tick ( ✓ ) the appropriate box and give full statements whenever necessary.

**Prepared by:**

Meriem HENOUDA

**Supervised by:**

Dr. Ahmed Chaouki HOADJLI

**Section One: General Information**

Q1. Would you specify your gender:

- a) Male       b) Female

Q.2 Applying for the master degree was:

- a) Your own choice   
b) Your parents' choice   
c) Someone's advice

If it was your own choice, was it because:

- a) You would like to raise your level of education   
b) You would like to get more job opportunities   
c) You would like to have the opportunity to conduct academic research and develop your research skills   
d) All of these

Others, if there any

.....  
.....  
.....  
.....

Q3. How have you found learning at the master level?

- a) The same as it was at the license level   
b) Easier than it was at the license level   
c) More difficult than it was at the license level

Whatever your answer would be, please justify

.....  
.....

**Section Two: Reading Comprehension**

Q4. How do you consider the reading skill?

- a) Very important  b) Important  c) Not important at all

Q5. In your academic context, do you believe that reading is giving as much importance as other skills?

- a) Yes  b) No

Q6. How often does your teacher ask you to read texts and answer their activities in class?

- a) Always  b) Often  c) Sometimes  d) Never

Q7. How often does your teacher ask you to read materials outside the classroom?

- a) Always  b) Often  c) Sometimes  d) Never

Q8. In which language do you mostly prefer to read?

- a) Arabic   
b) French   
c) English

Q9. Do you enjoy the time you spend in reading?

- a) Yes  b) No

Q10. How often do you read in English?

- a) Always  b) Often  c) Sometimes  d) Never

Q11. Please specify why do you usually like to read in English?

- f) For pleasure   
g) As part of an assignment   
h) To enrich your vocabulary   
i) To increase your knowledge of the language   
j) All of the above

Others.....

.....

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Q12. Do you have any reading comprehension difficulties?

- a) Yes  b) No

If yes, what kind of difficulties

- a) The inability to recognise the types of text and/or the unfamiliarity with the topic of the text,
- b) The inability to connect the ideas of the text with each other and/or the inability to connect background knowledge with the new one,
- c) The inability to understand complex language forms (words, sentences),
- d) The inability to understand new vocabulary,
- e) The inability to know the writer's intentions,
- f) lack of the attention, and
- g) All of them

Q13. Would you specify the main reasons for students' reading difficulties? (you may choose more than one answer)

- a) Lack of exposure to different text genres and to different text structures
- b) The lack of opportunities for practicing reading
- c) The disuse of some effective reading strategies
- d) Learning in overcrowded, disorganised, and noisy classrooms
- e) Having poor background knowledge
- f) All of the above

Others.....  
.....  
.....

Q14. Once you decide to start reading a passage, do you plan out in advance to use a given strategy or technique?

- a) Yes  b) No

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Q15. While reading a text, what do you usually do to comprehend its parts and relations better?

- a) Use visual Organisers as diagrams, tables, or maps,
- b) Summarise the text on a separate paper,
- c) Use questioning,
- d) Use prediction,
- e) Use inference, and
- f) Do nothing, just keep the information in mind

Others:.....

.....

Q16. When you read a text, and in order to understand it, do you usually refer to what you already know as background knowledge of the text's topic?

- Yes                       b) No

Q17. How much do you agree that background knowledge has great importance in reading comprehension?

- a) Strongly agree                       b) Agree                       c) Neutral
- d) Disagree                       e) Strongly disagree

Q18. Does your instructor use particular strategies to activate your prior knowledge or to make you understand the text better?

- a) Yes                       b) No

If yes, does s/he use:

- a) Discussion,
- b) Visual aids (e.g. pictures)
- c) Questions and answers,
- d) Visual organisers (e.g. mind maps, concept maps)
- e) Prediction.

Others.....

**Section Three: Concept Mapping**

Q19. Are you familiar with the concept mapping strategy?

- a) Yes
- b) No
- c) I heard about it, but I do not know what it is

In case you are familiar with it, in simple words, please indicate what it is?

.....

.....

Q20. How often does your instructor use it in his/her class?

- a) Always
- b) Often
- c) Sometimes
- d) Never

Q21. Do you think that applying the concept mapping strategy could contribute to easy and fast comprehension of texts?

- a) Yes
- b) No

Q22. Knowing that the concept mapping strategy works on clarifying the confusing parts of the text and monitoring students' understanding of the content, how excited are you to have the opportunity to be taught using this innovative strategy?

- a) Very excited
- b) Excited
- c) Moderate
- d) Not excited

If you would like to add any comments or suggestions, please feel free.

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*Thank You Very Much for Your Collaboration*

**Appendix 5: The Reading Comprehension Mini-Syllabus**

**PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA**

**MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH**

**MOHAMED KHEIDER UNIVERSITY – BISKRA**

**FACULTY OF LETTERS AND FOREIGN LANGUAGES**

**DEPARTMENT OF FOREIGN LANGUAGES**

**SECTION OF ENGLISH**



# **Reading Comprehension**

## **Course Description and Syllabus**

February/March 2019-2020

**Instructor:** HENOUDA Meriem

**Email:** henoudameriem9@gmail.com

**Class Meeting Days:** Sundays, Mondays, and Wednesdays

**Class Meeting Time:** Sundays (11:20 – 12:20),

Mondays (9:40 - 10:40),

Wednesdays (13:10 -14:10).

### **Course description**

Reading remains a key component to general knowledge and a cornerstone to academic success which makes it a demanding and laborious skill student ought to develop. Thus, it

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is necessary to make use of a variety of instructional strategies such as concept mapping. This course is designed to help students get familiar with this innovative strategy by providing the necessary theoretical background knowledge required for the creation and modification of this visual aid. This course will focus on the application of the concept mapping strategy on reading comprehension. This course provides a framework for understanding information not only regarding how to draw different concept maps, but also regarding how to use it into breaking the reading passages into smaller interrelated parts.

This course will use a combination of lectures, class discussions, reading assignments.

### **Objectives and Learning Outcomes**

Upon successful completion of the course, Master students' reading comprehension will be fostered through the use of the concept mapping teaching strategy. Specific learning objectives of this course are:

- Gaining an understanding of what the concept map is,
- Identifying its components, types and benefits,
- Discussing some samples of concept maps, and
- Accurately drawing some concept maps to the corresponding reading passages.

### **Course Materials**

Handouts, board, data show.

**Announcements:** Class announcements will be e-mailed and/or posted.

### **Assessment Procedure**

This course will be assessed by means of pretest, posttest, and classwork.

### References

- Bhattacharya, A. (n.d.). Promoting Science Passage Comprehension Via Concept Mapping Instruction. Retrieved from [https://www.eiseverywhere.com/file\\_uploads/79b5da3061072e90b0ca068f9bf748b](https://www.eiseverywhere.com/file_uploads/79b5da3061072e90b0ca068f9bf748b)
- IELTS Reading Samples. (n.d.). IELTS- Exam.net. Retrieved from [www.ielts-exam.net](http://www.ielts-exam.net) › ielts\_reading
- Novak, J. D., & Cañas, A. J. (2015). The theory underlying concept maps and how to construct them. Retrieved from <https://www.researchgate.net/publication/215439441>
- Otieno, W. V. (2015). *Effects of concept mapping based instruction on students' Achievement in physics* (Master's thesis). Kenyatta University, Nairobi County, Kenya.
- Manoli, P. & Papadopoulou, M. (2012). Graphic Organisers as a reading strategy: Research findings and issues. *Journal of Creative Education*, 3(3), 348-356. Doi: 10.4236/ce.2012.33055
- Mayfield Clinic. (2018). Anatomy of the brain. Retrieved from <https://mayfieldclinic.com/pe-anatbrain.htm>
- Shabiralyani, G., Hasan, G. S., Hamad, N., & Iqbal, N. (2015). Impact of visual aids in Enhancing the learning process. *Journal of Education and Practice*, 6 (19), 226-233.
- Tabatabaei, O., & khalili, S. (2014). The effect of concept mapping on Iranian Pre-intermediate 12 reading comprehension. *Journal of Language Teaching and Research*, 5(6), 1368-1380.

**Session 1: The pretest**

Lecturer's name: HENOUDA Meriem	Date: 27/ 02/ 2020
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
The pretest objectives: The pretest will be administered in the first place in an effort to measure students' comprehension ability prior to treatment, as well as to select the sample that will best fit our objectives.	

References:

IELTS Reading Samples. (n.d.). IELTS- Exam.net. Retrieved from [www.ielts-exam.net](http://www.ielts-exam.net) › [ielts\\_reading](#)

Student's name:.....

the duration: 1 hour.

The group: .....

The mark:.....

### **Employment in Japan**

**A.** Every autumn, when recruitment of new graduates and school leavers begins, major cities in Japan are flooded with students hunting for a job. Wearing suits for the first time, they run from one interview to another. The season is crucial for many students, as their whole lives may be determined during this period.

**B.** In Japan, lifetime employment is commonly practised by large companies. While people working in small companies and those working for sub-contractors do not in general enjoy the advantages conferred by the large companies, there is a general expectation that employees will in fact remain more or less permanently in the same job.

**C.** Unlike in many Western countries where companies employ people whose skills can be effective immediately, Japanese companies select applicants with potential who can be trained to become suitable employees. For this reason, recruiting employees is an important exercise for companies, as they invest a lot of time and money in training new staff. This is basically true both for factory workers and for professionals. Professionals who have studied subjects which are of immediate use in the workplace, such as industrial engineers, are very often placed in factories and transferred from one section to another. By gaining experience in several different areas and by working in close contact with workers, the engineers are believed, in the long run, to become more effective members of the company. Workers too feel more involved by working with professionals and by being allowed to voice their opinions. Loyalty is believed to be cultivated in this type of egalitarian working environment.

**D.** Because of this system of training employees to be all-rounders, mobility between companies is low. Wages are set according to educational background or initial field of employment, ordinary graduates being employed in administration, engineers in engineering and design departments and so on. Both promotions and wage increases tend to be tied to seniority, though some differences may arise later on as a result of ability and

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business performance. Wages are paid monthly, and the net sum, after the deduction of tax, is usually paid directly into a bank account. As well as salary, a bonus is usually paid twice a year. This is a custom that dates back to the time when employers gave special allowances so that employees could properly celebrate *bon*, a Buddhist festival held in mid-July in Tokyo, but on other dates in other regions. The festival is held to appease the souls of ancestors. The second bonus is distributed at New Year. Recently, bonuses have also been offered as a way of allowing workers a share in the profits that their hard work has gained.

**E.** Many female graduates complain that they are not given equal training and equal opportunity in comparison to male graduates. Japanese companies generally believe that female employees will eventually leave to get married and have children. It is also true that, as well as the still-existing belief among women themselves that nothing should stand in the way of child-rearing, the extended hours of work often do not allow women to continue their careers after marriage.

**F.** Disappointed career-minded female graduates often opt to work for foreign firms. Since most male graduates prefer to join Japanese firms with their guaranteed security, foreign firms are often keen to employ female graduates as their potential tends to be greater than that of male applicants.

**G.** Some men, however, do leave their companies in spite of future prospects, one reason being to take over the family business. The eldest sons in families that own family companies or businesses such as stores are normally expected to take over the business when their parents retire. It is therefore quite common to see a businessman, on succeeding to his parents' business, completely change his professional direction by becoming, for example, a shopkeeper.

**H.** On the job, working relationships tend to be very close because of the long hours of work and years of service in common. Social life in fact is frequently based on the workplace. Restaurants and *nomi-ya*, "pubs", are always crowded at night with people enjoying an evening out with their colleagues. Many companies organise trips and sports days for their employees. Senior staff often play the role of mentor. This may mean

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becoming involved in the lives of junior staff in such things as marriage and the children's education.

**I.** The average age of retirement is between 55 and 60. For most Westerners, retirement may be an eagerly awaited time to undertake such things as travel and hobbies. Many Japanese, however, simply cannot get used to the freedom of retirement and they look for ways of constructively using their time. Many look for new jobs, feeling that if they do not work they will be abandoned by society. This has recently led to the development in some municipalities of municipal job centres which advertise casual work such as cleaning and lawn mowing. Given that Japan is facing the problem of an increasingly ageing society, such activities may be vital in the future.

### **Questions**

#### **Part One:**

##### **Task 1**

The Reading Passage has nine paragraphs **A–I**.

Choose the correct heading for each paragraph from the list of headings below.

#### **List of Phrases**

- i** How new employees are used in a company
- ii** Women and Japanese companies
- iii** Why men sometimes resign from Japanese companies
- iv** Permanency in employment in Japan
- v** Recruiting season: who, when and where
- vi** The social aspect of work
- vii** The salary structure
- viii** The recruitment strategy of foreign firms
- ix** Japanese people after retirement

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Section A .....

Section F .....

Section B .....

Section G .....

Section C .....

Section H .....

Section D .....

Section I .....

Section E .....

**Task 2:**

Complete the sentences below with words taken from the reading passage.

Use **NO MORE THAN THREE WORDS** for each answer.

**10.** Japanese employers believe that moving professionals within companies and listening to workers' views leads to.....

**11.** Employees receive their wages monthly and a bonus.....

**12.** Japanese workers often form close personal relationships and older staff may even become a..... to junior staff.

**Task 3:**

Choose the correct letter, **A, B, C or D.**

**13.** Company training in Japan

- A** is not important
- B** is for factory workers only
- C** is for professionals only
- D** is for all staff

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14. Foreign firms are keen to employ Japanese women because

- A the women are more intelligent than men
- B the women that apply are more capable than the men that apply
- C the women will be only short-term employees
- D the women prefer guaranteed security

15. Japanese people continue to work after retirement because

- A they need the income
- B they miss working
- C they assist in the family business
- D they have no status outside employment

**Part Two:**

In no more than 7 lines, write a short paragraph in which you mention the key ideas in the text.

.....

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*Thank You so Much for Your Help and Collaboration*

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

The correction of the pretest:

Answers:

### Task 1 (9 points)

Section A **v**

Section B **iv**

Section C **i**

Section D **vii**

Section E **ii**

Section F **viii**

Section G **iii**

Section H **vi**

Section I **ix**

### Task 2 (3points)

Complete the sentences below with words taken from the reading passage.

Use **NO MORE THAN THREE WORDS** for each answer.

**10.** Japanese employers believe that moving professionals within companies and listening to workers' views leads to **loyalty**.

**11.** Employees receive their wages monthly and a bonus **twice yearly/twice a year**.

**12.** Japanese workers often form close personal relationships and older staff may even become a **mentor** to junior staff.

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**Task 3 (3 points)**

Choose the correct letter, A, B, C or D.

13. **D** is for all staff

14. **B** the women that apply are more capable than the men that apply

15. **B** they miss working

**Part Two (5points)**

The evaluation of the paragraph considers the following:

Form: (Grammar, spelling, mechanics, formal language....)

Content:(Main ideas, order of ideas, unity.....)

## Lesson1: Introduction to Reading Comprehension

Lecturer's name: HENOUDA Meriem	Date: 01/03/2020
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Groups 1, 3
Resources: Handouts, board.	
Lesson objectives: At the end of this session, students will be able to recognise what reading and reading comprehension are. At the end of this session, students will be aware of the importance of reading in language learning, types of reading, components of reading comprehension, and the different reading comprehension strategies.	

### References

Manoli, P. & Papadopoulou, M. (2012). Graphic Organisers as a reading strategy:

Research findings and issues. *Journal of Creative Education*, 3(3), 348-356. Doi:

10.4236/ce.2012.33055

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Headings + content	Teacher activity	Student activity	Time
<ul style="list-style-type: none"> <li>•Warm-up: Asking Questions, discussion</li> <li>•Introducing the session's objectives to students.</li> </ul>	The teacher asks questions	The students answer and discuss them	10 Min
<ul style="list-style-type: none"> <li>•Defining reading</li> <li>•Importance of reading in language learning</li> <li>•Types of reading</li> <li>•Defining reading comprehension</li> <li>•Components of reading comprehension</li> <li>•Strategies of reading comprehension</li> </ul>	The teacher presents the lesson  By reading and explaining the handouts	Students listen to her. Treatment, discussion, suggestions are tolerated	50 min

## **Lesson 1: Introduction to Reading Comprehension**

At the end of this session, you will be able to:

- Define reading and reading comprehension.
- Determine the importance of reading in language learning.
- State the types of reading.
- Determine the components of reading comprehension.
- Identify the strategies of reading comprehension.

