MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH

UNIVERSITY OF MOHAMED EL-BACHIR EL-IBRAHIMI

BORDJ BOU-ARRIRIDJ

FACULTY OF LETTERS AND FOREIGN LANGUAGES

DEPARTMENT OF ENGLISH LANGUAGE

THE END OF STUDIES DISSERTATION

A Dissertation Submitted in Partial Fulfillment of the Requirements for a
Master Degree in Didactics

An Investigation into the Effectiveness of the Cornell Note-taking

Method on the Students' Retrieval of Information

The case of the third year undergraduate students at

Mohamed El   Bachir El Ibrahimi University.

Submitted and Defended by

Rahma Bennia   **Hanane Zougham**

Supervised by

Dr. Fatima Douadi

Board of Jury members:

Dr. Rima Rouabah	**M.A.A**	**Chairperson**
Dr. Fatima Douadi	**M.C.B**	**Supervisor**
Dr. Kenza Nezzar	**M.A.B**	**Examiner**

The academic year 2022-2023

ABSTRACT

The purpose of the current study is to investigate how well English Foreign Language (EFL) learners can retrieve knowledge using the Cornell note taking method. A quasi-experimental study was undertaken on a sample of 20 third-year EFL students at Mohamed El-Bachir Ibrahimi University. A total of ten individuals from each group were divided into the experimental and control groups. The control group was instructed to continue taking notes using their usual method, whereas the experimental group was instructed to use the Cornell method during their Literary Text Study lectures. They were thus maintained without manipulation. To ascertain the students' level of understanding of note taking and the Cornell system, a pre- and post-closed- ended questionnaire were used, along with three achievement tests to evaluate their retrieval of information, during the manipulation and after it. The acquired data were statistically analyzed with the statistical package for social sciences (SPSS). Finally, the research findings revealed that employing the Cornell note-taking method improved students' recall of information.

Keywords: Cornell note-taking method, retrieval of information, investigation, experimental study, EFL;

DECLARATION

We hereby declare that this dissertation, entitled "An investigation into the Effectiveness of the Cornell Note-taking Method on the Students' Retrieval of information The case of the third year undergraduate English students at Mohamed El Bachir El Ibrahimi University." and the work presented in it are free of any plagiarized information and it is entirely the result of our own efforts with the guidance of our supervisor Dr, Fatima Douadi. Also, we acknowledge that all the quoted information from the previous studies have been cited in the references. Hence, we totally confirm that no part of this present research has been submitted at any other university or educational institution.

Candidates' name:

Signature:

Date:

DEDICATION

To our lovely families, Bennia & Zougham;

To our parents who believed instilled the passion and love of learning in us;

To our siblings who have been a source of strength and inspiration thought our career;

To our teachers who have shown us the path of success and shining.

This dedication is prepared with all respect and admiration.

ACKNOWLEGMENT

Table of Content

General introduction

Chapter One: Literature Review

Chapter two: Methodology

Chapter Three:Data Analysis

General Conclusion

List of Abbreviations and Acronyms

EFL: English as Foreign Language

RQ: Research Question

List of Tables

List of Figures

The Study Background

According to current trends in educational psychology, academics are becoming increasingly interested in the importance of developing the academic performance through concentrating on how students synthesize, interpret, encode, store, and retrieve information, at the appropriate time, with a specific technique that can be taught respectfully to enhance this procedure (Berliner, 2006). They found that the note taking and rereading are the most important instructional techniques that may be used to aid in the recollection and the recalling. Okubanjo (2007) claimed that students in higher educational institutions must be taught the most effective techniques of note–taking that assist them to develop their academic skills.

Therefore, many researches were sought to study the note taking as the most remarkable staple activity of academic life, particularly lecture courses. to define it as "writing transcriptions activity of the material presented" (Di Vesta & Gray, 1972, p. 8). This activity, for a long time, has been widely used as an important learning method which granted both instructors and students benefits in organize and summarize information, enhance comprehension and understanding, improve critical thinking and more specifically, it increases retention and recalling (Chen, Gong, & Huang, 2015; Nielsen & Webb, 2011). As well, its large effectiveness is not restricted only on their academic performance; however, it is considered as a lifelong habit that refresh the individual's personal settings.

However, the note taking techniques are not one-size-fits for all students; and each technique can serve the needs and learning style of students and the demands of the learned materials; including the outlining system, the Cornell system, the charting system, and the

mapping system. Unlike the other note taking techniques, the Cornell note taking system is one of the effective methods that is defined as a systematic method which suit the different learning styles by mastering, organizing, recording and receiving notes at once. As well, it is designed by a cognitive psychological system which affects data on the long-term memory that helps in the retention and recalling of information easily(Smith, 2017).

Unfortunately, this method did not appear to be applied in the Algerian universities; rather,   the students used this kind of note taking techniques. Where, they tend to write random notes that do not follow any particular way to organize the written information.

Statement of the Problem

Note-taking is a complex activity that combines between the comprehension with the production of notes in order to retrieve them easily, and this complicated process is dependent upon a fragile memory that can be forgotten very quickly if it is not transferred to long-term memory (Pauk, 2001; Piolat et al., 2004). This procedure was the core topic of many researchers from many years, which concluded that taking organized and structured notes with a specific technique, such as the Cornell note taking method, can enhance and strength the memory and the learning retention at once (Kiewra et al., 1991). Where, many EFL students of universities face challenges when it comes to recalling the needed information at the appropriate time because of the random taking notes.

The Cornell note taking method is an organized notes system of notes that involves three sections in one page; a main notes section, a cue column and a summary section. This system was designed to promote active engagement for the academic students with a deep concentration during the lecture and enhance the recalling and retrieving of information

easily with reviewing and revision of the written notes. The latter had a large influence on academic researches to investigate and evaluate the effectiveness of this method on the learning skills and disciplines, such grammar, writing, organization and few researches on retrieval of information.

The lack of researches about this method in the Algerian universities led us, as second year master students at Mohamed ElBachi elIbrahim, to conduct our research on the effectiveness of the Cornell notes taking method on the students' retrieval of information in order to evaluate this technique and present it for the third year EFL students.

Aims of the Study

The core aim of the present study is to help the 3rd year EFL students at Mohamed El Bachir El Ibrahimi University of Bordj Bou Arreridj to better retrieve information through the use of the Cornell notes' taking system. More specifically, this research is based on evaluate the effectiveness, the positive and negative influence, of adopting the Cornell note taking method on the students retrieval of information

Research Questions and Hypotheses

The current research seeks to answer the following question to achieve the highlighted aims:

Research Question: Does the Cornell note taking method affect the students' retrieval of information?

In order to answer the research question, we have selected the alternative hypotheses to better understand the relation between our variables and determine whether there is a

significant different between the variable, the Cornell method and the retrieval of information:

Null Hypothesis (H0):

The Cornell note taking method does not have an effect on the students' retrieval of information;

Alternative Hypothesis (H1):

The Cornell note taking method has an effect on the students' retrieval ofinformation.

The Research Methodology

The current research is based on the effectiveness of the Cornell note system on the students' retrieval of information; according to its hypotheses, aims and question mentioned before which represent its nature that determine the use of certain theoretical and methodological frames. Hence, we opted to the positivism paradigm for the theoretical selection; as well as, for a quantitative approach in a quasi-experimental method form. The main reason of choosing this approach is to confirm the intervention relation between the two major variables of the study with alternative hypotheses. The latter choice will strengthen the research and allow for a better understanding for its steps from examine, explain, explore, assess and then test the hypotheses to assure the effectiveness of the Cornell note system.

Hence, the population involved in this research is the undergraduate English students at the Department of English division at Mohamed El Bachir El Ibrahimi University of Bordj Bou Arreridj. However, the study sample consisted of 20 students from the 3rd undergraduate level; selected from five different groups. The selection of students was based on voluntary and non- random criteria of the non-probability sampling in order to respect and ensure the validity and reliability of our quasi-experimental research.

Significance of the Study

Through this study, researchers intend to highlight the effectiveness of the Cornell note taking system, as new method of note taking, on the retrieval of information rather than the other studies that had conducted on the Cornell note system with other learning skills. Moreover, the study is considered as the first significance research in Algeria that is expected to provide positive contributions to EFL learners in the recalling and retrieval of information easily from lectures in order to develop and enhance their academic levels. As well as, the study on the note taking and recalling isconsidered as a beneficial opportunity to dig in an academic obstacle that face many students from decades, and try to overcome it with this new note-taking technique.

Ethical Consideration

The ethical part took during the giving investigation refers to the rights and values' decisions which involve to the research data gathering and the academic class to whom the study is directed from participants and readers. Foremost, the participants of the study were aware of the research process in detailed from the beginning and before signed the consent letters. Both participants and their literature teacher were given a consent letter to sign as an agreement to conduct this study and collaborate with us. (See appendix A). The consent letters describe the objectives and the aim of this study and its process, along with the assurance that their personal information and privacy will be kept anonymous. As well, their acceptance to be part of our research was a personal decision based on the confidence, trust and anonymity during the research.

Structure of the Dissertation

The intended structure of the current dissertation is divided into three main chapters, preceded by a general introduction that discussed the important information to show the dissertation's nature; and succeeded by a general conclusion that summarizes the key findings of the study, highlights the limitations faced the researchers during their journey, and suggests important directions and recommendations for future researches. Therefore, *Chapter one* develops for the literature review which provides two major sub- chapters that discuss the variable of the study in detailed" the Cornell note system; and memory and retrieval".

Continuously, *the second Chapter* deals with the main details selected by the researchers to collect the necessary data for answering the above question. This chapter has two parts; the first part is concerned with the research paradigm and the quantitative design used in the present research and the second one describes the main steps of the data collection. Finally, *Chapter three* presents a detailed analysis of the gathered data, with deep interpretations focus on the questionnaires, marks and the Cornell notes' observation in order to reject or accept the hypotheses.

CHAPTER ONE

Introduction:

Note-taking is a staple activity in academic life, and although it is used extensively in the classroom, teachers and learners alike take it for granted. As a result, the extent to which note-taking is used, regardless of the reason, has been widely investigated. For example, Palmatier and Bennett (1974) found that 99% of 223 interviewed college students recorded notes during lectures.

Other researchers like (Carrier, 1983; Carrier, C., Williams, M., & Dalgaard, B.1988; Ganske, 1981) reported that note-taking continues to be used extensively by students in college courses. Thus, students perceived the advantage of recording notes during lecture presentations, because of this, the extensive literature on note-taking showed that it is an effective educational activity.

Not only can note-taking reviews lead to positive learning outcomes, but note- taking has often been shown to improve learning. This investigation aims to tell us about whether the Cornell note-taking method is effective on the retrieval of information, as well as, the effects of this method on the student's achievements.

Note-taking

Definition:

Researchers define note-taking as making transcriptions of the subject matter (Vesta & Gray, 1973). The act of taking notes involves noting information that has been taken from a fleeting source, such as an oral discussion at meetings or lectures. O'Malley and Chamot define note-taking as jotting down significant words and concepts in abridged verbal,

pictorial, or numerical form to help with language task performance (O'Malley & Chamot, 1990). Moreover, Françoise and Piolat defined note-taking as the quick transcription of information through a few condensing strategies, such as reduced words and substitute symbols, to produce an external memory whose sole value is its subsequent application (Boch & Piolat, 2005).

In contrast, Fajardo (1996) saw note-taking as a complex activity which combines reading and listening with selecting, summarizing, and writing. Nwokoreze (1990) believed that learners achieve the best level of comprehension during the note- taking phase.

Moreover, note-taking is a pervasive activity among students. Taking notes is a complex action that necessitates information comprehension, selection, and textual production processes (Piolat, Olive, & Kellogg, 2005).

The purpose of taking notes

Taking good lecture notes is critical for academic success in college. Note-taking, according to Bosh and Piolat (2005), might be regarded as a component of Writing cross the Curriculum.

Carol and Amy stated in their book of contemporary educational psychology collecting notes from oral and written verbal lectures is widely acknowledged as an effective approach for improving information retention (Carrier & Titus, 1979). Furthermore, Howe (1970) proposed that employing student notes will be important in investigating the relationship between learning and the individual coding process. For example, while researching individual differences in note-taking, it would be effective to investigate the effect of various note-taking procedures on the later recall of significant material.

Similar justifications and explanations for writing and maintaining notes are provided by a number of authors and commentators, including Cottrell (2003), Sinfield and Burns

(2003), and Lowes, Peters, and Turner (2004). Making notes helps in summarising or reinforcing the most important parts of what has been read, heard, or experienced. They also act as vital source records for future reference. They also remind the note taker of additional activities to engage in for learning, like gathering information and acting. Taking notes improve memory; Especially during tests, summarising what has been said could help in remembering the materials better. Consequently, taking notes is beneficial for subsequent reference, particularly while getting ready for tests or writing assignments.