### **1. Definition of Reading:**

Reading is generally perceived as the mere process of following words on pages or assigning sounds to words. Therefore, providing one single definition of reading has not yet been achieved as reading is seen differently.

1.1 Goodman (1988, as cited in Dechant 1991) states in his definition of reading, “matching sounds to letters”.

1.2 Johnson defines reading as follows, “reading is the practice of using text to create meaning” (as cited in Dechant 1991).

1.3 Dechant (1991) asserts that the act of reading is much more complex. Reading takes place if and only if the intended meaning of the text is being generated. This necessitates from the reader to bring about his entire knowledge. He defines reading as follows:

“Reading means building a representation of text by relating what is on the paper to one’s own fund of experience. When the reader’s representation of text essentially approximates that of the writer, genuine reading occurs.”

Q1: What can you deduce from the above stated definitions?

Q2: Reflecting on what you know and the previous definitions, write your own definition of reading.

## **2. Importance of Reading on Language Learning:**

Reading is often viewed as a key to FL/SL learning, especially that it eventually fosters the overall language competence. Whatever the type of reading is, students who read on a regular basis make gains in writing proficiency and oral skills compared to their counterparts. Extending and sustaining student's vocabulary growth is probably the most cited benefit of reading. In fact, reading cultivates a rich learning experience as readers will be exposed to a wide range of knowledge on regard to vocabulary, external world, language structures/patterns, language content, and language use.

## **3. Types of reading:**

According to the literature, we can distinguish the following types of reading:

### **3.1 Scanning**

- Scanning is a fast reading wherein the eyes move quickly over the reading material.
- The purpose of the reading task is limited to searching for a specific piece of information.
- To find the information, key words are to be searched. For example, students tend generally to answer the reading comprehension questions through scanning, aiming to locate the key phrases of the answer in the text. Most often, numbers, dates, peoples' names are easily scanned.

### **3.2 Skimming:**

- It refers to the ability to quickly moving the eyes over the text to get a broad overview of what the text is about.
- The purpose is limited to getting the gist of the text.

### **3.3 Extensive reading:**

- It is also known as free reading.
- Reading long texts for pleasure.

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- The students engage in the act of reading simply because they like the text not because they feel obliged to undertake a given instruction (task)
- They are guaranteed the right to select the time and the reading material.

### **3.4 Intensive reading:**

- It is also called narrow reading or detailed reading.
- Generally, it focuses on reading short texts and doing exercises on them.
- It is led by the teacher who sets up a time for the reading text and the activity.
- Notably, students know the purpose of the reading act and what is expected from them prior to reading (specific learning aims).
- Students are not guaranteed the right to select the reading material which, most of the time, does not meet the learners' expectations.

### **4. Definition of reading comprehension:**

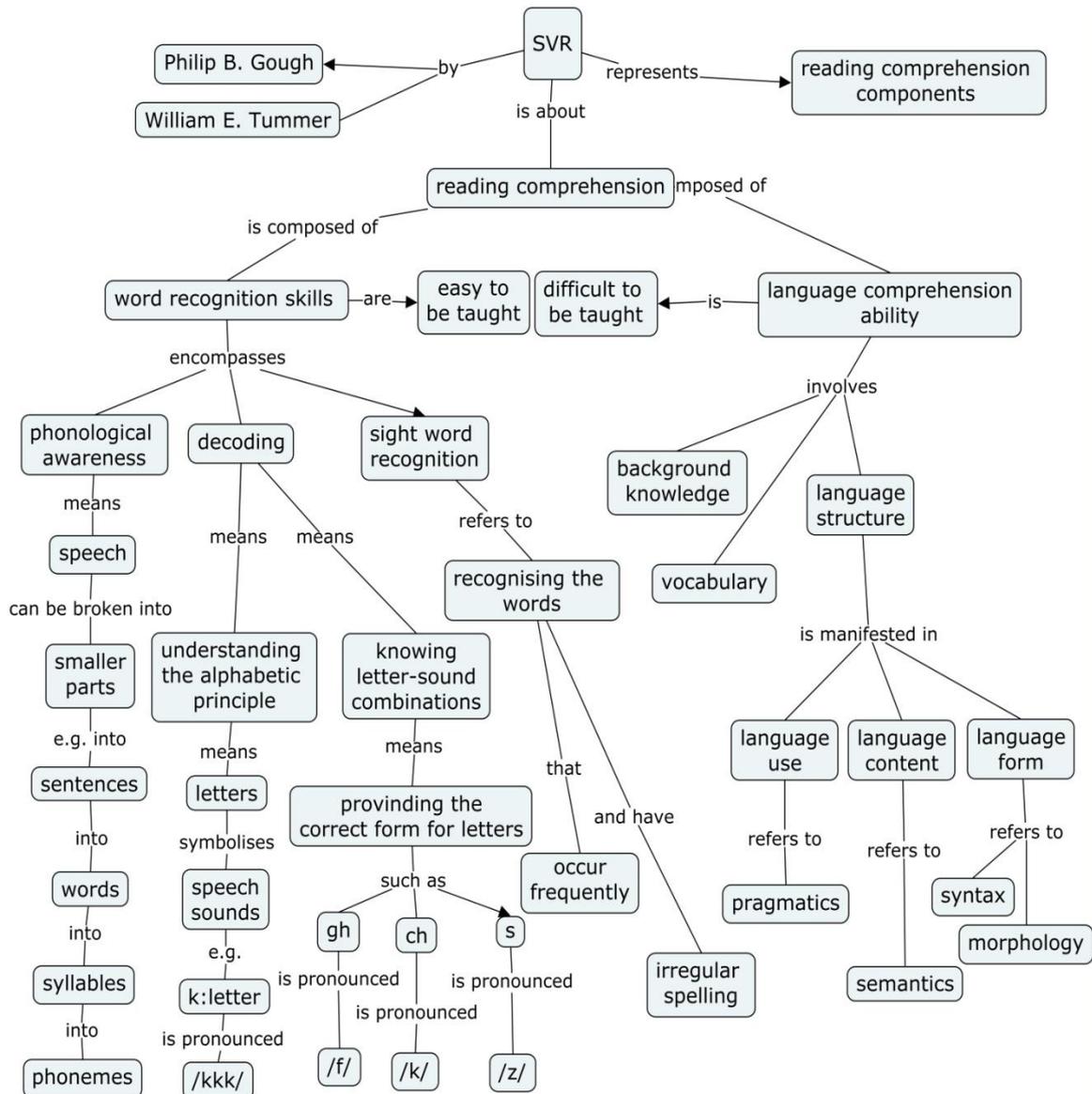
The evidence suggests that reading comprehension is the ultimate aim of the act of reading. It refers to the act of understanding what you are reading. Therefore, reading comprehension does not, by no means, refer to the ability of turning the printed letters into sounds, but it is more than that.

Harris and Hodges (1995, as cited in Tennent, 2015, p. 23) state that “reading comprehension is the construction of meaning of written text through a reciprocal interchange of ideas between the reader and the message in a particular text.”

### **5. The Components of Reading Comprehension:**

According to the SVR, which was initially proposed in 1986 by Philip B. Gough and William E. Tunmer, reading comprehension involves two equally important components which are also subdivided into a number of elements as represented in the following diagram:

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### 6. Strategies of reading comprehension:

A great number of students may have trouble with basic reading skills. They may have difficulty understanding the main or sub ideas of the reading passage or even managing time in accordance to the allotted time. Thus, reducing the obstacles related to reading comprehension through the use of some instructional strategies has become quite necessary. There are many suggestions concerning the reading comprehension strategies, but what follows are some of the widely recognised ones:

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**Prediction:** Readers may use their prior knowledge and information from the text, such as the title, pictures, headings in order to anticipate about the course of future events that may take place at a later time in the story.

**Summarisation:** This strategy necessitates from the reader to identify the main parts/ideas of the text and rewrite them using his own words.

**Questioning:** Encourages students to ask high-level questions before, during, and after reading. This supports students to have thoughtful and in-depth answers which promote the comprehension of the text.

**Inference:** Refers to the combination of what is already known as prior knowledge and the clues mentioned in the text in order to draw conclusions of what is not directly presented or stated in the text.

**Graphic organisers:** Demonstrate the different relations in the text i.e., between the concepts, key ideas, and sub elements. They help students write well-organised summaries of a text. Such visual tools have been proved to assist readers to break the reading passage into its smaller parts, as well as keep track of thought. Some examples of graphic Organisers are: story maps, concept maps, tree diagrams, Venn diagrams, and semantics maps (e.g. mind maps, spider maps). Therefore, concept mapping, which may be used in a variety of field, is just one example of the reading strategies.

Q. Which of these strategies do you usually use and for which purpose do use it?

*Thanks for your attention*

**Lesson 2:** Introduction to the Concept Mapping Teaching Strategy (Part 1)

Lecturer's name: HENOUDA Meriem	Date: 02/03/2020
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Groups 1,3
Resources: Handouts, board.	
Lesson objectives: At the end of this session, students will be able to recognise concept maps and distinguish them from other visual tools They will be able to define the concept map and state its characteristics. They will discern the steps that should be followed in an effort to draw it correctly.	

References:

Shabiralyani, G., Hasan, G. S., Hamad, N., & Iqbal, N. (2015). Impact of visual aids in Enhancing the learning process. *Journal of Education and Practice*, 6 (19), 226-233.

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Headings + content	Teacher activity	Student activity	Time
<ul style="list-style-type: none"> <li>• Warm-up: Asking questions, discussion</li> <li>• Introducing the session's objectives to students.</li> </ul>	The teacher asks questions	The students answer and discuss them	10 min
<ul style="list-style-type: none"> <li>• Defining visual aids</li> <li>• Defining concept mapping</li> <li>• Its origins</li> <li>• Its characteristics</li> <li>• A concept map showing the characteristics of concept maps</li> </ul>	The teacher presents the lesson  By reading and explaining the handouts	Students listen to her	30 min
Steps of constructing a concept map	Presenting	Listening	20 min

## **Lesson 2: Introduction to the Concept Mapping Teaching Strategy (Part 1)**

At the end of this session, you will be able to:

- Define visual aids
- Define concept mapping
- Determine its origins
- List its characteristics
- Know the steps of making a concept map

### **1. Visual aids:**

The teacher uses different kinds of aids to make learning effective. Kinder and James describe visual aids as “visual aids are any devices which can be used to make the learning experience more real, more accurate and more active”. The tools that tend to use the sense of vision are called visual aids. They help to make an issue or lesson clearer or easier to be understood.

### **2. Examples of visual aids:**

Pictures, models, charts, maps (mind maps, concept maps.), videos, slides, real objects flashcards, bulletin board, chalkboard, slides, overhead projector...

### **3. Concept mapping**

#### **a. Definition of the concept map:**

In the concept mapping method, groups of ideas are represented in the form of a picture or map. Concept maps are graphical tools for organizing and representing knowledge. This diagram represents the different relations among a set of connected concepts, ideas belonging to the same topic, lesson, or unit. Too often, concepts, which primarily describe objects or events are represented by single words enclosed in boxes or circles (also called nodes) and connected to other concepts by arrows (also called lines or arcs), generating a highly informative network.

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Specifically, in concept maps, words or phrases written by the arrows define the kind of relationships existing among different parts. These words are called the linking words and they usually include such categories as verbs, adverbs, verb phrases, or prepositions. In concept maps, words or phrases written by the arrows, define the kind of relationships existing among different parts. These words are called the linking words and usually include such categories as verbs, adverbs, verb phrases, or prepositions.

b. Its origins:

Concept mapping was developed in the course of Novak's research programme at Cornell University in 1972.

c. Its characteristics:

**Concepts:** can be either subjects or events.

**Nodes:** the circles or the boxes used to represent the concept or the idea.

**Linking words or phrases:** They are words and/ or phrases. They can be verbs, adverbs, phrasal verbs, prepositions which are placed on the lines connecting different concepts in the concept map.

Instances of linking words/ phrases are: made up of, is, have, contains, are, includes, etc.

**Propositional structure:** also known as units of meaning. It is composed of two or more concepts connected with particular linking words in order to formulate meaningful statements. Some examples are:

Successful business creates wealth.

Plants have leaves

Photosynthesis uses light energy and water that comes from the environment to form oxygen molecules.

**Hierarchical structure:** A key element of the concept map is its hierarchical structure, placing the most general concepts at the very top of the concept map while the

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

less general have to be arranged hierarchically below. That is to say, it is designed to be read from top to bottom.

**Parking lot:** A metaphor that describes a set of words (concepts). They are put in a form of a list in order to be moved into a specific place in the concept map. The parking lot may contain only the key phrases or concepts, but later, the concept mapper could expand on them while constructing the map.

**Cross-links:** Included to show different relationships between concepts belonging to different domains in the concept map, allowing the person to visualise how ideas and concepts are related to one another.

### d. Concept Map Creation:

Though there are no strict rules to follow, it is preferable to consider the following steps:

1. Identify the main, specific concept which may be the subject of a research paper.
2. Brainstorm and list out any related concepts which will eventually fall under the main concept to form the overall map. This list is called a parking lot.
3. Order the concepts from the most general to the most specific.
4. Start creating the preliminary concept map. Begin with the main topic then branch out to major points and supporting details.
5. Use symbols, arrows, crosslinks, linking words to illustrate how concepts are related to one another.
6. Review the map and look for more connections. Remember there is no a final version of a concept map.

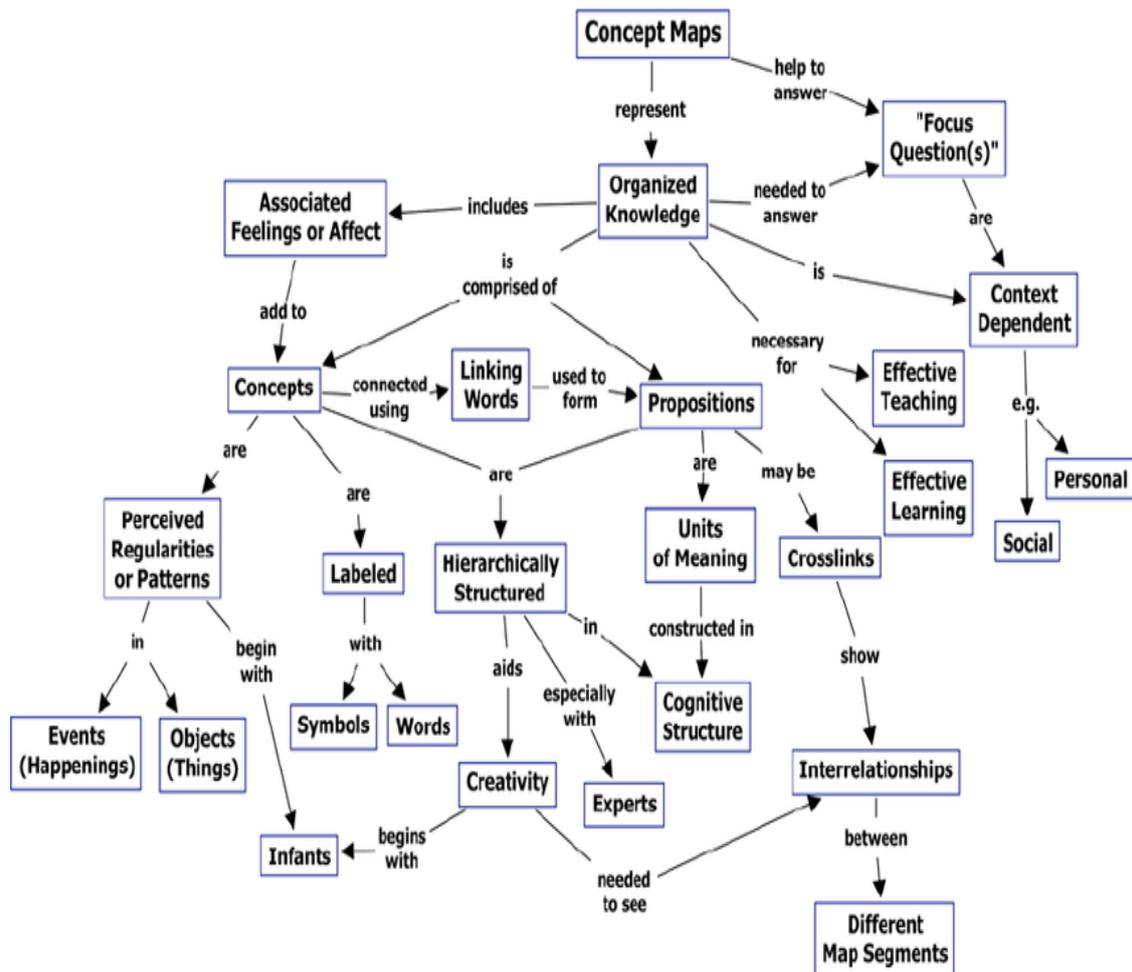


Figure 1: A concept map showing the characteristics of concept maps

Reference:

Shabiralyani, G., Hasan, G. S., Hamad, N., & Iqbal, N. (2015). Impact of visual aids in Enhancing the learning process. *Journal of Education and Practice*, 6 (19), 226-233.