Taking notes can help in focusing on the lecture or the reading, as well as, in avoiding distractions which drives the students to study more actively rather than passively. Also, Hartley (1998) synthesised the findings of fifty-seven studies on the efficacy of note-taking based on student perceptions. He revealed that learners cite three key motivations for writing notes. To relieve boredom, and because of peer pressure everyone is doing it. Moreover, Students feel the approach will help them retain the material of lectures better in the future. They hope the notes will enable them to be more organised with their revision (Neville, 2006).

Additionally, taking notes is crucial for students, particularly in higher education according to Johnstone & Su (1994) the more students record, the more they remember and the better they perform on exams.

The role and functions of notes:

According to Boch (2005), Note Takers take notes to fulfill two main functions: record information and aid in thinking. One of the main goals of note-taking, beyond creating a simple reminder or recording an action, is to build a stable external memory in a form that can be used later. Faced with ever-changing messaging situations, note-takers try to remember everything.

DiVesta and Gray (1972) suggested that taking notes aids learning in two ways, offering not just what they called an external storage benefit but also what they called an encoding benefit. More specifically, they believed that taking notes not only helps by documenting lecture knowledge for subsequent restudy; it also helps during the presentation by boosting the encoding of information in ways that facilitate later.

Using notes to store conveyed information often obscures another vital function—reflection. Nevertheless, Hartley (2002) stated that note-taking is an effective information-processing tool commonly used daily and in many professions.

Thus, it contributes to the performance of many intellectual processes, For example, making judgments, solving problems, making decisions, etc. There has been a lot of debate about whether learners benefit from the encoding part of note-taking. note-taking –In other words, it stems from the act of taking notes in class (Barnett, DiVesta, & Rogozinski, 1981; Di Vesta & Gray, 1972; Einstein, Morris, & Smith, 1985).

In addition, Note-taking can support time-consuming real-time thought processes, such as solving math problems. In this respect, notes are similar to sketches in that they encode information, which eases the mnemonic process and thus facilitates solution development (Cary & Calson, 1999).

Note-taking is a complex procedure that incorporates several functions (Hale & Courtney, 1991). Di Vesta and Gray (1972) distinguish two note-taking functions:

The encoding function and the external storing function. According to them, encoding guarantees that information has been correctly understood and kept in memory by taking notes. It entails having the student's pay attention to the order of the talk, comparing newly acquired and prior knowledge, and so on. Hartley and Davies (1978) argued that the encoding

function contributes to forming personally formed and meaningful patterns by coding, integrating, synthesising, and changing observed material.

External storage, according to Hale and Courtney also, aids in the process of reviewing the information gained through notes for future testing operations. Other supporters of the external storage capability argue that it is essential because it allows the listener to save knowledge in the form of notes, which may be edited at any moment and utilised in the future (Dunkel, 1988).

It is vital for students to develop note-taking skills in order to succeed in school, job, and life in general. One strong reason to take notes is that you will never be able to listen to a lecture or a presentation again. You must record and save information at all times so that you can use it later. Because taking notes is such an important ability, many educators believe it should be explicitly taught in school (Ornstein, 1994). The author found out also that note taking should be part of the curriculum. It is vital for students to develop note-taking skills in order to succeed in school, job, and life in general.

According to note-taking research by Muraina (2014), taking notes in class and reviewing those notes (either in class or subsequently) improves student learning. Surprisingly, most research shows that students remember more lecture material if they write it down. (Strean, 2011). Furthermore, pupils who take notes outperform students who do not take notes on both immediate and delayed recall and synthesis examinations (Kiewra, 1991).

Moreover, the more pupils record, the more they remember and do better on exams (Johnstone& Su, 1994). In conclusion, taking notes helps with recollecting factual content and synthesizing and applying new knowledge, especially when notes are reviewed before exams

Note taking strategies:

Effective note-taking assists students in remembering what they learnt in class so that they may study, deepen their knowledge, and handle more complex subjects later on. According to studies, students have a 34% probability of remembering crucial information if it is included in their notes, but just a 5% chanceif it is not. It makes little difference if they prefer concise summaries or graphic instructions and diagrams in your notes. The key is to find a note-taking approach that works for them. There are various methods for taking notes, and the one chosen depends on the student's personal preferences as well as the instructor's approach to the material. (Syrett)

Note taking strategies for reading:

According to Marsh and Sink (2010), taking notes allowed students to save fundamental knowledge and remember examples and critical ideas in their minds. When taking notes, we should pay attention to several points. First, the notes must be so comprehensive and brief that the reader not only saves time but also captures the entire notion of the text when studying it. Notes must also be essential and understandable enough to be retained in memory and used whenever necessary. Taking detailed notes is less valuable than keeping our notes.

According to Bonner and Holliday (2006), pupils can demonstrate a lack of self-awareness if they believe they are taking adequate notes. According to studies conducted at an American institution among Chinese EFL students, having the academic talent of taking notes during the course improves understanding and mastery of their courses by better recording the information in their minds.

Nunan claimed that reading comprehension is a fluid process of combining textual information with pre-existing schemata in order to comprehend the meaning. Reading for

comprehension or meaning is thus one of the primary reasons for reading. There are, however, some impediments to successful comprehension.

Moreover, Roy, D., Brine, J., & Murasawa, F. (2014) stated that the applications of note-taking precisely boost the ability of readers to take notes and help them to recall some details, as well as increase their proficiency in listening. Thus, it is good to employ it in language-learning classrooms. According to Marzano, Pickering, and Pollock (2001), good summarising and note-taking contribute to an increase in student learning. Helping kids understand how information is arranged will allow them to better summarise what they read or hear.

Students that can effectively summarise learn to synthesise knowledge, ahigher-order thinking skill that includes information analysis, recognising core concepts, and defining unnecessary material. Previous research has shown that mastering note-taking tactics increase students' reading skills and are very useful for making progress in reading assignments of their lessons (O'Mal-ley & Chamot, 1990; Carrel, 1998; Taraban, 2004; Phakiti, 2006; Motallebzadeh & Mamdoodi, 2011).

In another study, Lonka, Lindblom-Ylanne, and Maury (1994) investigated how 200 university applicants' note-taking tactics (underlining and idea mapping) impacted detailed learning, synthesis tasking, and critical reviewing of a book. Subjects were permitted to take notes in-text or on a separate piece of paper. The findings showed that the hierarchical location of concepts led to students' attention and knowledge retention.

Underlining improved both detailed learning and synthesis tasking, while idea mapping influenced critical content analysis; nonetheless, the lack of delayed testing may be a weakness of their study. Dunkel (1988) found that the number of information units, rather than the number of notes collected, influenced post-lecture test performance in a comparable study.

Note taking strategies for listening:

In the early 1970s, the importance of hearing as a tool for comprehending and as a significant aspect in promoting language learning was brought to light, recognising listening as an essential part of the procedure of second language acquisition (Feyten, 1991). Listening is now thought to be a considerably more sophisticated action that is essential for language acquisition (Krashen, 1994).

Ferris and Tagg (1996) stated that the most common challenges mentioned by students worldwide include a lack of note-taking skills, problems with note-taking, and listening comprehension. As a result, pupils' inability to comprehend may contribute to their silence during classroom discussions.

Another issue that listeners frequently highlight is the fast disappearance of the content of what they are listening to. Many languages learners remark that when listening, they can easily follow the speakers, but when it comes to recalling it later, they are caught off guard.

Gilbert (1989) highlights how difficult it is to take notes from a foreign language lecture. In some circumstances, students are advised to take notes in L1 while listening to L2 (Koren, 1997). Titsworth and Kiewra (2004) discovered that spoken organizational lecture cues increased the frequency of documented organizational points and details by 39 and 35%, respectively, in their study. Another alternate conclusion of their investigation indicated that taking notes resulted in approximately 13% higher exam achievement than not taking notes. It is still debatable if note-taking practices have an effect on student progress.

According to Barnett (1981), taking notes while listening to the message allows pupils to memorise new information while also comprehending it and allowing the message to be captured so that it can be used when the information-receiving process is complete.

According to Titsworth (2001), while taking notes from lectures, students must focus on various signals from the speaker, such as fluency, prosody shifts, notes on the board, etc.

The results of the experimental investigations on this topic are diametrically opposed in this case, and many concerns remain unresolved, and the researchers have indicated that additional research on the topic is needed to discover if teaching note- taking skills can increase student achievement (Bretzing, Kulhavy, Caterino, 1987; Chen, 2007; Falout, 2002; Palmatier, 1971; Peck & Hannafin, 1983; Wilson, 2003)

The Cornell Note Method

Definition:

The Cornell note-taking method is a developed system gathers the organization and summarizing processes of taking notes; it is considered as a systematic method to master, organize, record and receive notes of ideas, information and fact that presented within classroom activities (Smith, 2017). Akintunde, (2013) stated that the Cornell note-taking system is a technique used to boost accomplishment scores and develop the process of retrieving information easily. This note taking system directs students to prepare organized notes systematically and to reformulate the content with their own words; where the constructivism theory of Jonassen's (1991), as noted by Ertmer and Newby (1993), explained that learning occurs student to "mind filters input from the real world to produce its own unique world"

Mohammad Akram Alzu'bi (2019) found that the Cornell system is a note taking way that basically developed through a basis on a cognitive psychological human system of information processing which affects directly the data of the long-term memory. According to Lieberman (2000), the information processing is comprised of three stages; the first stage which takes place in the sensory memory receives the information and transfers them to the short-term memory (working memory). Then, the second part is the working memory which can hold limited information for limited time and it transfers the information to the third memory which is the long-term memory if there is no interference and stored until it is needed.

The Origin of the Cornell System

Almost seventy years ago, most researchers focused on the effects of note taking and writing on the attention, memory, comprehension; the professor Walter Pauk started broad research for an effective note taking technique with his students on the Hill at CORNELL University. This technique was practically flexible, general and simple at the same time, labeled as the Cornell Method or the Cornell Way. This notes system was called under the name of Cornell private University in Ithaca, New York, that was founded by Ezra Cornell and Andrew Dickson White in 1865. This note-taking way was such a developed generalized study tool helps students to organize systematically their notes and facilitated their revision process and recalling of information. (Joe Wilensky 2022; Walter Pauk ,2000; Ahmed Chaouki Hoadjli,et.al, 2021)

The Cornell method, has gained a large popularity from its first appearance in Walter's book 1962, *How to Study in College*. It has been adopted by many countless colleges and universities not only in the United States but also from the world-wide countries, including China. In 1974, the method was developed to be spread and use in several international universities in different domains by teachers and students. (Wilensky 2022; Pauk ,2000; Drs. Rohmana,et al, 2020)

Structure:

Davoudi, et al (2015) stated that the Cornell method is a systematic format which focuses on the well-organization of notes to pulling out the important concept and ideas in a specific a period of time and structure. The latter is a two-column system; the left column is one third of the page, and the right column is two thirds of the page (Faber et al., 2000). However, Walter Pauk (2011) claimed that the students' notes must be neat, complete, and well organized on the paper to serve their needs, in other words, Walter on his book *how to*

study in college-2011 mentioned that the Cornell structure is a three non-equal columns which must be drawn as following;
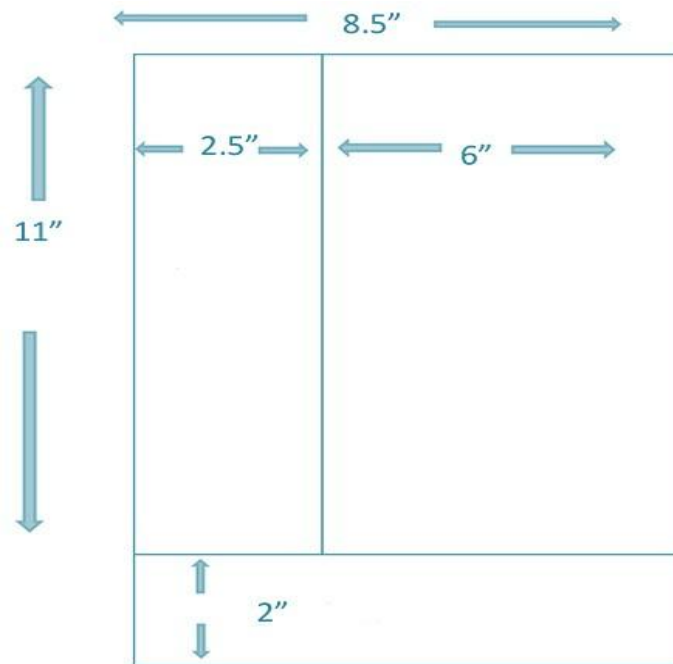
Figure 1: The Cornell note-taking structure

First, draw a vertical line down the left side of each page two-and-one-half inches from the edge of the paper; end the line two inches from the bottom of the sheet. This creates the cue column. Next, draw a horizontal line two inches from the bottom of the page. This is the border for your summary area. The large space to the right of the cue column and above the summary area is whereyou write your notes.

Cue Column:

The cue column is the left blank space, as it is appeared in the figure that needs to be completed after the lecture by key words, questions and so on. According to Pauk, (2010) "it used to write stark cues of only one word or one phrase in length, and only

Figure 2the cue column

after the notes of alecture have been taken on the sheet's right-hand portion, which is usually about six inches Wide' and added
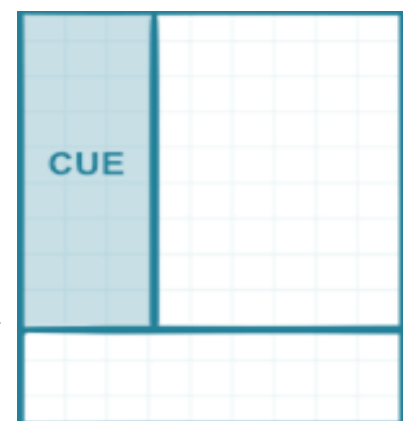
that "use the cue column for questions to help clarify meanings, reveal relationships, establish continuity, and strengthen memory"(Pauk ,2011).

Notes Column:

The column of notes is the large space that allows students to analyze and synthesize ideas and notes from one or more sources. It is used during and after lecture while reading or listening to make students more organized in write necessary notes and creating schemes in an appropriate way that serves each student differently; Pauk (2011) "The information that goes in the largest space on the page varies from class to class and from student to student. Different courses come with different demands".
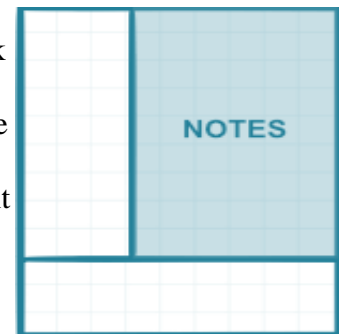
Figure 3 the notes column

Summary Section:

According to Robert Marzano, et al(2007), the most effective note taking requires from the student to summarize notes' information through three main steps: deleting, substituting some information and keep the necessary ones in order to create its own lecture or lesson ""If you were to read this passage with the purpose of summarizing it, your mind would quite naturally engage in three activities: deleting things, substituting things, and keeping things" (Robert, et al 2007).

Figure 4: the summary column of the Cornell structure

The summarizing process reinforces the student's understanding and helps them to identify gaps and missed information because of the multiple notes' reading. Within this summary, students' reduce brief simple sentences to

facilitate the recalling of information later, Pauk (2011)" The summary area will be used to distill a page's worth of notes down to a sentence or two."

Whereas, Drs. Rohmana, et al(2020) emphasized that this method provides students a divided papers into columns, however this division maintains the 5 R's of note-taking, as :

- **Record:** During the lecture, students record in the main column the information, facts and ideas in form of an outline, paragraph, diagram or even illustration.

- **Reduce:** After class, as soon as possible the students have to revise their notes to highlight key words and /or questions from the right side. Then they must summarize these ideas briefly in the Cue Column in order to clarify meanings and relationships, reinforce and strength the memory.

- **Recite:** After relating between the notes and cues, reciting includes verifying more details and explanation for the information through an active reading for the content. This process helps students to re-explain the topic in depth with the use of their own words, which encourages them to identify knowledge gaps and missing ideas.

- **Reflect:** In the reflection stage, the students seek to reveal the previous information and connect ideas together in order to draw a meaningful conclusion. This process can achieve through Build scaffolding, make prediction about the coming learned information and/or make a relation between the notes and a big picture that reflects them.

Review: Students should spend 15 minutes of their time every week to quick review their notes to avoid the knowledge decay. This stage of repetition helps them to build and retain most information to be kept them in the long-term memory.

The Effect of the Cornell note-taking system:

Previous study examined the effectiveness of the note taking process and the Cornell notes system on the different skills and sub skills of students' developments levels, depending

on their achievements and success on the multiple disciplines. The results of the study indicated a good influence on grammar, retrieval, writing organization and others in the majority of the researches, however, others resulted the no efficient of the above system on the enhancement of students.

Few studies are conducted about the using of the Cornell note-taking method to show its effect on the students' comprehension, autonomy and independency; Spires and Stone (1989) "students will increasingly have to depend on their ability to take notes in order to be successful in the classroom" (p. 36). Broad research in the U.S was examined the investigation of notes taking by, both college students in use and professors through teaching; the latter have shown that the two parts of the study have the same point of views concerning the topic. It is found that, Cornell taking notes instruction during lectures is an integral part of the academic context that contributes a high level of information' retaining and questions' answering (Dunkel& Davy, 1989. Jacobs, 2008).

Others found out that the Cornell notes method is a unified Split Page system of notes taking that has a significant effect on students understanding and retrieving of information as well, during the teacher made tests based on text (Stahl,King and Henk, 1991, P.615. Faber, Morris and Lieberman, 2000). Whereas White and Sutherland (2001) argued that this system of notes taking imposed students for a deep concentration during the lecture which reflects on their memory of recalling the taking information as much as possible.

From the study of Wu and Tsai-Fu (2010) on Taiwanese college SL students' comprehension, the researchers used the Cornell notes method to examine shortconversations and long lectures understanding and ideas recalling, with English and Chinese languages. The results confirmed a positive effect on the students' comprehension, regardless the languages, for both texts; however, the participants who well-utilized the Cornell method and combined

all the instructions scored higher than other students who had some conditions and exceptions.

According to the study of Davoudi, et al (2015), the Cornell system has a very important role in overcoming the grammatical difficulties by achieve a high average of knowledge in a practical way. The study was an experiment, includes 70 intermediate EFL students, 44 males and 26 females. These participants were divided into two homogeneous groups, control group and experimental group. However, after the pre test, the experimental group was trained to use the Cornell method, then both groups were exposed to grammatical instructions. After finished the whole treatment, both groups had a test under the same condition, to carefully collect data.

The results of the study have shown that the experimental group outperformed the control group in the grammatical instructions, which means that the Cornell note- taking method allowed students to be able to use grammatical items, and gained more knowledge. Furthermore, it helped to develop the thinking skills of the students and specifically their critical thinking. Another experiment study was conducted by Rohman, et al (2020) in order to investigate the significant effect of the Cornell method on students' grammarlearning. The participants were the students in 11th grade of MAN 1 Kendari. The samples were divided into two groups of 20 students from each, a control group as XI IPS 2 class and experimental class as XI IPS 3. The latter was manipulated through a treatment of the Cornell note-taking method usage for the experimental and grammar lectures learning for both. The study concluded that   the Cornell method carried a large positive effect on the improved level of the students' grammar development at class XI IPS 3 of MAN 1 Kendari.

From the high spread of the positive effect of the Cornell method on the different learning skills, many researchers were ambiguous to examine its effect on the writing production. A study was conducted by Alzu'bi (2019) which combine the Cornell system

division and the stages of writing in order to well performed the main elements of the writing composition, "in Cornell method, the students can write the details belonged to the elements of the composition on the right side of the paper suchas, writing details about the introduction and the body"(Alzu'bi, 2019). The results of this study indicated that the Cornell method had a positive effect, features and significant advantages on improving the writing composition skills.

A study conducted by Hoadjl and Bouguesba (2021) on the EFL students at Biskra University, Algeria, was based on a quasi-experimental design on the case of 12 students that worked with tests and focus groups to collect their data. The findings of the research proved the remarkable motivational effect of the new note-taking system on the students writing production and organization, and it helped to upgrade their summarizing and paraphrasing skills. Moreover, Williams' (2004) interviewing study, with the 8th grade students, showed the interest of the students by the notes taking in general and the Cornell note-method specifically in the writing, organizationand retrieval of information.

According to the results of the several studies which based on scientific evidence the Cornell method masters and enhances the EFL learners' knowledge, it motivates them to be more aware on the writing elements which make them able to remember all the necessary details as well. Furthermore, it makes students more organized through summarizing the main items in systematic ways within three different columns, to facilitate the connection of ideas which lead to a well productionof a final draft composition.

The Cornell note-taking method had not only used in the SL studies; however, it has been expended to many other educational subjects. Broe (2013) investigated its effects on the mathematic students to concluded with a beneficial result. As well as, Zorn (2007) examined its impact on American History and Language Arts, where the results showed an effective scored by History and 20.4% in Language Arts and an average of 24.5%.

However, in another study**,** scholars concluded their researches'' results with no significance differences neither between the experimental and control group, nor before and after the treatment on the same students. Quintus, et al (2012) found out, after conducted an experiment study on high school students, that the Cornell method had no positive significant in students' performance because the date collected showed no difference between the experimental group and the control one.

As well as, Peck and Hannafin's (1983), manipulated more than two experimental groups with specific note-taking training, and other groups had no formal training. At the end of the study, they recognized that the non-formal structures of note-taking groups performed out much better than the experimental groups. Hence both researchers suggested that the findings were a result of the interference of a new note-taking style with the information's retention.

Difficulties Students Experienced with Note-Taking

Note-taking is a complicated process that requires from the students to use a combination of the three senses: sight, sound, and touch. However, students usually face several difficulties and obstacles in combining the senses with the process of creating the note-taking material; writing production and listening at the same time, and deciding the most important items to be decoded and mentioned as fast as possible, as well, balancing the comprehension with the detailed information to be added on the notes (Quintus et al., 2012. Piolat et al., 2004. Boyle, 2010).

According to Quintus et al (2012), many difficulties face the learners in the note-taking process because it requires several cognitive efforts which may be difficult in deciding the most important information and the manner of their organization to be easy in reviewing. As well, it is challenging for students to quickly switch between listening and writing especially in paced spaced lectures with the use of complex language as well;

some students write quite slowly, and the instructor and other students must wait while those students write down the information; some students become so focused on writing what is projected on the screen that they cannot listen to the instructor; and some students may have trouble creating notes that are useful at a later time (p.27).

And Konrad et al., (2009) stated that the difficulties are consequences of the combination of several skills at once in specific period of time, because the students record every written word on the blackboard and catching every word from the oral explanation of the teacher which do not affect the learning positively (Baker & Lombardi, 1985. Boyle, 2007; Kiewra & Benton, 1988).

However, all what is said and heard is more complicated than beneficial for the learners' comprehension and cognitive development, and most of students used to duplicate their notes with a random manner (Piolat et al., 2004. Baker & Lombardi, 1985). The best way to overcome these difficulties is to select the right note-taking technique that suits the students' interest and be more effect to them, so they can extend their attention, recall of information and be more organized on decoding ideas an ordered manner, as comprehensively as possible (Rowntree, 1976. Kesselman- Turkel and Peterson, 2003, 1982. Boyle, 2007).

Learning and memory

Memory cannot exist without learning, and learning cannot exist without memory; the two are not mutually opposed. Memory is a sign of learning. Information is processed and stored in memory, which promotes learning. Three key signs indicate whether or not something has been learned: an indication of an ability to recall material, performance on a measured task such as a quiz, and a behavior change (Dehn, 2010). All learning originates in the brain's self-system. The self-system determines whether the pupil will pay attention or begin a task. How does that decision get made? It is based on personal importance, self-efficacy, and general feelings about learning.

According to Kazdine (2000) Concepts like learning and memory go hand in hand. Memory is the way you express what you've learned, whereas learning involves learning new skills or knowledge. The speed at which the two events take place is another distinction. Learning is when you learn a new skill or knowledge gradually and laboriously. Making a memory is when acquisition happens instantly. Anna- katharine brem, kathy ran, and alvaro pascual leone, believe that memory and learning are cognitive processes with numerous subprocesses.

Memory and its types:

Encoding, storage, and retrieval are the three processes the brain uses to create memories. Before storing data until it is reactivated or retrieved, encoding involves analyzing and structuring it. 98% of the information that enters the brain comes from the five senses. Information travels to a fork in the road and is either discarded or directed to memory locations when it enters the brain. There are typically two types of memory: short- and long-term (Bligh, 2000).

- **Short-term memory:**

Short-term storage, or the location where conscious thought and information processing take place, is another name for working memory. For instance, short-term memory would be used to store the data needed to dial a strange phone number. That data is lost, learned, and stored in long-term storage over a period of 20 to 30 seconds. As short-term memory's potential increases with new study strategies and developing skills, it becomes less and less significant over time. For instance, preschoolers can simultaneously maintain two items in their short-term memory.