**Lesson 2:** Introduction to the Concept Mapping Teaching Strategy (Part 2)

Lecturer's name: HENOUDA Meriem	Date: 02/ 03/ 2020
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
Resources: Handouts, board, data show	
Lesson objectives: At the end of this session, students will be able to practically draw their own concept maps.	

References:

Bhattacharya, A. (n.d.). Promoting Science Passage Comprehension Via Concept Mapping

Instruction. Retrieved from

[https://www.eiseverywhere.com/file\\_uploads/79b51da3061072e90bca068f9bf748b](https://www.eiseverywhere.com/file_uploads/79b51da3061072e90bca068f9bf748b)

Novak, J. D., & Cañas, A. J. (2015). The theory underlying concept maps and how to

construct them. Retrieved from

<https://www.researchgate.net/publication/215439441>

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Headings + content	Teacher activity	Student activity	Time
<ul style="list-style-type: none"> <li>•Warm-up: Asking questions about the previous session.</li> <li>•Introducing the session's objective to students.</li> </ul>	The teacher asks questions	The students remember what they learnt, answer the questions	10Min
<ul style="list-style-type: none"> <li>•Presenting further samples of concept maps (simple, complex...)</li> <li>•Discussing their structure and content</li> </ul>	The teacher presents them	Students listen	15 min
<ul style="list-style-type: none"> <li>• Practice 1: a text to be mapped</li> </ul>	<ul style="list-style-type: none"> <li>•Reads the text</li> <li>•Provides feedback, the correction of activities</li> </ul>	<ul style="list-style-type: none"> <li>•One student draws the concept map on the board while others follow him</li> </ul>	15 min
Practice2: A text to be mapped	Feedback, correction	<ul style="list-style-type: none"> <li>• Work in pairs.</li> <li>• Read the text and draw the map</li> </ul>	20 min

## Lesson 2: Introduction to the Concept Mapping Teaching Strategy Part 2

At the end of this session, you will be able to:

- Turn a reading passage into a comprehensive simple concept map.

### Further samples of concept maps:

Depending on the topic being treated, concept maps can be either simple as in figures 1, 2 or complex as in figures 3, 4.

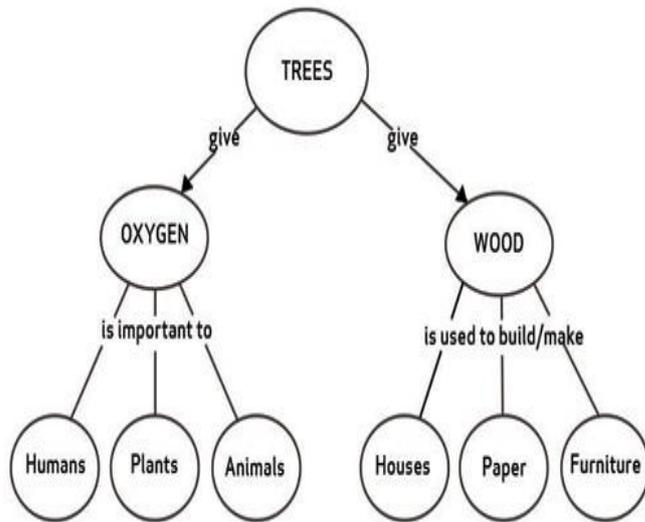


Figure 1. A concept map that shows the benefits of trees

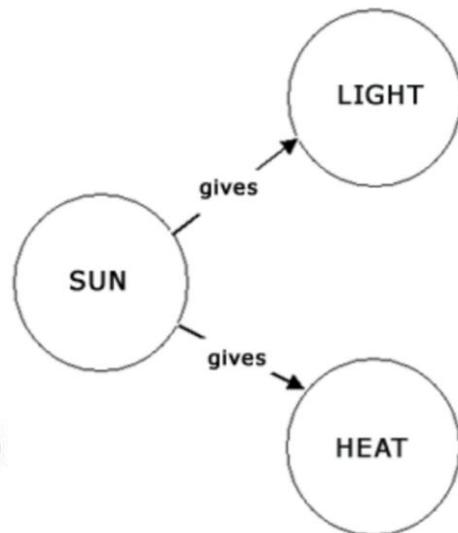


Figure 2. A concept map that shows the benefits of the sun

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

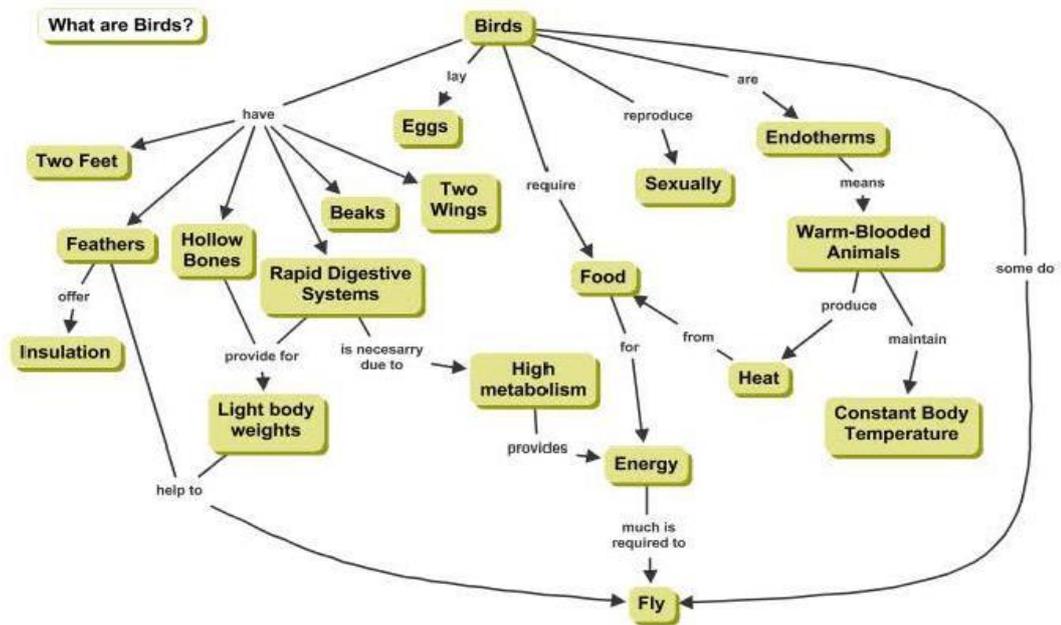


Figure 3. A concept map that explains what birds are

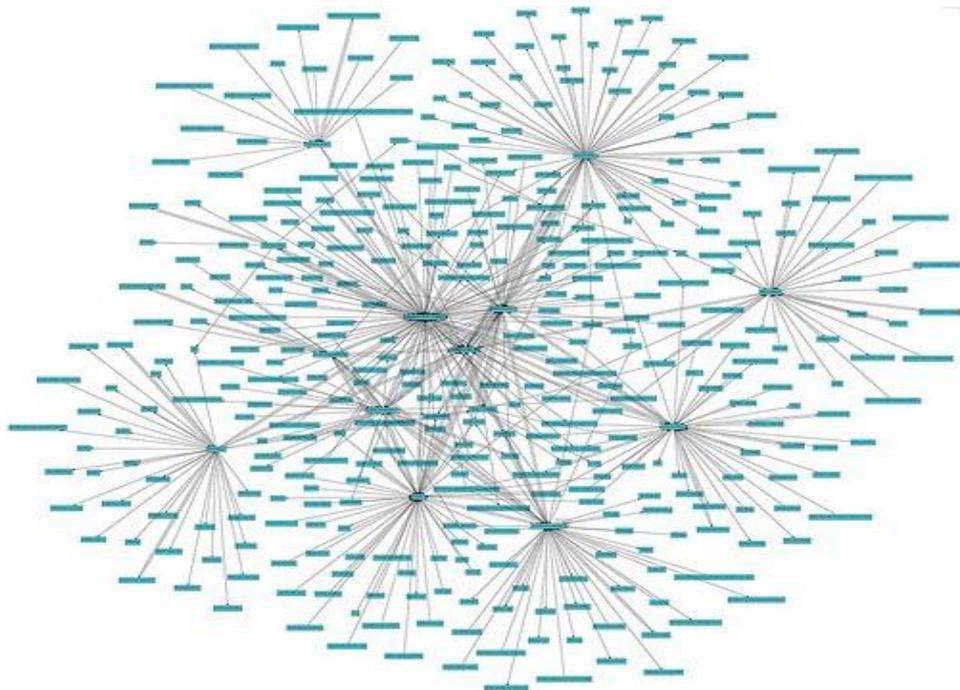


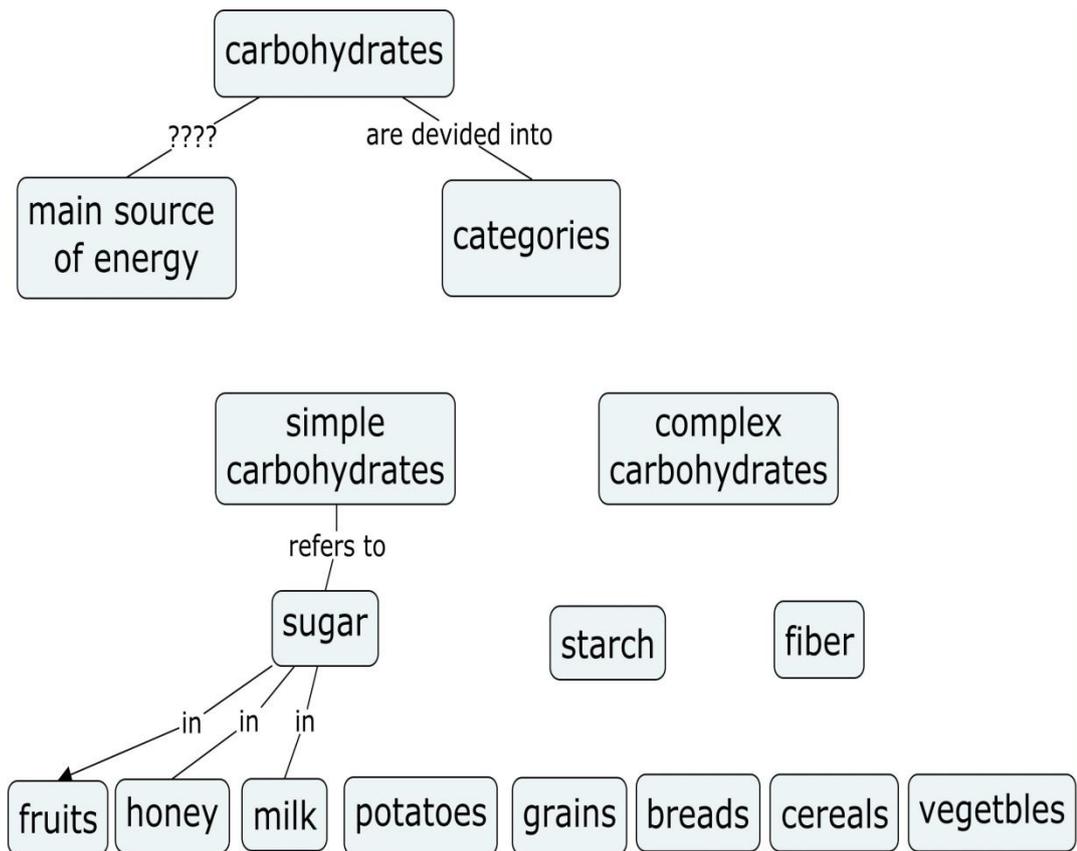
Figure 4. A complex concept map

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

**Practice1:** Read the following short passage carefully and finish the concept map that follows:

**Carbohydrates**

Carbohydrates usually are the main sources of energy for the body. There are three different types of carbohydrates: sugar, starch, and fiber. Sugar is in fruits, honey, and milk and are also called simple carbohydrates. Starch is found in potatoes and grains, and is called complex carbohydrates. Fiber is found in breads, cereals, and vegetables, and is also called complex carbohydrates. Fiber is needed to keep the digestive system running smoothly.



## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

**Practice2:** Work in pairs to draw the concept map of the following passage.

### **Cardiovascular disease**

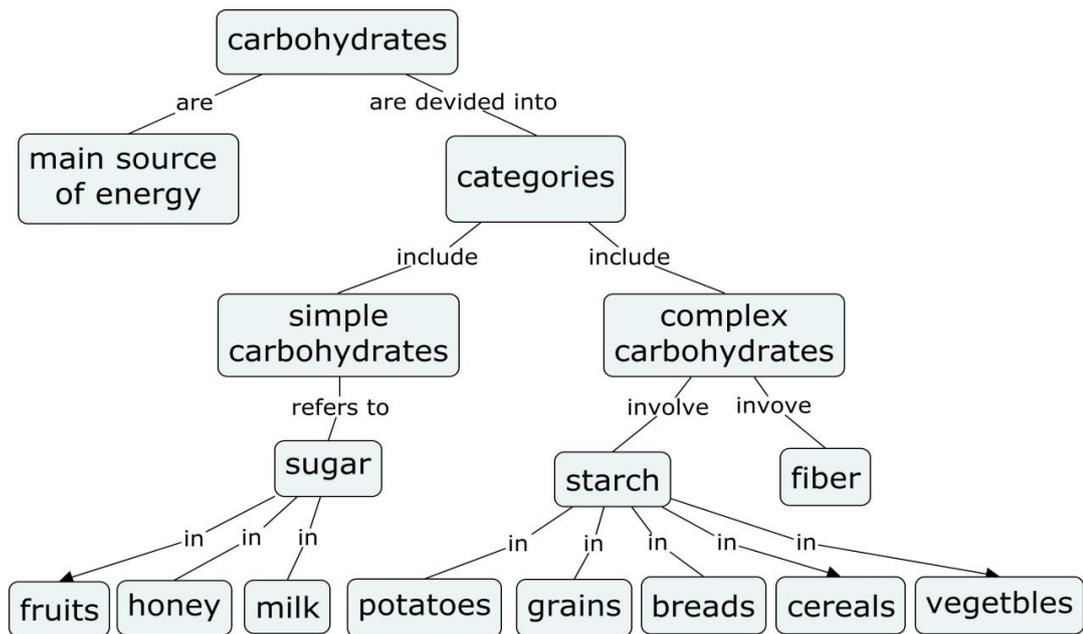
Atherosclerosis, hypertension, and heart failure are all parts of Cardiovascular disease. Each affects the heart in a given way. To start with, Atherosclerosis is when fat is built up on arterial walls. while hypertension is when blood pressure is higher than normal, heart failure is when the heart cannot pump blood efficiently.

References:

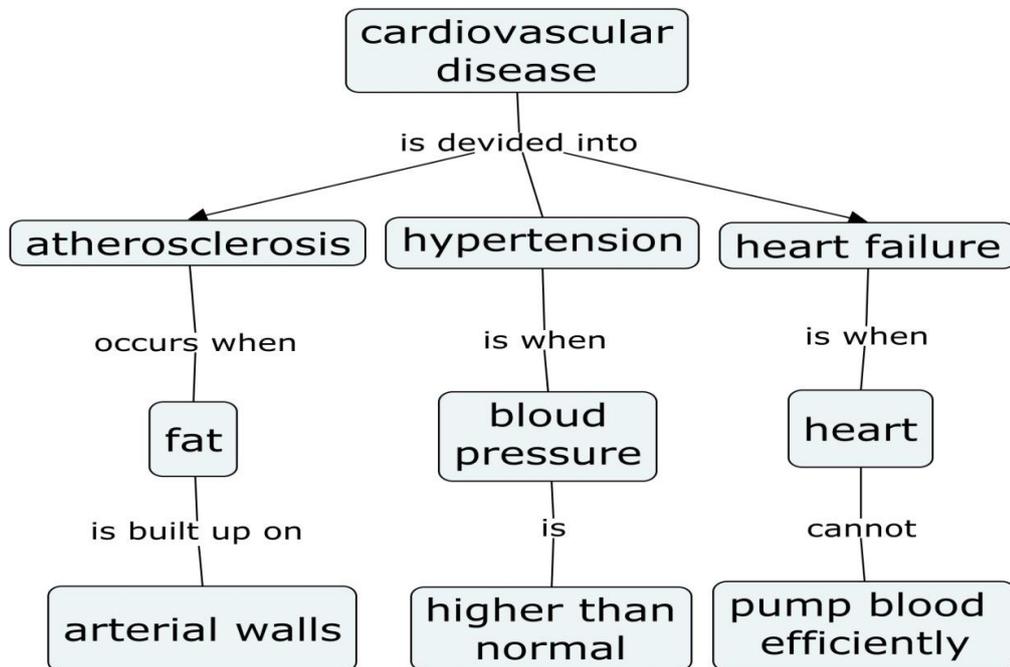
Bhattacharya, A. (n.d.). Promoting Science Passage Comprehension Via Concept Mapping Instruction. Retrieved from

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**The correction of practice 1**



**The correction of practice 2**



**Lesson 3: Concept Map Structures, Domains, and Benefits.**

Lecturer's name: HENOUDA Meriem	Date: 04/ 03/ 2020
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
Resources: Handouts, board.	
Lesson objectives: At the end of this session, students will be familiar with the different structures of concept maps, as well as the different domains where it can be used. They will learn some of the uses/ benefits of this instructional tool.	

**References:**

- Otieno,W. V. (2015). *Effects of concept mapping-based instruction on students' Achievement in physics* (Master's thesis). Kenyatta University, Nairobi County,Kenya.

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Headings + content	Teacher activity	Student activity	Time
<ul style="list-style-type: none"> <li>• Warm-up: Asking questions about the previous session.</li> <li>• Introducing the session's objectives to students.</li> </ul>	The teacher asks questions	The students answer and discuss them	10 Min
<ul style="list-style-type: none"> <li>• Concept map structures</li> <li>• Domains where it can be used</li> <li>• Its benefits, uses</li> </ul>	The teacher reads, explains, presents, asks the students	Students listen, Predict answers	17 min
<p><b>Practice:</b></p> <ol style="list-style-type: none"> <li>1. Do you know what sponges are?</li> <li>2. Construct a concept map that represents what you know on sponges (your prior knowledge).</li> <li>3. Depend on the following short passage to complete your concept map.</li> <li>4. Using the marking grid presented by the teacher, correct your classmates final concept map.</li> </ol>	Provides feedback, correction	Answer the practice	33 min

### Lesson 3: Concept Map Structures, Domains, and Benefits.

At the end of this session, you will:

- Learn the variety of structures concept maps can take.
- Determine the number of domains where concept maps can be used.
- Be aware of the different benefits, uses of the concept mapping strategy.

#### 1. Concept map structures

There are three map structures as proposed by kinchin (2000, as cited in Otieno, 2015), namely spoke, chain, and net structures. These are demonstrated in figures 1, 2, 3, respectively.

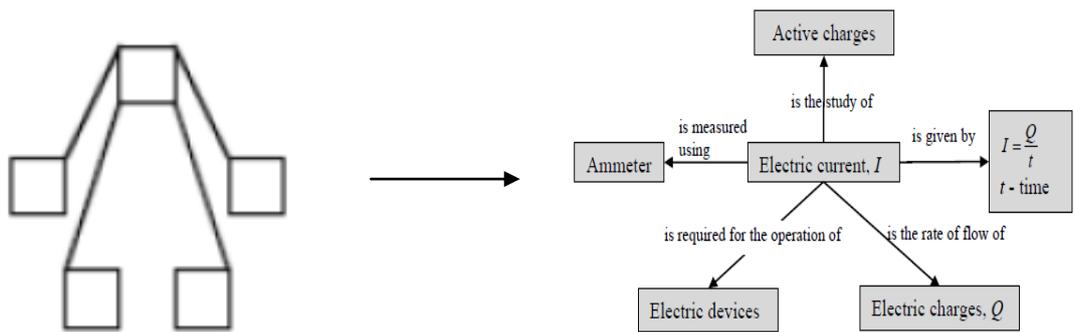


Figure 1. Spoke

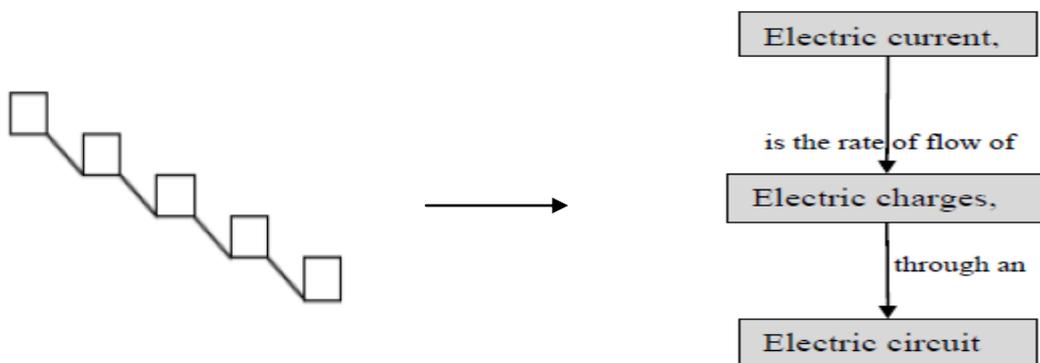


Figure 2. Chain

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

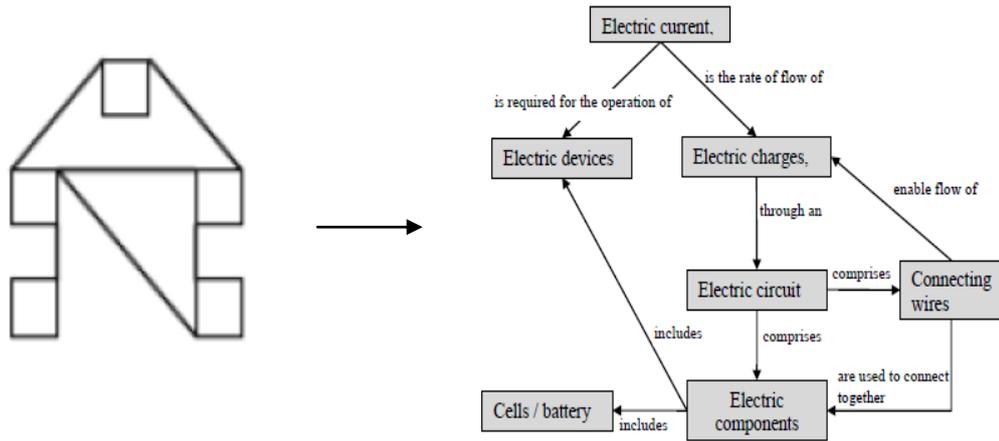


Figure3. Net

Building on the spoke, chain, and net structures, researchers from Stanford University (Yin, Vanides, Ruiz-Primo, Ayala, and Shavelson, 2005, as cited in Otieno, 2015) propose five possible structure types that could be used to describe concept maps; linear, circular, hub spokes, tree, and network/net. As long as what they are doing is correct, the students can adopt any of the concept map structures in figure 4.

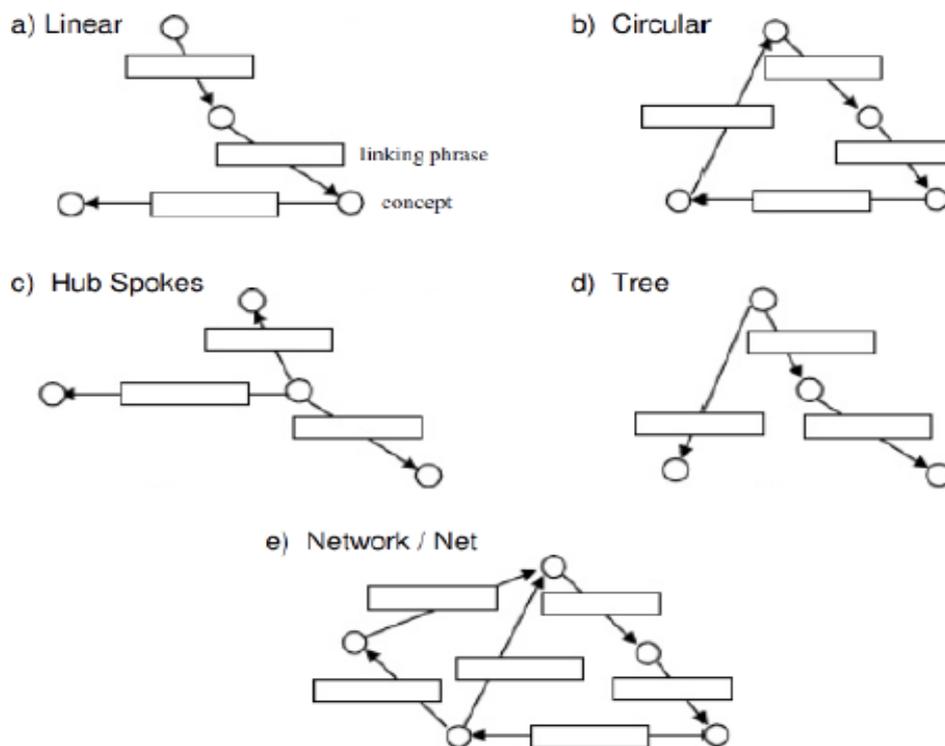


Figure 4. concept map structures

**2. Some of the domains where the concept mapping strategy can be used:**

- |                                       |                |
|---------------------------------------|----------------|
| A. Second language teaching, learning | f. Medicine    |
| B. Mathematics                        | g. Physics     |
| C. Architecture                       | h. Computing   |
| D. Statistics                         | i. Agriculture |
| E. Physics                            | j. Chemistry   |

**3. Benefits of concept maps:**

Instructional concept maps are flexible tools that can be used for a variety of educational uses:

5. Facilitates reading comprehension with its visual format,
6. Demonstrating an acceptable level of understanding on a subject,
7. Relates the ideas of texts together,
8. Activates prior knowledge,
9. A good way for summarizing the text,
10. Curriculum planning,
11. Note-taking during the lesson,
12. Used for planning studies and career,
13. A graphic for presentations and term projects,
14. Refines creative and critical thinking about problems, questions, explorative ideas,
15. Synthesises information by integrating new and old concepts to better grasp the big picture,
16. Encourages brainstorming and high-level thinking,
17. Fosters discovery of new concepts and their connections,
18. Provides clear communication of complex ideas,
19. Promotes collaborative learning,
20. Sparks creativity,
21. Identifies areas that need further knowledge or review,
22. Absorbing information while studying for an exam,
23. Assessing a student's grasp of a particular topic,
24. Consolidating knowledge during the learning process.

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

### **Practice:**

- a. Do you know what sponges are?
- b. Construct a concept map that represents what you know on sponges (your prior knowledge).
- c. Use the following short passage to complete your concept map.
- d. Using the marking grid presented by the teacher, correct your classmates' final concept map.

### **Sponges**

Sponges are classified as animals because they do not make their own food. Though they have different shapes and sizes, they lack a number of animal characteristics such as muscles, nerves, circulatory system, and internal organs. Sponges are made of four types of cells. The first type is the collar cells. These cells help to bring oxygen and nutrients to the sponge while also removing waste and carbon dioxide. The second cells are the porocytes. The latter make up the pores of the sponge. Epidermal cells, however, form the skin on the outside of the sponge. Finally, the amoebocytes, which constitutes the final type of sponges, help in transporting nutrients. Importantly, they usually work together with the collar cells.

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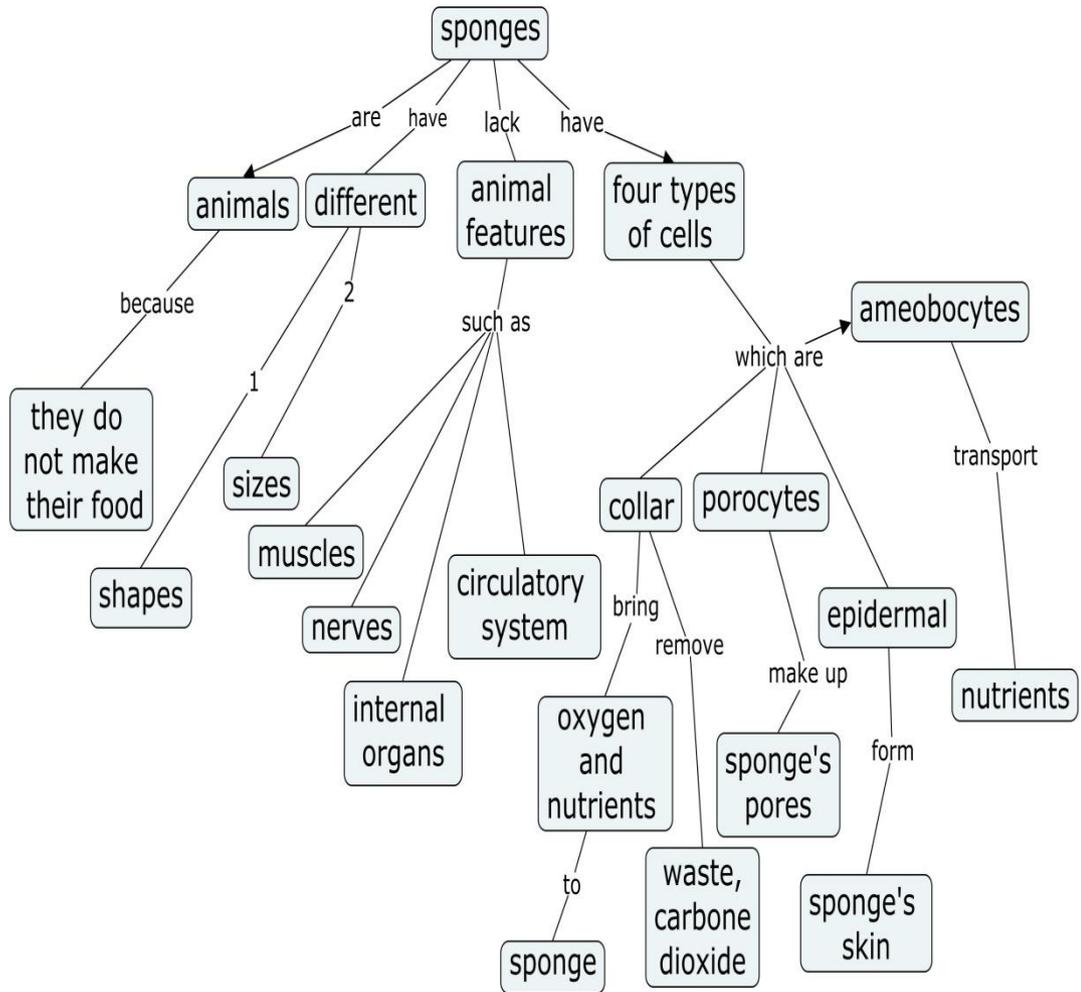


Figure5. A concept map showing what sponges are

Thanks for Your Attendance

**Lesson 4: Reading Comprehension and Concept Maps**

Lecturer's name: HENOUDA Meriem	Date:
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
Resources: Handouts, board.	
Lesson objectives: At the end of this session, students will learn to activate their prior knowledge on the topic of the passage they later read about before they start constructing the concept map.	