- **Long-term memory:**

Practice, repetition, and meaningfulness are the three main ways that long-term memory is documented. As a result, things that are truly important or personally meaningful can be easily transferred to the knowledge storehouse, or memory, over time. Unfortunately, young children are noticeably less adept at distinguishing nine degrees of meaning than adults (Rafoth, Leal, & DeFabo, 1993).

The degree of authentic learning is another component of long-term memory retention. According to Walters and Shneider (2010), the degree to which information is retained is predicted by the level of original learning.

Three Stages of the Learning/Memory Process:

Psychologists break down the learning and memory process into three stages: encoding, storage and retrieval (Melton, 1963). This means when they learn something, they store it in their minds and can access it later when needed. Encoding is the initial learning; storage is keeping it in your brain and retrieval is being able to access it.

- **Encoding:**

The process of perceiving and learning new information is known as encoding. Psychologists often use tasks such as having students study a list of pictures, words,

sentences, stories or videos to study memory. Encoding in these scenarios is generally straightforward, although some details may be forgotten. The act of encoding is selective, meaning that only a small portion of details can be identified and remembered in more complicated situations.

Recoding is essential for the encoding process as it allows us to interpret the information, we have received in a way that makes sense to us.

Psychologists have studied a number of methods to help enhance retention during studying. One such technique is to think about the significance of what is being learned, and attempt to connect it to existing knowledge (Craik & Lockhart, 1972). Secondly, creating vivid images out of the information being learned (even if it is verbal) can be helpful in aiding recall later on (Bower & Reitman, 1972).

It has been suggested that effective encoding strategies involve forming clear memories and creating connections between them, which can lead to improved learning and recollection (Hunt & McDaniel, 1993). While it may take some effort to implement these strategies, the rewards of enhanced learning and retention make the effort worthwhile.

The process of registering information first is important in the learning and memory process. Without encoding an event, it is unlikely to be remembered in the future. Although encoding may be done well, there is still no guarantee that the event will be recalled later.

- **Storage:**

Once the data is coded, we need to keep it. Our brains take the coded info and store it. To store a memory, it has to go through three steps: Sensory Memory, Short-Term Memory and Long-Term Memory. This model was developed by Richard Atkinson and Richard Shiffrin (1968). Their model of human memory (Figure 1) is based on the idea that we process memories like a computer processes info (OpenStax & Learning). Our experiences shape our brains; it's an undeniable fact. Neurobiologists and psychologists agree that

memories are stored in the brain, and this requires a biochemical alteration of neural tissue. It is almost like writing yourself a note to remind you of something - the brain changes its physical composition in order to store the memory.
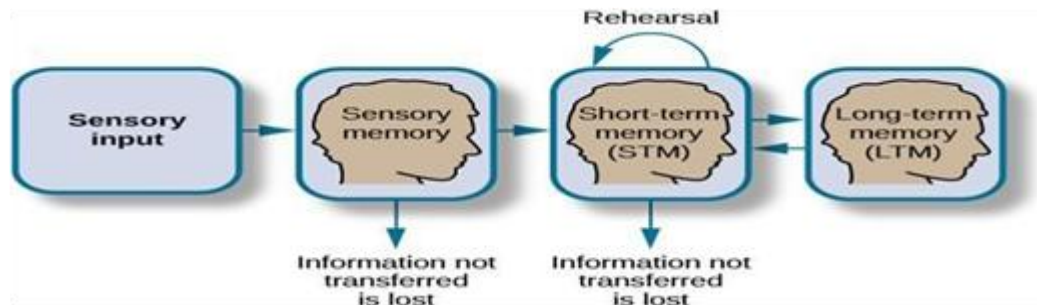
Figure 5:the Atkinson-Shiffrin model of memory

The retention interval is the time between when a person learns something and when they are tested on it. During this time, memories can become more firmly stored, helping with recall. However, experiences during this period can also disrupt memory. This is known as retroactive interference when something new interferes with the ability to remember an older memory. On the other hand, proactive interference is when memories from the past impede the encoding of new memories. An example is when someone trying to learn a second language finds themselves thinking in their native language instead.

- **Retrieval:**

Endel Tulving argued that "the key process in memory is retrieval"(1991, p. 91). Storing information is useless if it cannot be retrieved. We store thousands of event conversations, sights and sounds every day, forming memories. However, only a small fraction of these memories are accessed again. Most of the memories we make are never consciously recalled. This is a fact that we often overlook. For example, the events that occurred in fourth grade that seemed momentous at the time, may now be difficult to remember. It is unclear if these memories are still present in some latent form. Unfortunately, current methods do not provide a way to determine this.

Tulving & Pearlstone (1966) found that memory can be divided into two categories: stored and accessible information. The specific amount and type of information stored in the brain is unknown, but what is known is that only a small amount of it can be retrieved. It is common to experience the sensation of failing to remember something, but then succeeding at recognizing it when presented with several alternatives (such as on a multiple- choice test). Furthermore, people often have the experience of trying to remember something, giving up, and then having it come to them later withoutattempting to recall it.

Memory retrieval of information

According to APA dictionary of psychology, the term "*retrieval*" refers to the process of accessing information stored in memory, in other words, retrieval of information is the ability of recalling the stored information, in the working memory, when need it from the long-term memory (McDermott, et al., 2018). This act of retrieving represents a key part in the memory (Tulving, 1991) because of its fundamental role in the information processing, where the encoded and storage processes of specific information will be useless if the retrieval process is weak or does not recover the needed information. This needed information is based on two major memory's types which reflect specifickinds of retrieval on the memory, as following:

Table 1

Types of memory retrieval

Memory type	Other names	Example retrieval's kinds
Semantic	Fact memory	Retrieval of colours that fit certain categoryobjects. Retrieval of the countries. Retrieval of words that begin with 'F'.
Episodic	Event memory	Recollection of what text you read yesterday. Recollection of the eaten vegetables for dinner. Recollection of a study list words.

According to Tulving (1972), the long-term memory, responsible for the retrieval of information, has two main types; semantic and episodic. The semantic memory is a type of a long-term memory that refers to facts, independent pieces of information and generic knowledge, such as: colors. Its retrieval process is; according to many studies, automatically and involves the free access to a particular learned information, time and position (table01).

As well, the episodic memory, on the other hand, refers to the information that is unique for an individual context, and requires a conscious recollection to be retrieved. The retrieval process of this memory's type involves a specific point in time and context in order to recollect learned information. Hence, both the semantic and episodic memories are types of conscious memories that differ from each other in the form of the items retrieved.

Retrieval Brain Structure

The well-consideration of the memory's kinds supports the main distinctions of the brain mechanism which regulate the retrieval on each part. Many neuropsychological studies were revealed the main brain's parts which have a fundamental role on the retrieval process (figure 7), such as: the medial temporal lobe (MTL), frontal lobe, and parietal regions of the brain (Fletcher et al., 1998; Buckner and Wheeler, 2001; Kahn et al., 2004; Wagner et al., 2005; Konishi et al., 2000; Spaniol et al., 2009). Yet, the Departments of Neurology and Neurological Surgery and Radiology (1996) suggested that the prefrontal cortex of the frontal lobe is an important part of the brain that has involved in several human memory retrieval processes- including both; semantic memory and episodic memory (Buckner and Petersen, 1996).
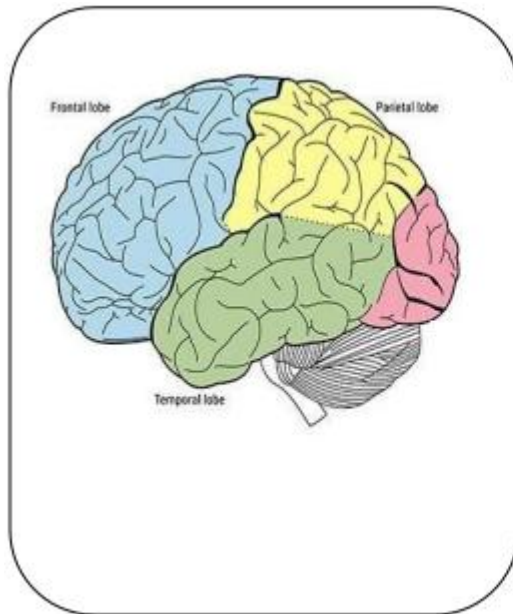
Figure 7:

The memory's brain parts

from: htttps;//www.reddit.com/
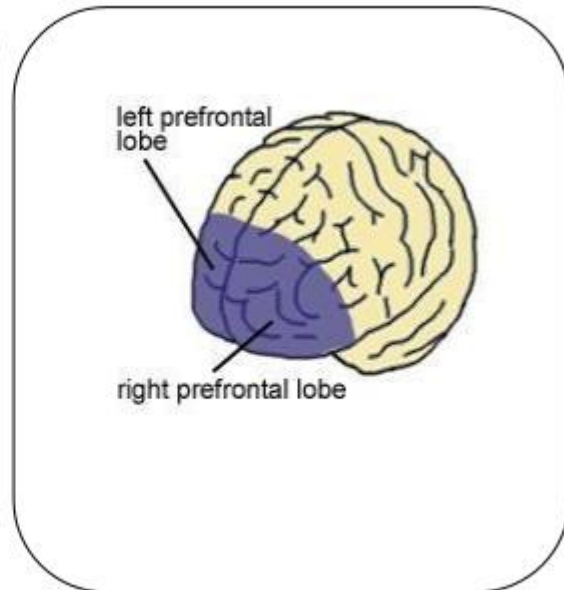
Figure 6:

The left and right prefrontal lobes

from : https://www.iqscorner.com/

In the figure 7, the prefrontal lobe (cortex) divides into two major regions; each one is responsible on a certain type of memory. (Buckner and Petersen, 1996; Cabeza et al., 1997; Fletcher et al., 1997; Nyberg et a., 1996). The left prefrontal cortex involves in the semantic memory retrieval, where it links the latter with systematic word meaning and reorganization of the main items from the working memory, (Cary R et al. 2001). However, the right prefrontal region monitors the retrieval of the episodic memory to make an appropriate response of information, as it is confirmed from the study of Henson et al. (1999) which concluded by the significance monitoring role of the right prefrontal cortex on retrieved episodic memory.

The Stages of Memory Retrieval

This brain's part division allows many researchers and scholars to study the main retrieval stages which help to determine the appropriate information from the working memory and the long-term memory. The process of information's memory retrieving based on particular stages which lead to facilitate the path of the recalling decisions on the early selection and the late correction of the retrieved information (Velanova et al., 2007; Duzel E., et al., 2001). According to Wilckens, et al. (2012), these stages are associated with each other for the memory decision reflection, as following:

Figure 8: stages of memory retrieval leading up to a memory decision

from: Wilckens, et al.(2012)
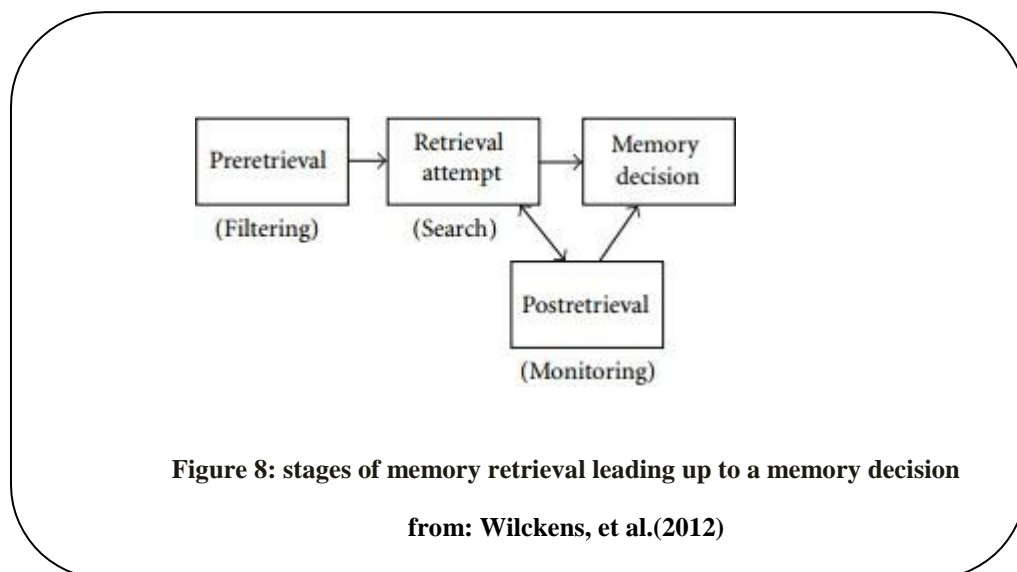
The memory retrieval process starts with a pre-retrieval operation which works to filter out the inappropriate information to restrict the memory search for the retrieval attempt. In case the pre-retrieval processing fails to be sufficient, the post-retrieval processing takes the responsibility in editing the retrieved content in order to make the appropriate memory decision**.** However, a possibility of an extra retrieval attempts before the memory decision to rely the retrieval process with the available information, as it is shown in figure08 with bidirectional arrows link retrieval attempt and post-retrieval. (Tulving & Pearlstone, 1966).

Memory retrieval types

According to some researchers, the memory retrieval is the process of pulled the non-accessible and needed information from the long-term memory to the surface through a specific memory brain mechanism. The latter is basically occurred in two main types: recall and recognition; that are affected by some variables and factors such as the retrieved time and the cues of retrieving, to increase the chance of remember the appropriate information. These types have been debated in various contexts for a long period of time (Anderson & Bower, 1972; Jacoby, 1991; Kintsch, 1970; Mandler, 1980; Tulving, 1976; Tulving & Watkins, 1973) as following:

- **Recall:**

Recall is an important type of the memory retrieval that requires a large amount of information in storage, and it is known as the construct of remembering the encoded and stored information in the long-term memory, based on two principles; (i) a group of overlapped items are random represented in the specific memory networks, (ii) The largest overlapped item is the appropriate one to be recalled (McDougall,1904; Michelangelo Naim et al,2020; Postman,1963). Whereas, some theorists claimed that recall involves two stages, (Anderson & Bower, 1972).

Free Recall

It is a complex paradigm of memory recall that occurs for many minutes interrupted by some pauses during responses. It has a necessary basic role in linking between the working memory and the long-term memory, as well; it facilitates the description of retrieval/ search strategies. The latter bases on the list-remember tasks to maintain a free recalling of items; for examples, a teacher can read aloud a list of specific number of words, after a short period of time, he/she may ask them to write down as many items as possible, yet the familiarity may manifest without intent (Atkinson and Shiffrin, 1968; Shiffrin, 1970;

Raaijmakers and Shiffrin, 1981; Metcalfe and Murdock, 1981; Rohrer and Wixted, 1994; Howard and Kahana, 1999 ;McCabeet al., 2011).

Cued Recall

Cued recall is the basic paradigm for associative memory with the help of semantic cues. It differs from the free recall in the familiarity of the cues/ words which rely to the remembered information that help in the retrieval process. For instance; a teacher presents a list of words with their cues, then ask students to recall the item with its cue; feather and bird. (Anderson 1981; Mensink & Raaijmakers 1988).

- ### Recognition

According to Moreno-Castilla et al,.(2018) the memory recognition is the ability to recall some sort of global familiar situations that have been encountered before. The determination of these familiar situations is based on linking the memory traces and the existence cues. This type of retrieval represents a combination of additive and weighted items which activate the memory process, in a fraction of a second, to identify episodic items in general; such as people, places, sounds and objects (Biederman, 1987; Thorpe, 1996; Clark & Shiffrin, 1992).

Voluntary and Involuntary memory retrieval

A long and interesting history in the mid-20th century, many theories have shown that the memory is not a single mental faculty; however, it has different kinds of thinking memory; such as the expected and the unexpected memories or as labeled the voluntary and involuntary memories. These kinds reflect directly either the effort or the intention of the human retrieval that facilitate the extract of the important items from the irrelevant ones (Barzykowsk et al.,2021; Kinoshita, 2001; Schacter, 1987). According to Ebbinghaus (1885/1964.), in the experimental study of human memory's book, these memories have

identified into two basic kinds: voluntary memory, involuntary memory which can be retrieved in conscious and unconscious ways.

- **Voluntary Memory**

This kind of memories, the deliberately recalled is considered as controlled personal memories, which was the basic study of many researchers (Ball & Little, 2006; Berntsen, 1996, 2009; Berntsen & Hall, 2004; Berntsen & Rubin, 2002, 2008). The latter has a strategic retrieval as a common standard way of recalling and remembering certain information. In other words, the voluntary memory's retrieval reflects a direct specific goal of specific research, Rasmussen & Berntsen, (2009) stated "voluntary memories are consciously initiated and generated in specific purpose in mind" (p 8).

- **Involuntary Memory**

It is the explicit personal memory which interrupts the human mind with no expectation or preceding attempt of retrieval by recollections information without conscious effort (Berntsen, 1996, 2009). It is considered by the cognitive theorists as a rare difficult type of memory research because of the non-expected coming information, where researchers must conducted a long term study to wait for this kinds of memories, "can only sit and wait, hoping for the improbable" Miller, 1962 (p. 161). Yet the involuntary memory may be retrieved in the conscious in a form of a flashback to past events and unconscious status as well, which creates inaccessible habits andpreferences but the shaped the human past.

Memory retrieval strategies

Memory is the essential part in the human's life which enables them to learn and discover the world. It has three major stages, encoding, storing and retrieval; to adopt certain information and knowledge appropriately. However, sometime this information disappears and be difficult to come back easily when ones need them. This demands a systematic activation of this information with the determination of ease access "the more active the

information, the easier it is to access" (Reder, 1988). Where, this ease access activation with the well-learned mnemonic strategies facilitates the improving of information's recollection, enhance the retrieval of information ability, and protect from forgetting and memory failures. Such as: the organization, mental mapping and the relearning.

- **Retrieval Mental Mapping**

It represents the cognitive production of combined series of process to be found in our mind. The latter helps to encode, register and recall the necessary information and controlled them in an organized way, in order to facilitate its retrieving from long-term memory. Several long-term memory retrieval studies show that the mental map has a fundamental role in organizing and storing the information for a long period of time in the long-term memory, (Clayton & Habibi, 1991; Curiel & Radvansky ,1998; McNamara, Ratcliff, & McKoon, 1984, Downs and Stea ,1973).

As the example, a study conducted by Curiel, (2002, 1997) showed that people who adopt the mental cognitive map in their daily life and learning process have a strong ability to strategic recalling of objects and tasks in an appropriate manner. As well as, the recognition tasks of the study indicated that the use of storing information, in mental mapping approach, with an organized way facilitated the retrieval memory process. Moreover, they affirmed that this approach adoption may help in both, the memory retrieval and in the learning comprehension as well.

- **Organization**

Many of the more recent studies established several debates about the effect of the organization on the information retrieval. Where most of them concluded that the organization in general helps to access the information which leads to ease the recalling by providing a potent and cues that easily implemented during retrieval; however, it is essentially well-establish the organization process to well manipulate the recalling easily

(Mandler, 1972;Tulving & Pearlstone, 1966). Yet the effect of the organization on recognitionis impaired between studies that confirmed the importance of the organization for recognition (eg; Connor, 1977; D'Agostino, 1969; Mandler, 1972; Neely & Balota, 1981), and the no review effective effect of it on the recognition (Bruce & Fagan, 1970; Kintsch, 1968).

A study of Guerin & Miller (2008), investigated the effect of organization on the three types of retrieval; recognition, free recall and cue recall, on 108 students at the University of California, Santa Barbara, the participants were randomly selected for the tests. It is concluded the large effect of organization on recall, free recall was much better scored than the cued recall, whereas an impaired effect has resulted on the recognition. And from other studies, participants recall the categorized list and items better than the random ones, hence the free recall participant and cued recall ones performed superiorly with cluster organized items. (Cofer, Bruce, & Reicher, 1966; Cohen, 1963; Tulving & Pearlstone, 1966.).

- **Relearning**

Research on forgetting and retrieval has demonstrated that the forgetting of information is the consequence of retrieving some new interfered information (Benjamin C. Storm et al, 2008). However, some strategies has an effective role on decreased the memory failures on recalling information such as; relearning. The relearning process represents the repeating of the previous learned information to active the stored and retrieval of the memory. In other words, "relearning is a highly effective learning technique that involves students taking several practice tests on to-be-learned material with each test separated by a time interval of a few days" (Higham et al,. 2021).

Several studies assumed the positive effect of relearning on the retrieval ofthe learned information, (such as Bahrick, 1979; Bahrick et al., 1993; Bahrick & Hall, 2005; Janes et al., 2020; Rawson et al., 2013; Rawson & Dunlosky, 2011, 2012, 2013; Vaughn et al., 2016).

Another study by Rawson, Vaughn, Walsh, & Dunlosky (2018) has shown the great impact of the relearning on three successive sessions per week. Where, the participants retrieved 20% after one single week, however, after the fourth relearning session, the participants were able to recall approximately 77% of the material and showed great results from the relearning process.

The Cornell note taking system and Retrieval of information

Several studies were conducted to proof the effect of the Cornell note taking method in a deep relation with different skills and sub-skills (*chapter01*) from one hand, and the retrieval of information on the other hand. The latter was a core topic from many researchers and scholars such as: Akintunde (2013) who stated in his comparative experiment study, on college students in Plateau State, Nigeria, between the three most used strategies of notes-taking; Cornell, Verbatim, and Outline; that the Cornell note-taking method had the most effective method which facilitated the recalling of information. This method helped the learners to expand their attention during the lecture, aided them to organize their notes in systematic way which reflected on the retrieval of ideas, information and knowledge easily (Rowntree, 1976.Kesselman-Turkel and Peterson, 2003).

As well as, Rohmana, et al (2015) found that the Cornell note taking method has a fundamental role in the concentration process of students during the lecture. Its divided system helps the learners to focus on the organization and the received knowledge in orderly fashion. Hence, this process maintains an effective recalling and retrieving of information as much as possible. It has shown in the previous experiment that the students in the experimental group recalled the information better and paid more attention than the control group.

CHAPTER TWO

Introduction

This chapter is considered as a core fieldwork in the development of this study since it highlights the research methodological main items used. It is mainly separated into two sections; the first section handles the main theoretical concepts included in the progress of this research in order to justify our selection which determines several components, such research question and hypotheses, the research paradigm, approaches and design. Continuously, the second section described the research procedure and the methods of the data collection and analysis implemented during the present work with their aim and structure.

Research Question and Hypotheses

As mentioned above in the general introduction, the purpose of the study is to investigate the effect of the Cornell note taking method on the students' retrieval of information. Where we aim to answer the following question;

RQ: Does the Cornell note taking method effect the students' retrieval of information?

As well, the question is directed the study into alternative hypotheses to confirm or reject the researchers' assumptions:

Null Hypothesis (H0):

The Cornell note taking method does not have an effect the students' retrieval of information;

Alternative Hypothesis (H1):

The Cornell note taking method has an effect the students' retrieval of information.

Research Paradigms

According to Mackenzie & Knipe (2006), the research paradigm is considered as an overall view which describes a specific work in educational researches. In this conceptual meaning, the paradigm, practically, is applied by researchers in order to determine the main methodological steps of their research and projects in order to facilitate the indication of values, terminology, methods and techniques. In this regard, the present research emphasizes the Positivist paradigm that is the mostly used in the experimental researches and deal with the alternative hypotheses to manipulate the independent variable and dependent variable.

The positivism paradigm is a worldview of a research composition which firstly proposed by Auguste Comte (1798 – 1857), a French philosopher. This kind of paradigm is grounded of the scientific methods of investigation; experimentation, observation and reason based on experience of human behavior in order to gather data which relate of questions and answers, or cause and effects relationships. The basis of this paradigm researches is to test and formulate a group of hypotheses related to the research's variables, and on deductive logic that offers definitions and mathematical calculations in order to design the final conclusion of the study (Comte 1856; Fadhel, 2002).

Research Approaches and Designs

The research design is the plan that outlines the main research study's steps. It contains the main approaches, techniques, methods and procedures used in collecting the necessary data to answer some highlighted questions. This plan aims to assure the systematic organize framework of the research that led to collect the needed data in rigorous manner and prove their reliability and validity easily. Hence, this design varies the choice of the data collection methods depend on the research approach and questions. In other words, the research approach and gap selected by the researchers determine the type the research design and data collection methods.

Accordingly, Grover (2015), the appropriate selection of the research approach leads to the well integration of its design and methods at once. Three major kinds of approaches refer to different researches depend on several needs to obtain data; namely as; quantitative, qualitative or mixed method. The current research is a classroom-orientedstudy which based on Note taking during the delivering of the lesson; according to Nunan, (1991) concerning the classroom-oriented research" it is either derives its data from genuine language classrooms or which has been carried out in order to address issues of direct relevance to the language classroom' (p, 249).

Under this context, the researchers opted to a quantitative research approach in order to collect the needed data; in hand with a quasi-experimental research design and a quantitative questionnaire as a tool, to provide a comprehensive understanding to the research questions.