References:

Mayfield Clinic. (2018). Anatomy of the brain. Retrieved from <https://mayfieldclinic.com/pe-anatbrain.htm>

Tabatabaei, O., & khalili, S. (2014). The effect of concept mapping on Iranian Pre-intermediate 12 reading comprehension. *Journal of Language Teaching and Research*, 5(6), 1368-1380

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Headings + content	Teacher activity	Student activity	Time
<p>•Warm-up: Asking questions, discussion</p> <p>•Introducing the session's objectives to students.</p>	<p>The teacher asks questions</p>	<p>The students answer and discuss them</p>	<p>10 Min</p>
<p>A reading passage: What is a computer</p>	<p>She asks them to:</p> <ul style="list-style-type: none"> <li>•Collectively brainstorm ideas on the topic- the computer.</li> <li>•Then read the actual passage</li> <li>•Construct the concept map based on the text and the brainstormed ideas.</li> <li>• Answer the reading comprehension questions.</li> </ul>	<p>They follow the instructions in order to draw the map and answer the questions following the text</p>	<p>50 Min</p>
<p>Homework:</p> <p>Q1. Read the text carefully (brain)</p> <p>Q2. Construct the corresponding concept map to the text.</p> <p>Q3. Based on the concept map you draw, write a short paragraph in which you describe the brain and its parts.</p>			

## Lesson 4: Reading Comprehension and Concept Mapping

### The text

#### What is a computer

Computers are changing all over lives and also old ways of doing things with their superhuman speed. They come in different sizes from very large to small pocket-sized ones. They can always be used in any field of activity. No one can deny their influence and importance. Computers are used to design different things. They are used in giant airplanes and modern cars. All spacecraft which are orbiting out through space are controlled by computers. In addition to helping us to work better, computers are opening new fields of endeavour. Perhaps the most important is in medicine where computers are helping doctors to research disease, chemists to design drugs and disabled people to learn skills.

Furthermore, computers can also be programmed to do many separate tasks at the same time. The central computer of an airline, for example, is constantly busy sending and receiving information to and from offices and airports around the world.

### Questions

Read the text carefully and choose the right answer.

1. According to the passage.....

- A) the computer has had little effect on your life
- B) people usually use pocket-sized computers at home
- C) computers are available everywhere
- D) the computers will influence our life in different aspect

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

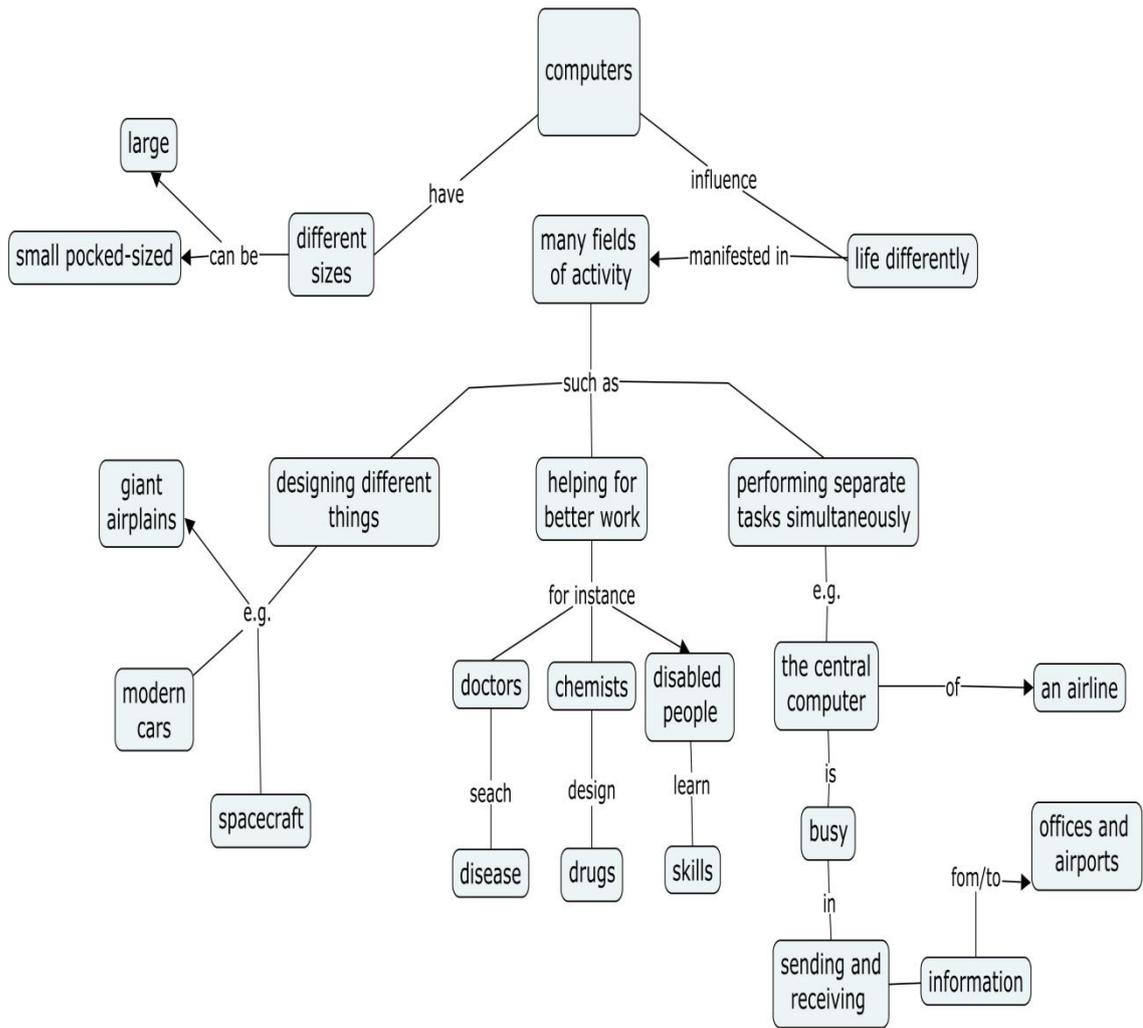
2. Computers can be used .....
- A) in the field of medicine
  - B) to design drugs for disabled people
  - C) to switch from one job into another
  - D) by chemists only
3. We learn from the passage that.....
- A) disabled people do research to design drugs
  - B) doctors teach the disabled people different skills
  - C) computers are used in research projects
  - D) computers should only do certain tasks
4. What can computers do in an airline?
- A) it can correspond information to and from the airport
  - B) it can design different things
  - C) it can help passengers talk to each other
  - D) it can help the flight attendant to convey the information

Reference:

- Tabatabaei, O., & Khalili, S. (2014). The effect of concept mapping on Iranian Pre-intermediate 12 reading comprehension. *Journal of Language Teaching and Research*, 5(6), 1368-1380

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# INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING



**Homework:**

**Brain**

The brain is an organ that serves as the centre of the nervous system. It is located in the head. It controls all functions of the body, interprets information from the outside world. The brain governs intelligence, creativity, emotion, and memory. The brain is composed of the cerebrum, cerebellum, and brainstem. **Cerebrum:** is the largest part of the brain and is composed of right and left hemispheres. **Cerebellum:** is located under the cerebrum. Its function is to coordinate muscle movements, maintain posture, and balance. **Brainstem** performs many automatic functions such as breathing, heart rate, body temperature, wake and sleep cycles, digestion, sneezing, coughing, vomiting, and swallowing. The cerebrum is divided into two halves: the right and left hemispheres. They are joined by a bundle of fibers called the corpus callosum that transmits messages from one side to the other. Each hemisphere controls the opposite side of the body. Not all functions of the hemispheres are shared. In general, the left hemisphere controls speech, comprehension, and writing. The right hemisphere controls creativity, spatial ability, and musical skills.

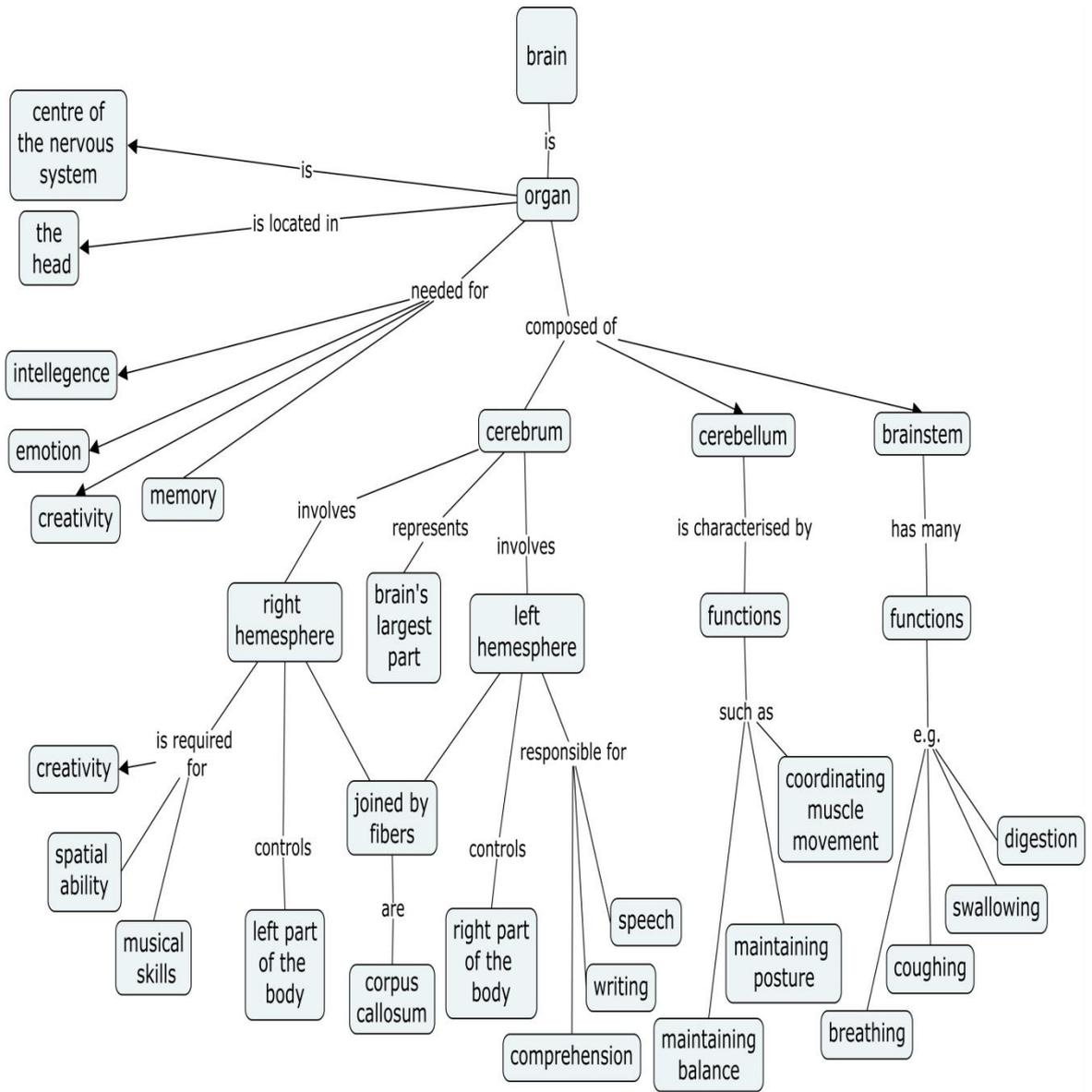
**Questions:**

1. In a parking lot, brainstorm all what you know about “the brain”
2. Draw a concept map based on your ideas
3. Read the text carefully
4. Add the necessary parts from the text in your concept map
5. Based on the concept map you draw, write a short paragraph in which you describe the brain and its parts (do not copy and paste from the text)

**References:**

Mayfield Clinic. (2018). Anatomy of the brain. Retrieved from <https://mayfieldclinic.com/pe-anatbrain.htm>

**The correction of the homework:**



## Lesson 5: Reading Comprehension and Concept Maps

Lecturer's name: HENOUDA Meriem	Date:
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
Resources: Handouts, board.	
Lesson objectives: At the end of this session, students will learn to firstly turn a long reading passage into a concept map and secondly answer the reading comprehension questions based solely on their maps.	

### References

Tabatabaei, O., & Khalili, S. (2014). The effect of concept mapping on Iranian

Pre-intermediate 12 reading comprehension. *Journal of Language Teaching and Research*, 5(6), 1368-1380

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Headings + content	Teacher activity	Student activity	Time
<p>•Warm-up: Answering the homework.</p> <p>•Introducing the session's objectives to students.</p>	<p>•The teacher checks out some answers</p> <p>•She distributes the correction of the homework</p>	<p>•One student draws the map on the board.</p>	10 Min
<p>A reading passage: Various forms of communication</p>	<p>She asks them to:</p> <p>•Read the passage</p> <p>•Construct the corresponding concept map for the passage.</p> <p>•Answer the follow-up questions based on their constructed concept maps.</p>	<p>They follow the instructions in order to draw the map and answer the questions that follow the text.</p>	50 Min

## Lesson 5: Reading Comprehension and Concept Maps

### The text

#### Various forms of communication

Ever since humans have inhabited the earth, they have made use of various forms of communication. Generally, this expression of thoughts and feelings has been in the form of oral speech. When there is a language barrier, communication is accomplished through sign language in which motions stand for letters, words, and ideas. Tourists, the deaf and the mute have had to resort to this form of expression. Many of these symbols of whole words are very picturesque and exact and can be used intentionally, spelling however can not.

Body language transmits idea of thoughts by certain actions, either intentionally or unintentionally. A wink can be a way of flirting or indicating that the party is only joking. A nod signifies approval while shaking the head indicates a negative reaction. Other forms of nonlinguistic can be found in braille (a system of raised dots read with the fingertips).

Road maps and picture signs also guide, warn, and instruct people.

But verbalisation is the most common form of language. Writing a letter, having a telephone call, a class discussion, and a friendly chat are examples of this kind of language.

### Questions

Read the text carefully and create the corresponding concept map.

Based on your concept maps, circle the right answer:

1. Which of the following best summarises this passage?

A) nonlinguistic language is invaluable to foreigners

B) although other forms of communication exist, verbalisation is the fastest

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- C) when language is a barrier, people will find other forms of communication
- D) everybody uses only one form of communication
2. Which of the following statements is not true?
- A) verbalisation is the most common form of communication
- B) ideas and thoughts can be transmitted by body language
- C) there are many forms of communication in existence today
- D) the deaf and mute use an oral form of communication
3. Which form other than oral speech would be most commonly used among blind people?
- A) picture signs
- B) road map
- C) braille
- D) body language
4. How many different forms of communication are mentioned here?
- A) 5
- B) 7
- C) 11
- D) 9

References:

- Tabatabaei, O., & khalili, S. (2014). The effect of concept mapping on Iranian Pre-intermediate 12 reading comprehension. *Journal of Language Teaching and Research*, 5(6), 1368-1380

Thanks for Your Attendance

**Session 8: The posttest**

Lecturer's name: HENOUDA Meriem	Date:
Course: Reading Comprehension	Duration: 1 h
Topic: Lesson Planning	Level: Master 1. Group 1
The posttest objectives: To check whether there is any significant improvement in the reading comprehension ability after the use of the concept mapping strategy.	

References:

IELTS Reading Samples. (n.d.). IELTS- Exam.net. Retrieved from  
[www.ielts-exam.net](http://www.ielts-exam.net) › ielts\_reading

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Student's name:.....

The duration: 1 hour.

The group: .....

The mark:.....

### **Universities in Britain**

**A)** Today in Britain there are 124 state universities, but only one private university - the University of Buckingham. Before the 19th century there were only six universities: Oxford, Cambridge, Aberdeen, Edinburgh, Glasgow and St Andrews. Universities were usually linked to the Church and were established between the 13th and 15th centuries. They often have good reputations, beautiful old buildings, traditions and usually offer a wide range of courses.

**B)** A number of universities were established in the 19th and early 20th centuries as a result of the industrial revolution and they began training highly skilled people for industry. These universities were generally established in major industrial centres such as Birmingham, Manchester, Newcastle and other big cities. Sometimes called modern or civic universities, these universities have the advantage of well-established libraries, academic specialities and accommodation that is close to campus. These universities are often able to provide accommodation for all first year students.

**C)** A number of new universities were established in the 1960s when children born after World War 2 entered the higher education system. The government decided to expand higher education to educate these students. The advantage of these universities is that they are well planned and most of the living and teaching facilities are on campus.

**D)** Before 1992, higher education in the UK was split into polytechnics and universities. The polytechnics provided skilled people for the industries situated in their region - they focused on vocational and professional subjects. For many years, polytechnics didn't have the same influence as universities. However, by 1992, educational standards in polytechnics were as good as universities and many became universities. Many of these universities also offer diploma courses.

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**E)** These universities are made of several smaller colleges which come together to form a single university under a senate committee. There are only seven of these institutions in the UK - London University, Oxford and Cambridge are examples. Specialist colleges offer a range of courses in one discipline - for example agriculture, music, design or medicine. Some of these colleges may only offer postgraduate programmes. These colleges are usually small, with a limited number of students.

**F)** Universities have different locations. The older universities often have teaching facilities and student accommodation situated close together. Students in these usually socialise in a particular part of the city and there is a strong sense of community despite being in a large city. Some city campuses are situated on the outskirts of the city. These very often have the space to provide sports facilities and accommodation. They are also close enough to the city for students to enjoy city life. Some universities, notably Oxford and Cambridge, have a collegiate structure - that is, students are members of colleges within the university. These colleges are the centre of social life and academic life. Academic staff usually live at the college, and students and staff enjoy easy relationships.

### Questions

#### Part One:

##### Task 1:

The Reading Passage has six paragraphs **A–F**.

From the list of phrases below, choose the correct phrase that corresponds each paragraph

#### List of Phrases

- I** Campus types
- ii** Old universities
- iii** Universities during the industrial revolution
- iv** University colleges
- v** Rising standards in higher education
- vi** The second expansion
- vii** Former polytechnics

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Section A ..... Section D .....

Section B ..... Section E.....

Section C ..... Section F.....

**Task 2**

Answer the questions below with words taken from the Reading Passage.

Use **NO MORE THAN THREE WORDS** for each answer.

7. Why were several universities established during the 19th and 20th centuries?

.....

8. What did the government decide to do in the 1960s?

.....

9. What qualification do many former polytechnics provide?

.....

10. What are colleges the centre of?

.....

**Task 3**

Classify the following descriptions as referring to

**OU** (old universities)

**CU** (civic universities)

**NU** (new universities)

**FP** (former polytechnics)

**UC** (university colleges)

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

**NB** You may NOT use any answer more than once

- 11. have accommodation and educational facilities on campus. ....
- 12. provide various courses on a single subject. ....
- 13. have lecturers and students living in the same place. ....
- 14. were built in growing cities.....
- 15. offer diploma courses.....

**Part Two:**

In no more than 10 lines, write a short paragraph in which you mention the key ideas in the text.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

*Thank You so Much for Your Help and Collaboration*

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

The correction of the posttest:

Part One:

### Task 1 (6 points)

Section A **ii**

Section B **iii**

Section C **vi**

Section D **vii**

Section E **iv**

Section F **i**

### Task 2 (3 points)

7. Why were several universities established during the 19th and 20th centuries?

**the industrial revolution**

8. What did the government decide to do in the 1960s? **expand higher education**

9. What qualification do many former polytechnics provide? **vocational and professional**

10. What are colleges the centre of? **social life/academic life**

### Task 3 (5 points)

Classify the following descriptions as referring to

11. have accommodation and educational facilities on campus. **NU**

12. provide various courses on a single subject. **UC**

13. have lecturers and students living in the same place. **OU**

15. were built in growing cities. **CU**

16. offer diploma courses. **FP**

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**Part Two (5points)**

The evaluation of the paragraph considers the following:

Form: (Grammar, spelling, mechanics, formal language....)

Content:(Main ideas, the order of ideas, unity.....)

**Appendix 6: The Concept Map Rubric**

<b>The characteristic</b>	<b>The mark</b>
concepts	1 point for each correct, meaningful concept
Links	1 point for each correct, meaningful connecting line
Linking words	1 point for each correct, meaningful linking word
Hierarchy	5 points for each correct, valid hierarchical level
crosslinks	10 points for each correct meaningful crosslink

<b>The characteristic</b>	<b>The possible mark</b>		
	5 points	3 points	1 point
organisation	<ul style="list-style-type: none"> <li>• Organised</li> <li>• The reader is able to follow and understand what is written.</li> </ul>	<ul style="list-style-type: none"> <li>•Somehow organised</li> <li>•Sometimes the reader is not able to follow what is written</li> </ul>	<ul style="list-style-type: none"> <li>•Not organised</li> <li>•the reader cannot follow what is written</li> </ul>
Spelling/grammar	No errors	1-2 errors	3 or more errors
The degree of understanding the topic.	Shows an understanding of the topic	shows a few understandings of the topic	Shows no understanding of the topic

**Appendix 7: The Post-Treatment Questionnaire**

(Concept Mapping Experience)

Dear students,

You are kindly invited to respond to the following questionnaire, which is an attempt to determine the way you find the preparation and implementation of the concept mapping strategy. Also, your answers will help us gain a better understanding of your attitudes and opinions the way this strategy has affected your reading comprehension.

Please tick (✓) the appropriate box (es) or provide full statements where necessary.

Confidentiality of your data/information will be ensured

**Prepared by:**

Meriem HENOUDA

**Supervised by:**

Dr. Ahmed Chaouki HOADJLI

**Section One: Lesson Presentation and Implementation**

Q1. Please specify which of the following aspects were you most satisfied with:

- a) The organisation and preparation of lessons.
- b) The clear determination of the lesson objectives.
- c) The teacher-student interaction
- d) The materials used during the sessions.

Q2. When it comes to concept mapping, which of the following did you find mostly difficult?

- The preparation stage of this strategy
- The implementation stage
- Both
- None

Whatever your answer, please justify

.....

.....

.....

**Section Two: Concept Mapping Application**

Q3. Please tick (✓) the appropriate box.

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General statements about the use of instructional concept maps	Yes	No
f) It is easy to construct concept maps		
g) Concept maps foster students' motivation, interest and engagement in the reading tasks		
h) The use of concept maps helps students to summarise the text, determine the main and sub ideas, and draw connections among them.		
i) Concept mapping is helpful for linking the different parts of the text (concepts, ideas, explanations, examples) together		
j) The use of concept maps helps in improving students' reading and diminishing the deficiencies in reading comprehension		
k) Concept mapping stimulates students to read analytically and independently.		

Q4. While using the concept mapping technique, have you noticed that your prior knowledge of the topic of the reading material is being activated?

Yes

No

Whatever your answer, please say how?.....

.....

.....

Q5. By using the concept mapping technique, have you noticed any improvement in your ability to remember the ideas of the text after finishing reading it?

Yes

No

Whatever your answer, please say how?.....

.....

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Q6. How did you find the use of concept mapping strategy?

.....  
.....  
.....  
.....

Q7. After trying this strategy, describe the way (how) this strategy helped you in comprehending different texts.

.....  
.....  
.....  
.....

Q8. With regard to the deep understanding of the text, do you find that concept mapping is

- (1) More useful than the traditional ways of approaching a text.
- (2) Less useful than the traditional ways of approaching a text.
- (3) Equally useful to the traditional ways of approaching a text.

Please

justify.....

.....

Q9. Do you prefer the use of the concept mapping strategy in teaching other courses?

- Yes  No

If yes, which courses? .....

.....  
.....

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

Q10. Will you use concept mapping for studying other courses (when necessary)?

Yes

No

Whatever your answer, please justify .....

.....  
.....  
.....

**Section Three: Challenges and Further Suggestions**

Q11. Did you face any challenges and constraints during the process of constructing different concept maps?

Yes

No

If yes, what kind of difficulties?.....

.....  
.....  
.....

Q12. Do you have any suggestions or comments concerning the better implementation of concept maps to assist students in overcoming the reading comprehension difficulties they usually encounter?.....

.....  
.....  
.....

*Thanks for Your Time and Collaboration*

**APPENDIX 1: THE INTERVIEW GUIDE FOR TEACHERS**

Dear teacher,

You are kindly asked for an interview, which serves as a data collection tool for a study, entitled “The Effects of Using Concept Mapping as a Teaching Strategy on Students’ Reading Comprehension”. As for the general aim, this research study is an endeavor to foster the reading comprehension of master students through the use of the aforementioned strategy and assist them in reducing their reading difficulties. Your responses/ data will be anonymous and will be used for research purposes only.

**Prepared by:**

Meriem HENOUDA

Academic Year: 2019-2020

**Section One: General Knowledge**

**Q01.** Would you specify your degree?

a) Master

b) Magister

c) Doctor

**Q02.** How long have you been teaching English at university?

.....

**Q03.** How do you find teaching reading?

a) Easy

b) Challenging

c) Difficult

**Section Two: Teachers' Practice in the Teaching of Reading Comprehension**

**Q04.** How do you teach reading?

.....  
.....  
.....  
.....

**Q05.** Do your students have any reading comprehension difficulties?

Yes

No

If yes, would you please specify them.

.....  
.....  
.....  
.....

**Q06.** What do you think are the reasons behind students' reading comprehension difficulties?

.....  
.....  
.....

**Q07.** What kind of support do you usually give to learners who are low achievers in terms of reading comprehension?

.....  
.....  
.....

**Q08.** Do you encourage students, especially the ones with reading comprehension difficulties to use particular strategies in order to overcome these difficulties?

Yes  No

If yes, what kind of strategies?

.....  
.....  
.....

**Q09.** Do you employ graphic organisers in your reading classes?

Yes  No

If yes, please say which one do you usually make use of?

.....  
.....  
.....  
.....

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

**Q10.** Do you use concept mapping in your reading classes?

Yes  No

If yes, please say why

.....  
.....  
.....

**Q11.** If no, what are the reasons that hinder you from adopting and using graphic organisers, especially concept maps into your instruction, in general, and your reading classes, in particular?

.....  
.....  
.....

**Q12.** What do you think about the use of the concept mapping strategy to reinforce students' reading and reduce their comprehension difficulties?

.....  
.....  
.....  
.....

**Q13.** Is there anything you want to add?

.....  
.....  
.....

*Thanks for Your Help and Collaboration*

**Appendix 9: The Opinionnaire**

1. Are there any repetitive questions?

Yes  No

- If yes, please specify them.

.....  
.....  
.....

2. Did you find any grammar/spelling mistakes in the questions?

Yes  No

-If yes, please notify them below.

.....  
.....  
.....

3. Are there any irrelevant questions that need to be removed?

Yes  No

-If yes, please provide the number of the question(s) below.

.....  
.....  
.....

4. Is the questionnaire of reasonable length?

Yes  No

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5. Is the questionnaire of reasonable length?

Yes  No

6. Are there any ambiguous questions that need to be reformulated and / or clarified?

Yes  No

-If yes, please indicate which questions require rewording.

.....  
.....  
.....

7. What do you think of the layout?

.....  
.....  
.....

8. Are the response categories appropriate?

Yes  No

9. If there are any questions that you believe are of close relevance to the purpose of the questionnaire but were not included, please write them below.

.....  
.....  
.....

**Thank you very much for your time and collaboration**

**Appendix 10: Questionnaire Validation Form**

I hereby certify that I have read the students' questionnaire in the study carried out by Meriem HENOUDA who is presently working on her MA dissertation at Biskra University. I have provided the researcher of this study regarding the effects of using concept mapping as a teaching strategy on learners' reading comprehension with remarks and comments concerning the layout, as well as the contents of the questionnaire.

**Background Information on the Expert:**

Name:.....

University:.....

Present Occupation:.....

Degree:.....

Telephone Number:.....

Email Address:.....

Signed:.....