Quantitative method

The quantitative method is an objective, deductive, formal approach, and systematic strategy of problem solving with generating data (Burns & Grove, 1999). This method deals with statistics, measures and numbers to contradict the conclusions and quantify the variation in a phenomenon, situation, or problem. The use of statistics does not impose only for a quantitative and the main function of it is to test and quantify feelings,opinions, attitudes, and different type of variables which support hypotheses to confirm a final conclusion (Farnsworth, 2019).

According to Rahman, (2017) the design of the quantitative research is either experimental (true experimental, quasi- experimental and pre- experimental) or non-experimental (cross-sectional research, correlation research, and observational research) which opt to gather reliable measurements through the appropriate observation and manipulation of the relation between two main variables in a specific population, known as independent and dependent variables. These designs allow the researcher to autonomous decisions concerning the objectivity of the study questions, data collection and the analysis of the statistical data (Creswell, 2011).

The selection of the quantitative approach in the present study is based on the research design, problem and hypotheses that must be tested and answered by providing structured and rigorous methods to data collection and analysis. The latter helps to test the hypotheses and answer the research question with systematic and objective way that avoid any subjectivity and bias and identify the relation between the research variables with numerical statistical data to ensure the results reliability and validity. Thus, to test the effectiveness of the Cornell note taking system with the alternative hypotheses, the quasi experimental represents the appropriate method that deals with the effect of interventions of the variables, the alternative hypotheses and the

explanatory research question. As well its suitable design serves the existent conditions of the present work;

The quasi-experimental

The quasi- experimental is a descriptive term refers to the quantitative approach which design under the conditions of the experimental approach. According to Broota (1989) "All such experimental situations in which the experimenter does not have full control over the assignment of experimental units randomly to the treatment conditions or the treatment cannot be manipulated are called quasi experimental design". The research must be conducted, at first, as explanatory research focuses on the explanation of two or more variables through linking the research questions to conclude the study. Secondly, the well- established designed of the research, on basic and previous researches, is necessary in the discovering and investigation of the study to be well relevant and significant.

The Variables

Since the present study presents an experimental research tackling "the effect of the Cornell note taking on the student's retrieval of information", it aims to determine the relation of cause and effect between two main variables through a set of changes being studied. These changes can affect the variables and show the links and differences that happen during the treatment and the research as whole to conclude it by the relation between the dependent and independent variables. In other words, the current study seeks to investigate the relation between the Cornell note-taking method as an independent variable and the retrieval of information as a dependent variable.

The difference between the two variables is a vital topic to be clarifying as following; according to Kaur SP(2013),

- **Dependent Variable**

The dependent variable is the consequence that been affected by a set of changes during the treatment. The latter is labeled because of it depends on the independent variable.

- **Independent Variable**

The independent variable is the antecedent variable that impacts the dependent one autonomously; whatever its number, structure or size. It is considered as an active variable in the research that make an important role in the manipulation on the other variable.
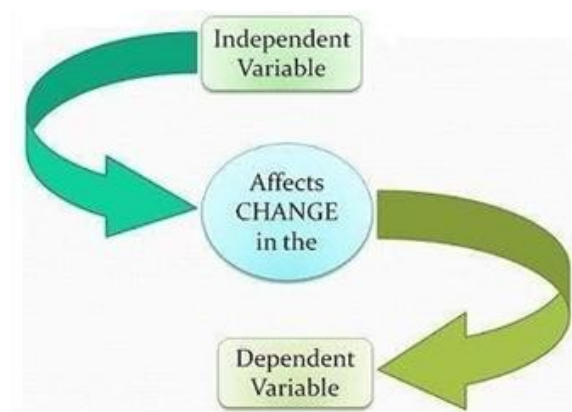
Figure 9:*the relation between the independent and dependent variables*

From: https://keydifferences.com/difference-between-independent-and-dependent-variable.html

Sampling Technique

According to Taherdoost (2016), sampling is a method of reducing and organizing a certain number of cases from a target population in a set of stages; from deciding the initial population, determine the sample technique and size, then collect the necessary data. And the selection of this procedure is based on two main factors the representation basis, probability sampling and non-probability sampling, and the element selection technique either restricted or unrestricted, depend on the research conditions.

In the current experimental research, since we have a quasi experimental that obligates the non randomization; we selected the convenience sampling from the non probability to be the frame of the study. This sampling technique, known as grab or opportunity sampling or haphazard, is one of the most common types of non probability that allows the selection of participants from one single sample and easy to be access in the study. As well, the present technique has a quick, inexpensive, and convenient procedure that allowed us to use the available participants at that moment. According to Babbie (2016);

> Convenience sampling is a type of non-probability sampling that is commonly used in research studies. This sampling technique involves selecting participants based on their availability and willingness to participate in the study. While convenience sampling is a quick and easy way to obtain participants, it can result in a biased sample that is not representative of the population being studied.

.

Population and Sampling Technique for this study

- **Population:**

This study was intended first with the 2nd year Lmd students since they have studied in their first year the techniques of note-taking, yet we due to some restrictions, we chose to work

with 3rd year English students, SLT module, at Bordj Bouariredj University. The reason for choosing this population is that master students are aware of the importance of taking notes and acknowledge the significance of this research study on their academic development.

- **Sampling Technique**

A case study of 20 3rd year students of English, didactic branch at BBA University was chosen from different groups based on the voluntary response sampling. We could not assign participants randomly which makes a true experiment impossible; therefore, in this research, a voluntary sampling was conducted and participants were self-chosen rather than being chosen on random basis. As a result, we based our selection on the students' diversity from different groups since we could not collect the needed number from one group only out of three groups.

The sample was divided into two groups of 10 participants in each group. The first group is the experimental group that used the Cornell note-taking, whereas the second one is the control group that was told to keep using their own technique in taking notes.

Data Collection Methods

One of the most important steps of the research conducting is the data collection, which allows gathering the necessary information in order to assure the hypotheses, and answer the research questions. This step requires from the researcher a well consideration and implementation of the appropriate instruments that enable to reach the exact outcomes aiming to get (Kabir, 2016, p. 202). Among several data-gathering instruments, the researchers' interest

is based on the questionnaire and tests because of the nature of the quantitative study as a quasi-experimental which needs numerical data.

Questionnaire

The questionnaire is one of the most useful instruments of data collection that includes a written list of questions which must be direct, precise and easy to be answered. The latter can suit both the qualitative and the quantitative researches depend on the questions' forms and the data to be analyzed. There are many types of questionnaires vary according to the purpose, size and the appearance and categorized based on the types of questions - close ended or open ended- (Pandey & Pandey, 2015; Kabir, 2016). The current research developed through a quantitative questionnaire which delivered as a pre-test before the treatment and a post-test after the treatment.

Pretreatment questionnaire

The primary tool used in collecting data was a close-ended questionnaire using the Likert scale, delivered to both groups in order to have an overall idea about their knowledge and use of taking notes and comparing between the groups. The questionnaire was designed in google form, and it contains 17 questions; delivered via email to the participants before the treatment sessions.

The treatment sessions

An introductory session was delivered to them before the treatment started, in which we explained the method and its different components, and gave the chance to them to ask their questions.

The experimental group was asked to take notes according to the Cornell note taking method. A template was given to them in the first session as a sample, and then they were required to use their own. Moreover, the treatment lasted for three sessions as it was agreed on. After each

session the notes were collected and scanned to be analyzed according to a checklist. The control group was left without any treatment.

Achievement test

The achievement is an educational term used to refer the behavioral changes in the teaching/learning levels. These changes are observed through systematic assessment and evaluation to identify the different levels. That means, the achievement test is an evaluation instruments which used to precise numerically the degree of leaning for specific group of students (Haladyna, 2004).

The achievement test we used was a single question delivered in the second and third session to both groups by their lit teacher about the previous sessions. It aimed to test both groups' retrieval of information as well as to compare between them. The participants answered the question in a given paper, and their information were kept anonymous. Finally, the test was graded out of 5 by the teacher.

Third achievement test:

A final quiz that included all the three sessions was allocated to both groups after finishing the treatment sessions to test the outcomes of the Cornell method on the students' retrieval. The test was graded out of 10 by their teacher.

Post treatment questionnaire:

The aim of the post questionnaire is to see the difference between the participants' answers before and after the treatment.

- The following table describes the period of the treatment and the full content:

Table 2:

Treatment table schedule and content

Treatment table schedule and content		
Sessions	**Content**	**The session dates**
Introductory session	• A presentation about the Cornellmethod, the aim of the study and its procedures • Taking the participants consent, and their emails.	**Monday,13 February 2023**

Pre questionnaire		
Taking notes using the Cornell method *session 1*	• *Lesson content:* American realism, civil war.	**Monday, 20 February 2023**

Taking notes using the Cornell method session 2 + Achievement test1	• Lesson content: regionalism, overview about the novel "theadventure of huckleberry Fin". • Question of the achievement test was about the main causes of the American civil war.	Monday, 27 February 2023
Taking notes using the Cornell method session 3 + Achievement test 2	• Lesson content: huckleberry Fin novel (themeaning of freedom). • The achievement test question was about the major differences between the two	Monday, 6 march 2023
	literary movements (realism and regionalism).	

Final quiz	• First Question was about what does miss Doglas and Watson represent in the novel of huckleberry fin? • Second question was what makesthe first chapter realistic? • Third question was: what is freedom for Hak in the first chapter?	**Wednesday, 8 march 2023**
Post questionnaire		

Table 1 shows that the quasi-experimental study we opted for lasted for 5 sessions. The first session students were introduced to the Cornell method, second session they started using it. Starting from the third session an achievement test was delivered and marked by their teacher and it lasted for two sessions as it was enough to collect the required data and compare between the groups. After finishing the treatment, the participants took another achievement test that was consisted of 3 questions related to the treatment sessions.

After scanning the students Cornell notes, we relied on the following checklist to examine the students Cornell notes. Each element is for *1* point

Table 3:

The checklist used to examine The Cornell notes

Description /scales	Poor	Good	Excellent
Create format **1- Headings: date, module,title.**	The absence ofheadings	The use of just 2/3 headings: Exp: date and title	Use the threeheadings appropriately
2- The well division of note's page	Two columns or one.	Three equal sized columns	Three non-equal columns: small cues, large notes and small summary.
Cue column **1-Titles and sub-titles**	No titles and subtitles find within the cue column	The absence of important subtitles of the lecture	Mentioning the titles and subtitles in organized way within the cue column
2- Questions	No questions or unclear informationincluded	The copy down of the questions on the other columns	The well reformulation of several questions or unclear ideas to be revised after the lecture

3- Keywords	The lack of keywordsin the cue column	The fair used of keywords	Well writing of keywords from the lecture
Note column *1- The use of main ideas*	No ideas mentioned	Random writing of information.	well-developed organized notes
2- abbreviations	Total absence of abbreviations	Non-systematic abbreviations and symbols	Abbreviations/symbolls used appropriately
3- highlighted/underlined orcircled new terms	No highlighted, circled or underlinedterms	Less highlighting and circling of terms	The new terms are highlighted/ underlined or circledto recall them easily
Summary column *1- summarizing of the notes*	No summary of notes	Mention the wholenotes in a long paragraph	Summarizing the whole notes briefly

Chapter three

Introduction:

The current study aims at investigating the effect of the Cornell note taking system on the students' retrieval of information. This chapter is dedicated to data analysis and findings (pre-, post-questionnaires, students' notes, the achievement tests) in order to answer the research questions.

Analysis of Results

- **Descriptive and Statistical Analysis of Pre and Post-treatment Questionnaires for Experimental and Control groups**

As was previously indicated, the purpose of the questionnaires is to ascertain the participants' knowledge of note-taking and its application both before and after the treatment period.

The Pie-chart diagrams follow summaries and illustrate the statements that are made as well as the conclusions drawn from the participant's responses, which were submitted through the Google Forms platform and then automatically calculated in terms of percentages. The pre- and post-questionnaire scores for both groups were compared (Mean; Std. Deviation) using Paired and Independent Samples T-Test as part of the statistical analysis of quantitative data conducted   with   SPSS

Experimental Group:

Figure 10: The experimental group pre and post treatment questionnaires pie charts

Figure 10.1: *The note-taking method used during lecture.*

Statement: *Do you use a note-taking method in your lectures?*

This statement aims to show how many of the participants use not-taking method in the lectures. As it is shown from pre-Q results, (80%) of them already use a taking note method, and (20%) said they don't use it their lectures. After the treatment, we can see that the percentage of the participants who said that they use a note taking method in their lectures raised to (100%).

Figure 10.2: *the Courses about note-taking*
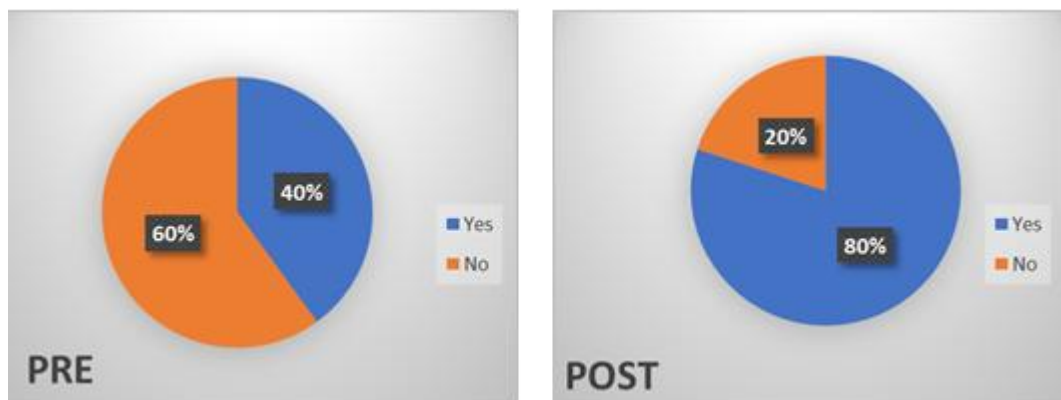
Statement: *Did you have any note-taking courses before?*

As, it is shown in the pie chart, (60%) of the participants answered that they didn't take any note-taking course before in the pre-Q, after the treatment, the percentage of participants who said yes raised to (80%) which shows their interests in taking notes.

Figure 10.3: *Types of Note-taking.*
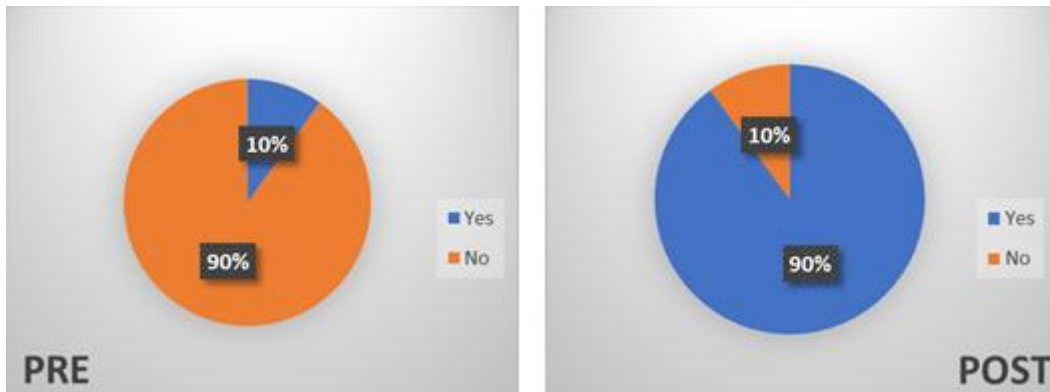
Statement: *Do you know any types of note-taking?*

In the pre-Q (90%) participants claimed that they don't know the types of note-taking, after the treatment, the pie chart of the post-Q shows that only (10%) of them are unfamiliar with the types of note-taking.

Figure 10.4: *The use of abbreviation during taking notes*
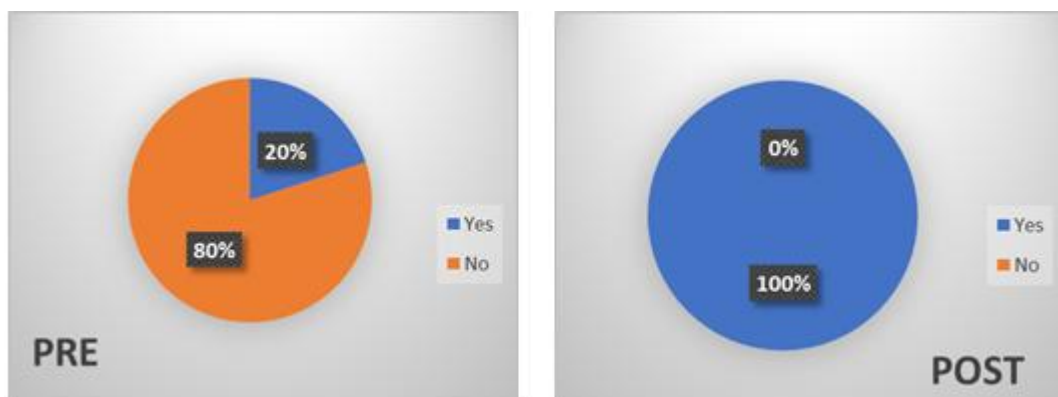
Statement; *Do you use abbreviations when you take notes?*

The pre-Q questionnaire shows that (20%) of the participants were using abbreviations when taking notes, and the percentage increased to (100%) after the treatment in the post-Q.

Figure 10.5: *The use of full sentence when taking notes*

Statement: *Do you use full sentences in taking notes from the lecture?*

From the results of the pre-Q, we can see that (70%) said that they use full sentences whenwriting their notes, whereas, the results of the post-Q (50%) claimed that they don't use full sentences after the treatment.

Figure 10.6: *Revising lessons through notes*

Statement: *Do you refer back to your notes when you revise your lectures?*

The pre-Q shows that (80%) of the participants claimed that they refer back to their notes when revising, whereas, after the manipulation, (90%) of them answered that they refer back to their notes when revising.

Figure 10.7: *The use of phone to take notes*
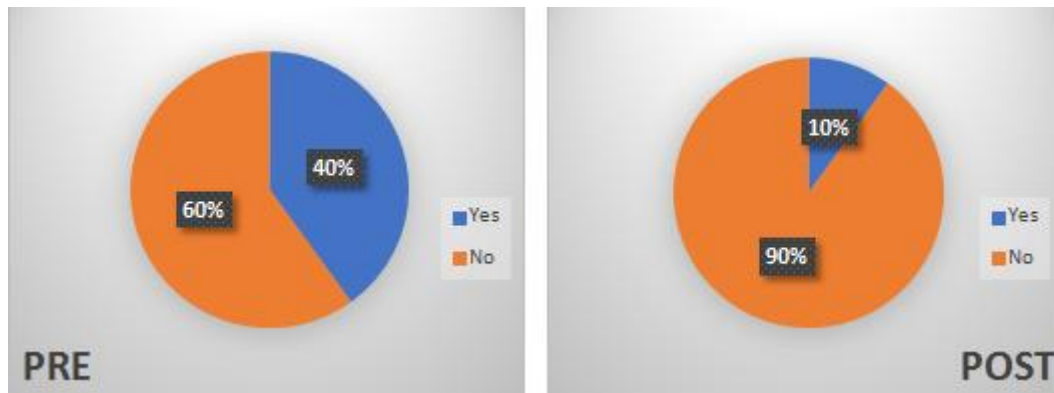
Statement: Do you use your phone to take notes?

As we can see from the pie chart, the percentage of the participants using their phone to take notes decreased from (40%) in the pre-Q, to (10%) in the post-Q.

Figure 10.8: *The use of papers to take notes*
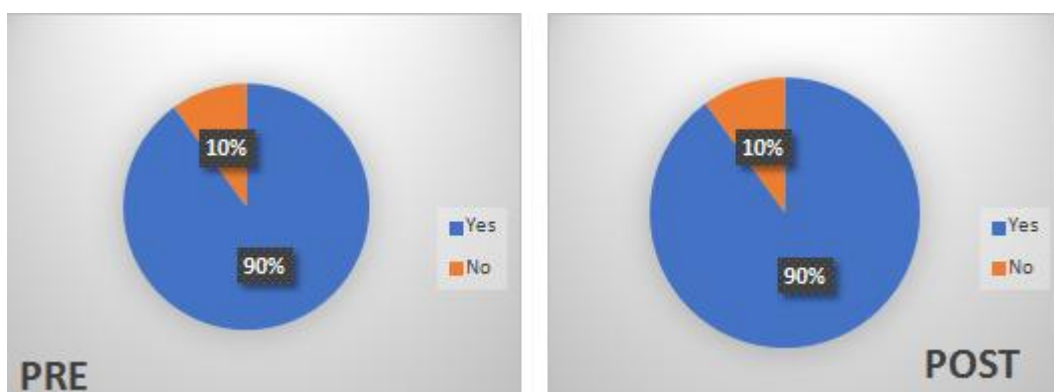
Statement, *do you prefer using papers to take notes?*

As the results shows, the participants preferred using the paper when taking notes, as the percentages stayed the same before and after the treatment.

Figure 10.9: *The Cornell note taking system*
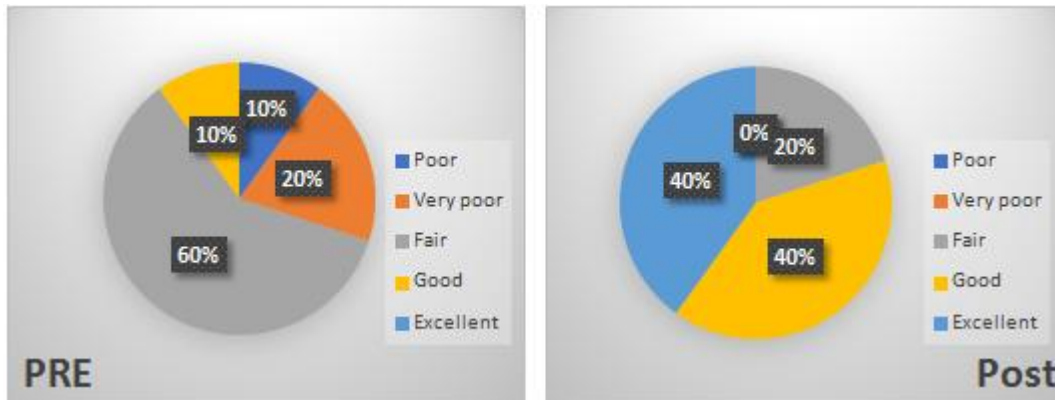
Statement: *How do you evaluate your knowledge about the Cornell note-taking method?*

As it is shown in the pre-Q results, (60%) claims that they have a fair knowledge about the Cornell note taking method, and (20%) a very poor knowledge about it. Whereas, after the treatment, (40%) said that they have an excellent knowledge about the Cornell note taking method and only (20%) still have a fair knowledge about it. These results show an improvement in the students' mastery of this method.

Figure 10.10: *notes organization*
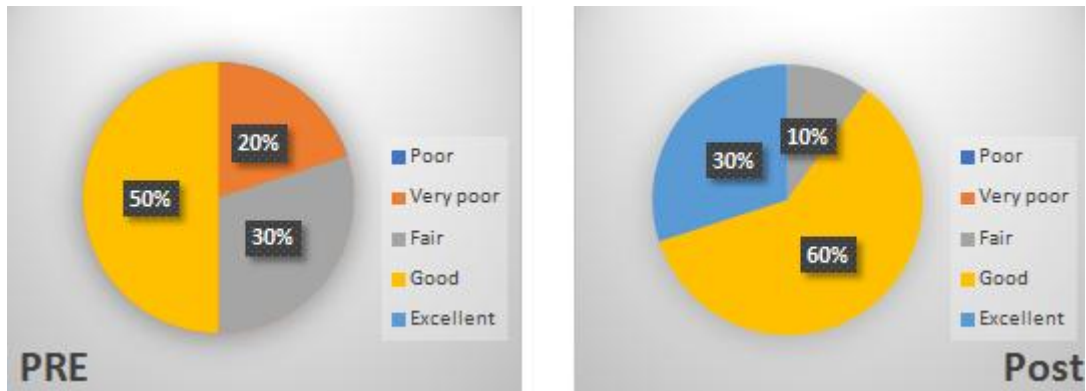
Statement: *How do you evaluate your ability about the organization of your notes?*

From the results shown, we can see that the percentage of the participants who claims that their ability to organize their notes is good raised from (50%) to (60%). Yet after the treatment, (30%) claim that their ability became excellent, with the lack of participants who says poor.