**Researcher Contact Details:**

Meriem Henouda

Email: henoudameriem9@gmail.com

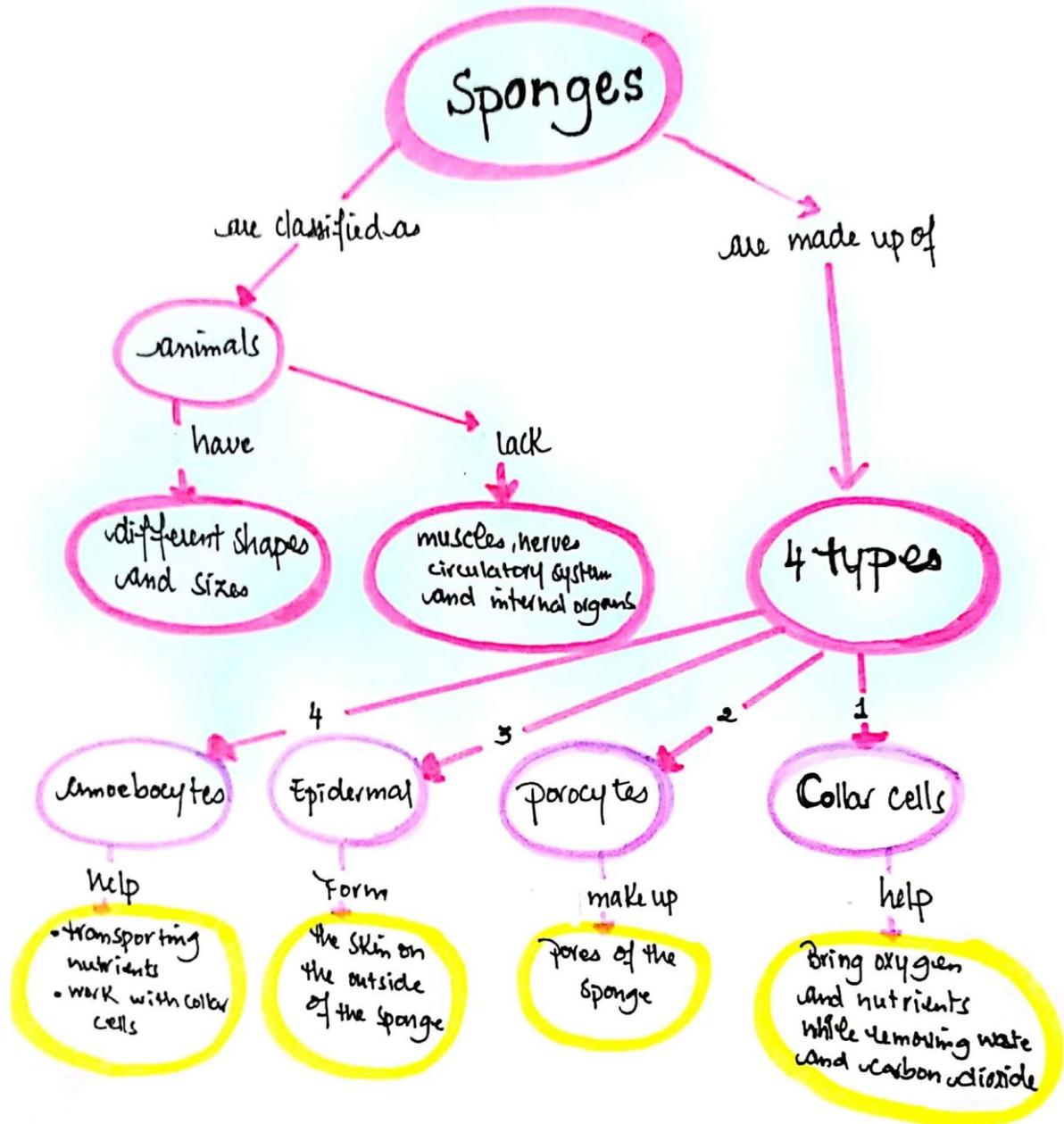
Mohamed Kheider University of Biskra

Faculty of Letters and Foreign Languages

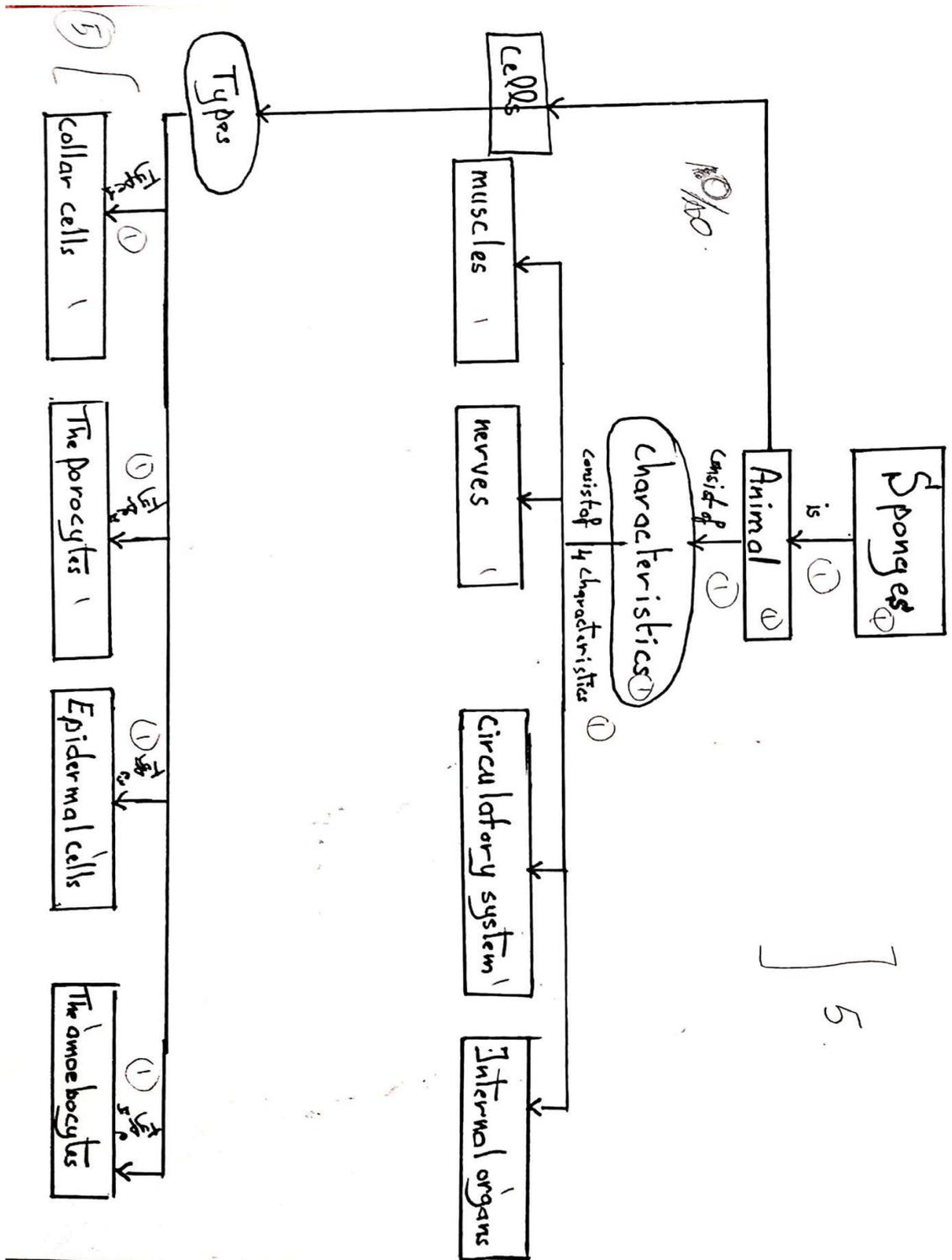
Department of Foreign Languages

Section of English

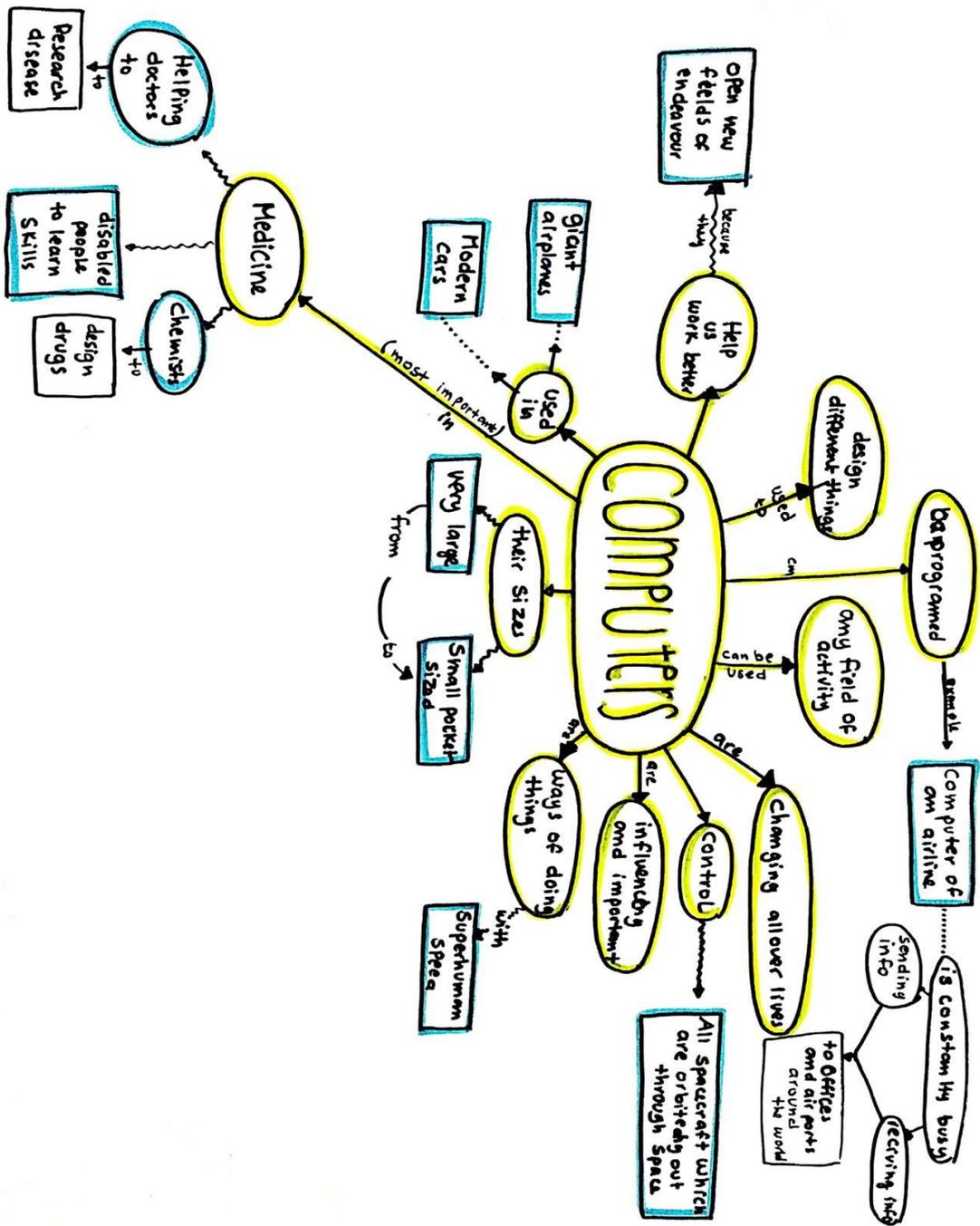
Appendix 11: Samples of the Participants Concept Maps



Maissa's concept map on sponges

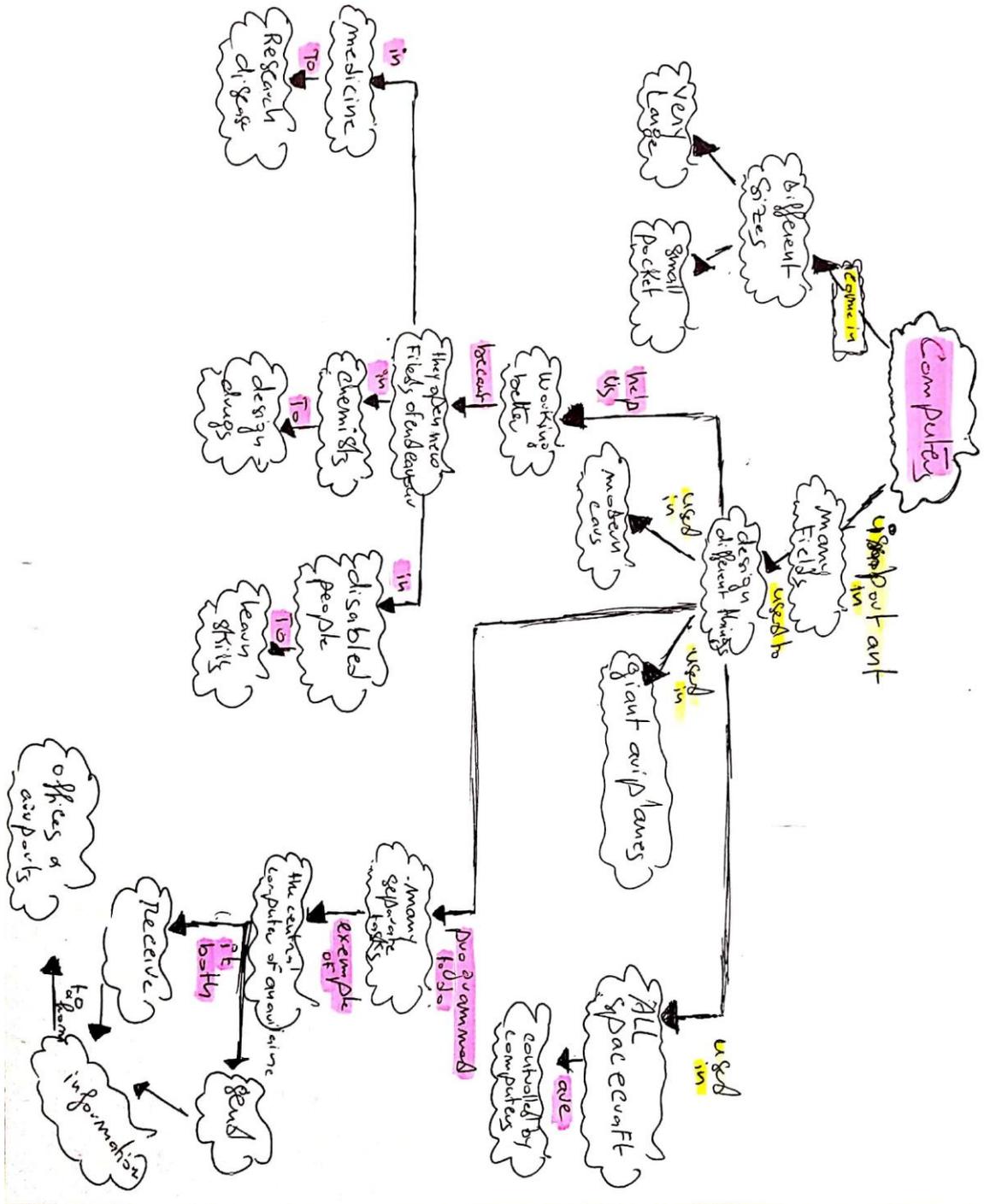


Yamina's concept map on sponges



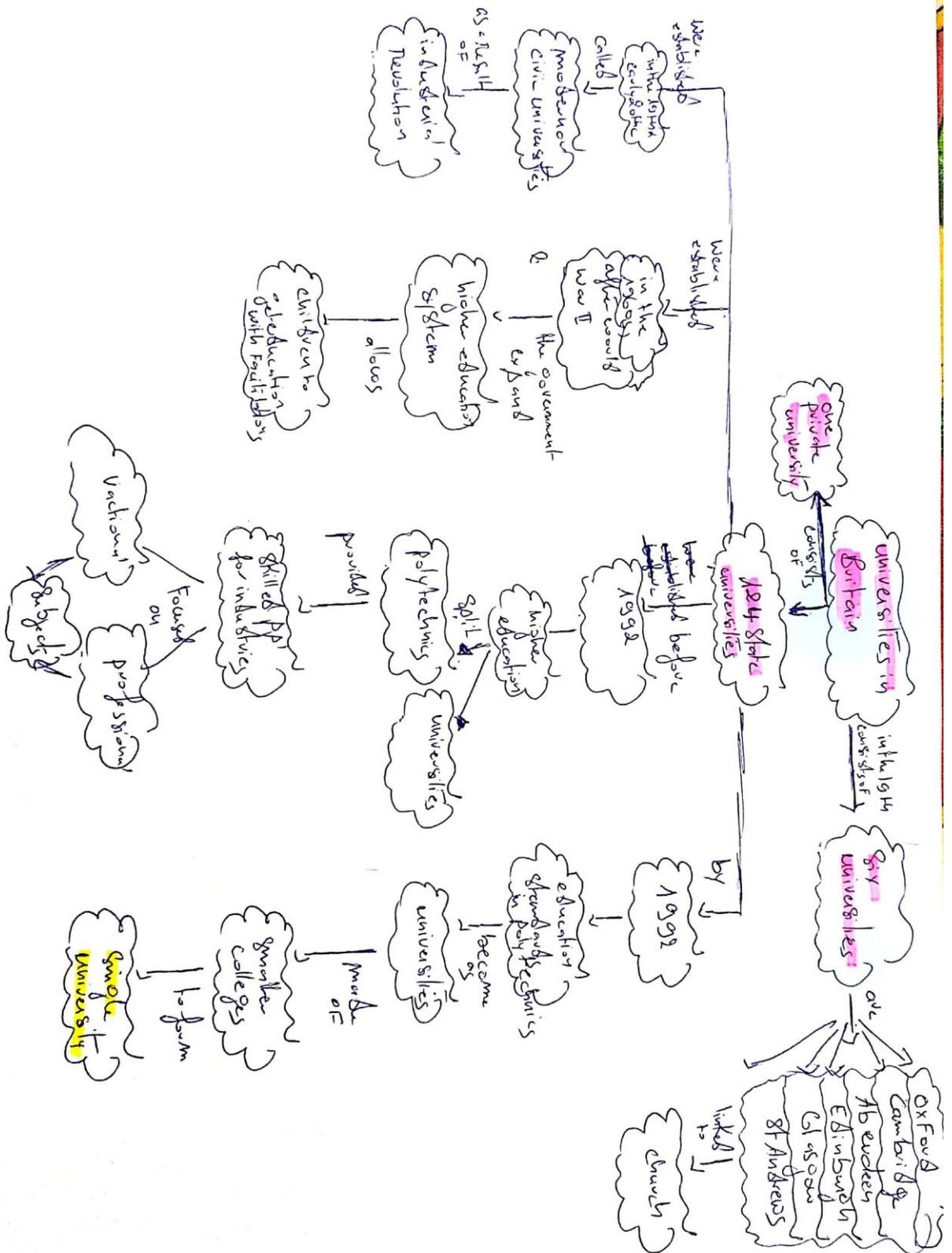
Marwa's concept map on computers

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

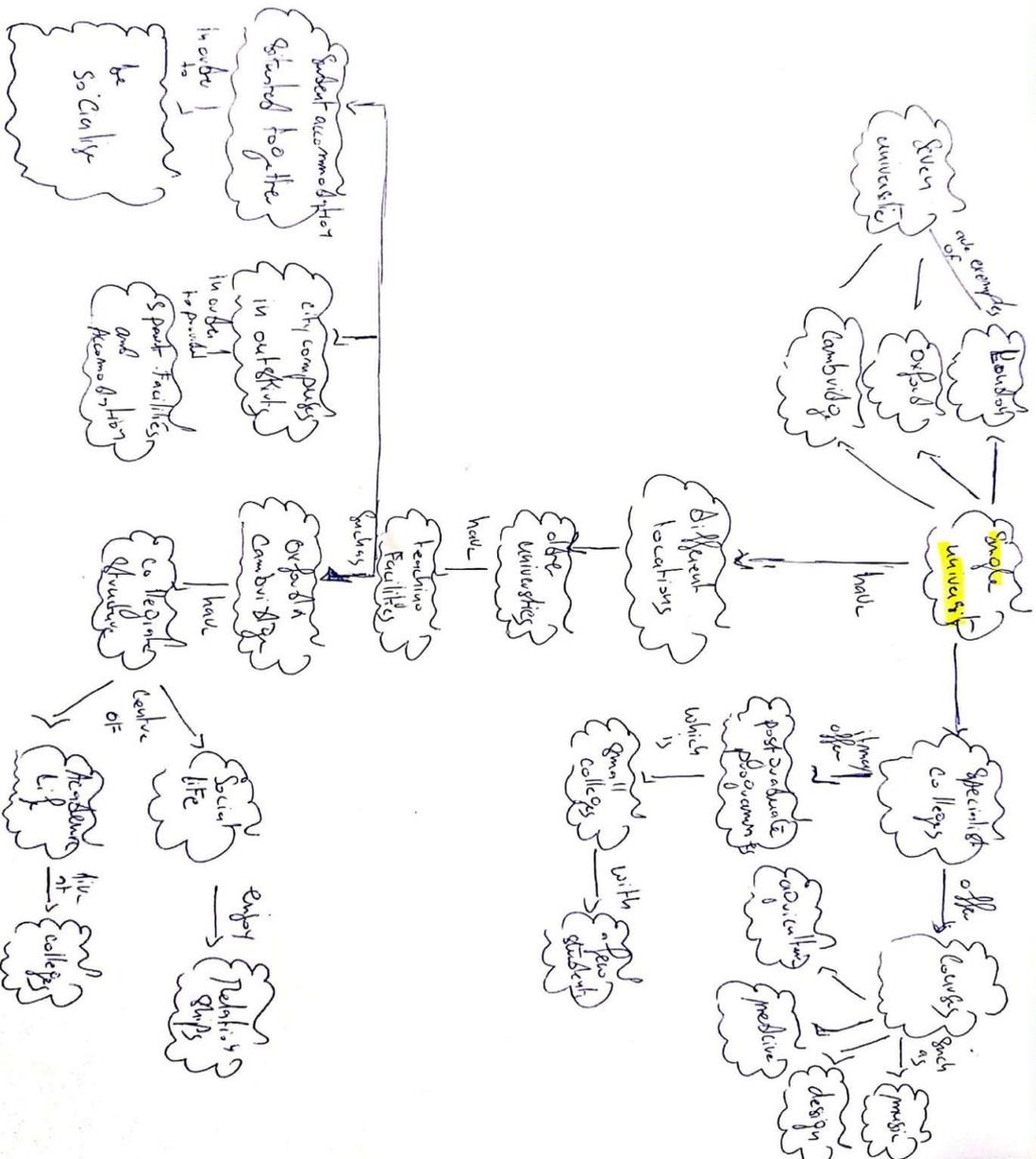


Chaima's concept map on computers

INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING



INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING



Chaima's concept map on universities in Britain (the post-test)

**Appendix 12: The Statistical Results Obtained Using SPSS**

**Descriptives**

			Statistic	Std. Error
scores on test before training	Mean		8,9722	,72024
	95% Confidence Interval for Mean	Lower Bound	7,4526	
		Upper Bound	10,4918	
	5% Trimmed Mean		9,0802	
	Median		9,2500	
	Variance		9,337	
	Std. Deviation		3,05572	
	Minimum		2,00	
	Maximum		14,00	
	Range		12,00	
	Interquartile Range		3,75	
	Skewness		-,855	,536
	Kurtosis		,756	1,038
	Mean		14,2500	,38401
scores on test after training	95% Confidence Interval for Mean	Lower Bound	13,4398	
		Upper Bound	15,0602	
	5% Trimmed Mean		14,2500	
	Median		14,2500	
	Variance		2,654	
	Std. Deviation		1,62924	
	Minimum		11,50	
	Maximum		17,00	
	Range		5,50	
	Interquartile Range		2,75	
	Skewness		-,138	,536
	Kurtosis		-,750	1,038

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 scores on test before training	8,9722	18	3,05572	,72024
scores on test after training	14,2500	18	1,62924	,38401

**Paired Samples Test**

	Paired Differences					t	df	Sig.
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 scores on test before training - scores on test after training	-5,27778	3,05452	,71996	-6,79675	-3,75880	-7,331	17	,000

### **Appendix 13: Some Interview Manuscripts**

#### Manuscript A

**Interviewer:** The researcher

**Interviewee:** Teacher A

**Researcher:** Hello, I am Henouda Meriem. Thank you so much for agreeing to answer a few questions which serve us to collect the necessary data for a study entitled “The Effects of Using Concept Mapping as a Teaching Strategy on Students’ Reading Comprehension”. I am mostly interested in the set of answers you will provide.

**Teacher A:** Welcome, I am pleased to provide help for the completion of your research work.

**Researcher:** The first two questions that I will start off by are meant to identify the necessary information concerning your profile as a teacher. Shall I start?

**Teacher A:** Yeah! Sure.

**Researcher:** Would you specify your degree?

**Teacher A:** I hold a magister degree.

**Researcher:** How long have you been teaching English at university?

**Teacher A:** For five years.

**Researcher:** Generally speaking, and as you are in charge of the course of reading, how do you find teaching it?

**Teacher A:** I see it is neither difficult nor easy. I find it rather challenging.

**Researcher:** Ok. Why do you believe so?

**Teacher A:** In addition to the issue of learner differences, the majority if not all the students show no interest in reading. This cannot all the time be handled easily.

**Researcher:** That is great thank you!

## INVESTIGATING THE EFFECTS OF USING CONCEPT MAPPING

For now, your practices in the reading comprehension course will be the centre of the follow-up questions.

How do you teach reading?

**Teacher A:** I generally try to provide a theoretical basis for reading.

**Researcher:** Would you explain even more.

**Teacher A:** I attempt to raise the students' awareness towards this skill including its definitions, types, importance, and benefits. In addition, I usually bring varied texts to the classroom and ask them to answer the reading comprehension questions. Later, I provide the necessary correction.

**Researcher:** Do your students have any reading comprehension difficulties?

**Teacher A:** Yes, absolutely.

**Researcher:** Ummm! Would you please specify them.

**Teacher A:** There is the problem of not being able to understand the meaning of the newly encountered vocabulary, know the genre of the text, and keep attention. In most cases, I see that they cannot link the ideas of the text.

**Researcher:** Taking these difficulties into account, what do you think are the reasons behind your students' reading comprehension difficulties?

**Teacher A:** In my view, and though there might be several reasons, overcrowded classes is the most recognised factor because it limits the opportunities for individual students to read.

**Researcher:** What about the lack of practice?

**Teacher A:** Exactly, it can be another reason; however, the students can seize the opportunity to read on a daily basis.

**Researcher:** What kind of support do you usually give to learners who are low achievers in terms of reading comprehension?

**Teacher A:** I provide some vocabulary learning strategies. For instance, I try to show them how to guess the meaning from context without the need for understanding each word.

**Researcher:** Do you encourage students, especially the ones with reading comprehension difficulties to use particular strategies in order to overcome these difficulties?

**Teacher A:** Yes.

**Researcher:** What kind of strategies then?

**Teacher A:** I generally advise them to use English-English dictionaries.

**Researcher:** Only?

**Teacher A:** Yeah, only.

**Researcher:** Do you employ graphic organisers in your reading classes?

**Teacher A:** No, I do not.

**Researcher:** Do you use concept mapping in your reading classes?

**Teacher A:** I never used it.

**Researcher:** If no, what are the reasons that hinder you from adopting and using graphic organisers, especially concept maps into your instruction in general and your reading classes in particular?

**Teacher A:** Actually, this strategy is not at all familiar to me. I only know mind mapping.

**Researcher:** Is this the only factor?

**Teacher A:** Another reason might be time. Too often, time does not permit the teacher to include such visualisation.

**Researcher:** Knowing that the concept map refers to the graphical representation whereby different relationships are visually displayed and it begins with the main idea then branches out into smaller ones, along with what the literature suggests concerning its value in keeping the students attentive and clarifying the confusing parts of the text, what do you

think about the use of the concept mapping strategy to reinforce the students' reading and reduce their comprehension difficulties?

**Teacher A:** Based on the description you provided so far, this strategy could potentially reduce the reading difficulties. So, it may have positive effects.

**Researcher:** Thank you again for your time in meeting me and providing valuable information.

**Teacher A:** Welcome! I am really glad to know about this innovative strategy.

Manuscript B

**Interviewer:** The researcher

**Interviewee:** Teacher B

**Researcher:** Hello, Thank you so much for accepting to come here next to me. I am Henouda Meriem and I am here for a research interview that serves as a data collection tool for a study, entitled "The Effects of Using Concept Mapping as a Teaching Strategy on Students' Reading Comprehension".

**Teacher B:** Welcome, I am happy to help.

**Researcher:** I have about 12 questions, but I do not think it will take more than 20 minutes. Be sure that there are no correct or incorrect answers; all the responses will be beneficial to my study to a certain degree. If everything is clear, I can start.

**Teacher B:** Yeah, you may start.

I am firstly interested in your profile as a teacher, so would you specify your degree?

**Teacher B:** A magister degree.

**Researcher:** How long have you been teaching English at university?

**Teacher B:** For twelve years.

**Researcher:** Since you are an experienced teacher, how do you find teaching reading?

**Teacher B:** For me, teaching reading is quite challenging.

**Researcher:** Well, why do you think so?

**Teacher B:** I think it has to do with learner differences. Choosing one reading material does not all the time suit the interest of individual students. In order to settle the issue down, I often ask them to suggest some topics for future readings, but still, they cannot agree on one.

**Researcher:** Well explained! Thank you!

Now, the instructional practices will be the centre of our focus.

How do you teach reading?

**Teacher B:** Firstly, I select a text based on two conditions: A particular purpose and students' interest

I ask them to read and answer the questions.

The before, during, after reading strategies may also be incorporated.

**Researcher B:** Would you exemplify, please.

**Teacher B:** Concerning the pre-reading strategies, I tend to introduce the topic through question-answer relationships while summarising the text is an example of during reading strategies. As for the after reading strategies, I generally make use of class discussion.

**Researcher:** Good! Do your students have any reading comprehension difficulties?

**Teacher B:** Yes, surely.

**Researcher:** Would you please specify them.

**Teacher B:** I observed that they mainly suffer from understanding the new vocabulary and the overall hidden message.

**Researcher:** What do you think are the reasons behind these reading comprehension difficulties?

**Teacher B:** Tracing the reasons cannot all the time be doable; nevertheless, they can be summarised in these points:

Showing no interest in reading

Inappropriate teaching

Overcrowded classrooms. We all know that overcrowded classrooms for learning, in general, is never good and for reading is worst.

**Researcher:** Great! But what do you mean by inappropriate teaching?

**Teacher B:** Many teachers rely only on the theoretical grounding of reading such as its definitions forgetting that one of our roles as teachers of the course of reading is to introduce students to a variety of reading strategies, especially that we have many strategies related to writing and speaking.

**Researcher:** Ok. You are right. Can we consider the lack of practice as one reason for students' reading difficulties?

**Teacher B:** Of course, this is crucial for the development of this skill; however, dedicating whole sessions to reading was and still is impossible. So, they can develop this skill on their own.

**Researcher:** I appreciate your insights. I'd like to shift to a different point. What kind of support do you usually give to learners who are low achievers in terms of reading comprehension?

**Teacher B:** I always encourage them to read outside the classroom. In addition, I provide them with some titles of books and links to websites.

**Researcher:** Do you encourage students, especially the ones with reading comprehension difficulties to use particular strategies in order to overcome these difficulties?

**Teacher B:** Yes.

**Researcher:** What kind of strategies then?

**Teacher B:** Summarisation, guessing before reading, and using the clues of the text.

**Researcher:** Only?

**Teacher B:** Yes, only.

**Researcher:** Do you employ graphic organisers in your reading classes?

**Teacher B:** No.

**Researcher:** Do you use concept mapping in your reading classes?

**Teacher B:** No, I never used it.

**Researcher:** What are the reasons that hinder you from adopting and using graphic organisers, especially concept maps into your instruction in general and your reading classes in particular?

**Teacher B:** Frankly speaking, I am not aware of this strategy. Also, I cannot use such graphic organisers because of the limitations of time.

**Researcher:** Knowing that the concept map refers to the graphical representation whereby different relationships are visually displayed and it begins with the main idea then branches out into smaller ones, along with what the literature suggests concerning its value in keeping the students attentive and clarifying the confusing parts of the text, what do you think about the use of the concept mapping strategy to reinforce the students' reading and reduce their comprehension difficulties?

**Teacher B:** This strategy seems beneficial and effective in reducing reading difficulties. I will think about it in my future lessons since it keeps students attentive.

**Researcher:** Thanks for this great conversation, hope you enjoy the rest of your day.

**Teacher B:** Welcome! It was great to hear about this strategy. Wish you good luck.

## ملخص الدراسة

تعتبر القراءة مهارة شاقة لكنها محورية وذلك لأنها تعزز اكتساب المعرفة فضلا عن دورها في الوصول إلى العديد من المجالات الأكاديمية، ومع ذلك وكما كان الحال بالنسبة لغالبية طلبة الماستر في اللغة الإنجليزية في جامعة بسكرة. فإن الوصول إلى الفهم الجيد والعميق للنص لم يكن دائما مضمونا. فقد لاحظنا أنهم لا يمتلكون المهارات القرائية الكافية وبالتالي يتم تناول الأسئلة الموالية للنص بشكل سطحي. لذلك فقد كانت الدراسة الحالية مجرد محاولة للتحقق من مدى فعالية تطبيق إستراتيجية الخرائط المفاهيمية على الفهم القرائي والتقليل من الصعوبات المصاحبة لعملية الإجابة على الأسئلة وذلك من خلال اختيار عينة متكونة من 26 طالبا. لهذا فقد تم تبني منهج المقارنة المختلطة (دراسة حالة وشبه تجربة). وفي هذا الصدد لقد تم استخدام الإستيبيانات والإختبارات والمقابلة. كما توقعنا، فقد أوضحت نتائج البحث أن المشاركين قد أظهروا العديد من الصعوبات المتعلقة بالفهم. إلى جانب ذلك، فقد انعكس التطبيق العملي لإستراتيجية رسم الخرائط المفاهيمية انطلاقا من النص المعطى إحصائيا على علامات الإختبار الثاني (البعدي). التي كانت أعلى وبشكل ملحوظ مقارنة بدرجات الإختبار الأول (القبلي). أشارت النتائج أيضا على أن هذه الإستراتيجية التعليمية لم يتم استخدامها من قبل من طرف المدرسين الذين تمت مقابلتهم. وفي الأخير جل النتائج المتحصل عليها في هذه الدراسة تشير إلى الأثر الإيجابي لاستعمال وتطبيق هذه الإستراتيجية في الفهم الجيد والعميق للنص.