Figure 10.11: *The main cues in notes taking*
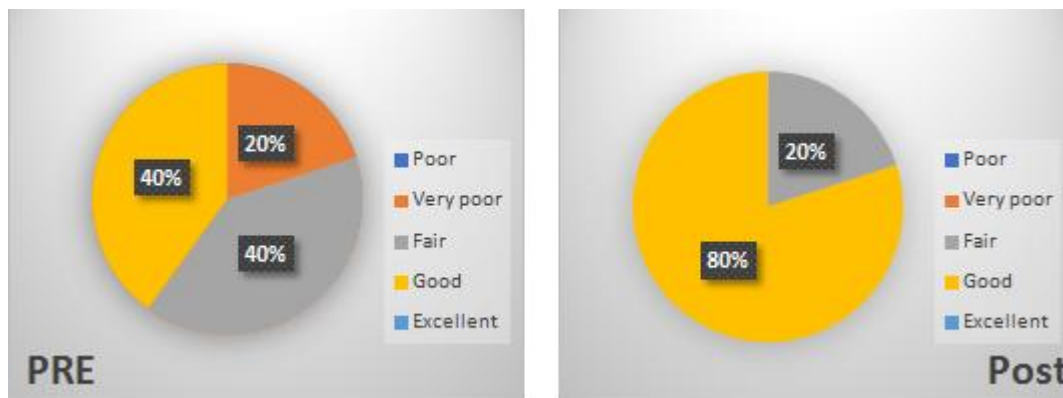
Statement: *How do you evaluate your ability in mentioning the main cues in your notes*I

In the Pre questionnaire we can see that a percentage of (40%) of the participants claims that their ability to mention the main cues in their notes is good, whereas, in the post questionnaire it raised to (80%). in the Pre questionnaire none of the participants claims that their ability to mention the cues in their notes is excellent.

Figure 10.12: *The notes' summarizing*
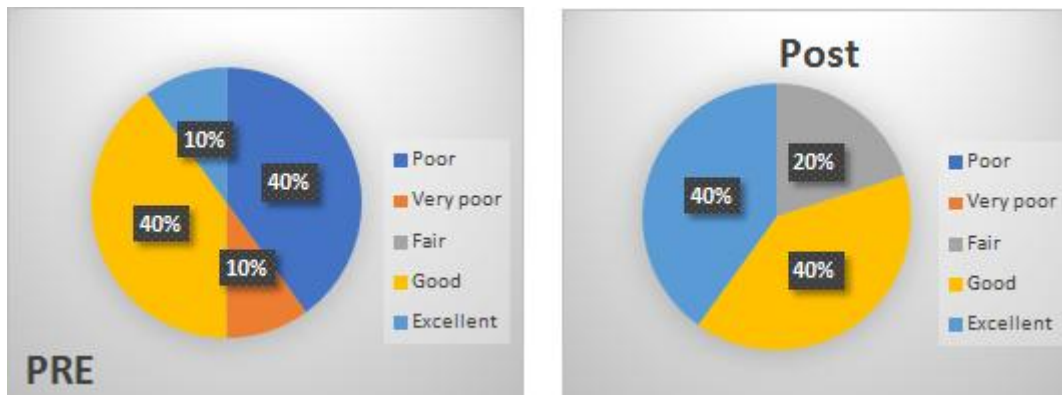
Statement: *How do you evaluate your ability about summarizing your notes*

As we can see from the chart an improvement is seen from the results between the pre questionnaire and the post questionnaire, the percentage of the people who answered excellent has raised from (10%) to (40%).

Figure 10.13: *The recalling of information through notes taking*
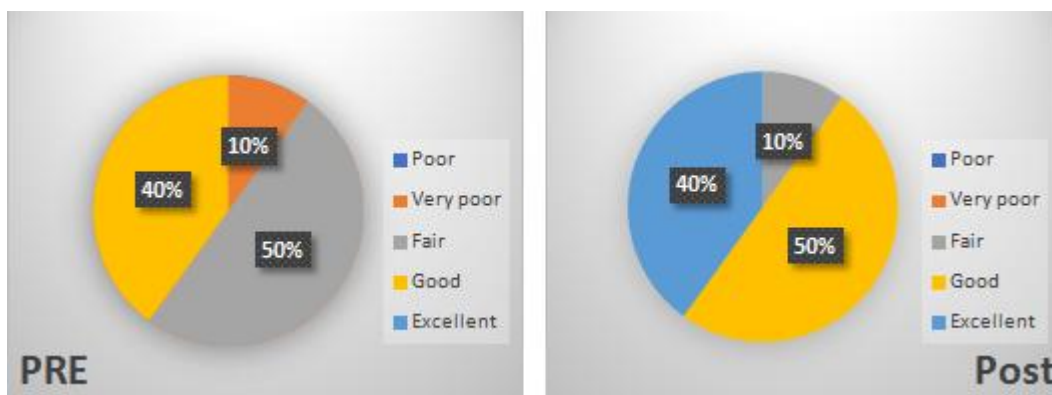
Statement: *How do you evaluate your ability about the recalling of information through*

taking notes?

In the Pre questionnaire (40%) of the participants claims that they have a good ability to recall information from their notes and (50%) answered that have a fair ability. The post

questionnaire shows an improvement in which (50%) of the participants answered that they have an excellent ability in recalling the information through their notes, and only (10%) answered fair.

Figure 10.14: *Notes' page division*
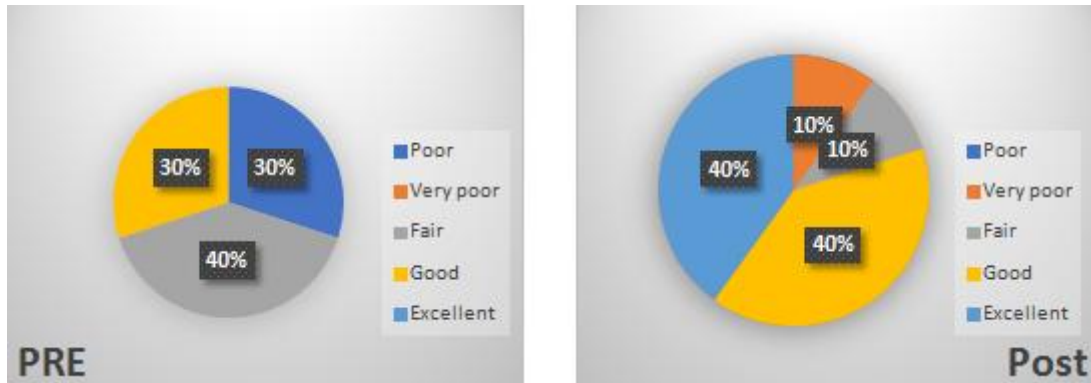
Statement: *How do you evaluate your knowledge about the appropriate division for notes page?*

From the results shown in the chart we can see an improvement, in which a percentage is (40%) of the participants answered that they have and excellent knowledge about dividing their notes page appropriately after the treatment and (40%) of them answered good and only (10%) answered fair.

Figure 10.15: *The ideas reformulation during note taking*
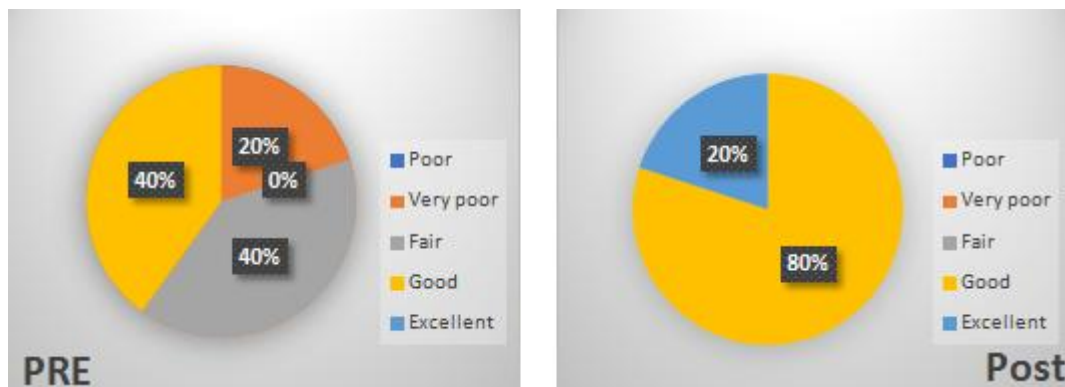
Statement*: How do you evaluate your ability of reformulating questions and information?*

From the pie chart results we can see the change between the pre questionnaire and the post questionnaire in which there were no participants who answered that they have an excellent ability in reformulating questions and information whereas in the post questionnaire (20%) of them have claimed that. The participants answered good has raised from (40%) in the pre questionnaire to (80%) in the post questionnaire. This shows that after the treatment participant has gained more skills in be formulating ideas.

Figure 10.16: *abbreviations creation*
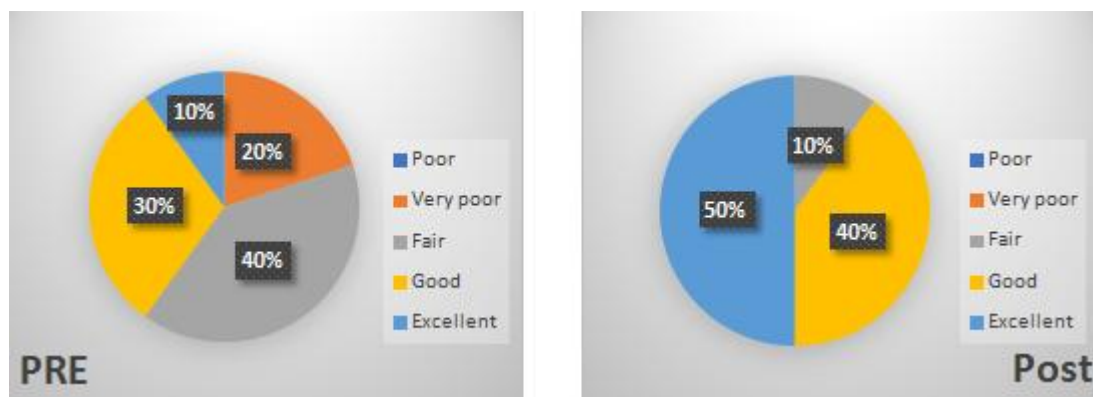
Statement: *How do you evaluate your ability in creating your own abbreviations?*

From the results in the pre questionnaire (30%) of the participants answered good in creating their own abbreviations whereas only (10%) answered excellent. In the post questionnaire results we can see that the results of the participants who answered good raised to (40%) and (50%) answered excellent.

The Paired-Samples T Test for Experimental group

Table 4:

Descriptive Statistics for the Experimental Group Pre-treatment and Post-treatment questionnaire results

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Experimenetal_pre_Q	2.1938	10	.25422	.08039
	Experimental_post_Q	2.7125	10	.25719	.08133

Table 5:

Experimental Group's Paired Samples T-test

Paired Samples Test									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Experimeneta_pre_Q - Experimental_post_Q	-.51875	.44395	.14039	-.83633	-.20117	-3.695	9	.005

Based on the results of the paired t-test for the experimental group, it appears that there was a significant difference between the pre- and post-treatment questionnaire scores.

The mean score in the pre-questionnaire (M = 1.1938) was significantly lower than the mean score in the post-questionnaire (M = 2.7125). This suggests that the treatment involving the use of Cornell note-taking technique had a positive effect on the students' scores. In addition, the P-value from the results shown (.005) is lower than (0.05), it suggests that the observed difference is statistically significant. However, a larger sampling size would provide more robust results and generalizability.

Control Group

Figure 11: The Control group pre and post treatment questionnaires pie charts

Figure 11.1: The note-taking method used during lecture.
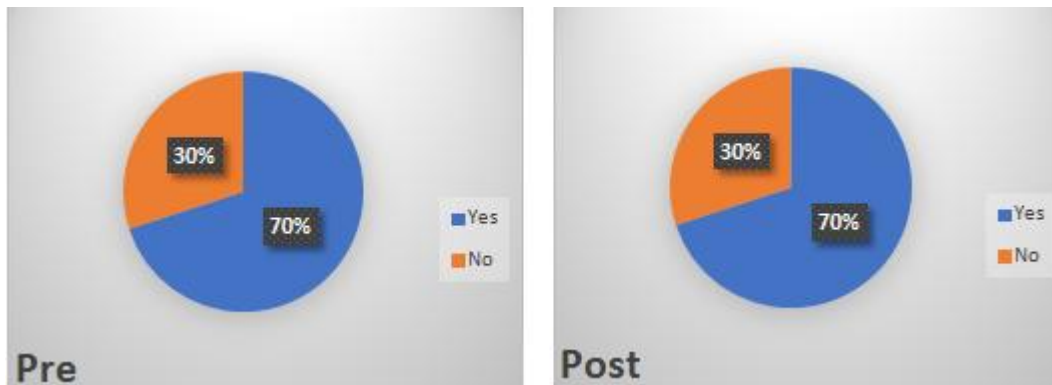
*Statement: **Do you use a note-taking method in your lecture?***

The figure above represents the note taking methods used during lecture, where we noticed in both the pre treatment questionnaire and post treatment graphs, a percentage of (70%) from the whole students use a specific note taking method. Whereas (30%) of the students do not have any specific note taking method.

Figure11.02: The Courses about note-taking;
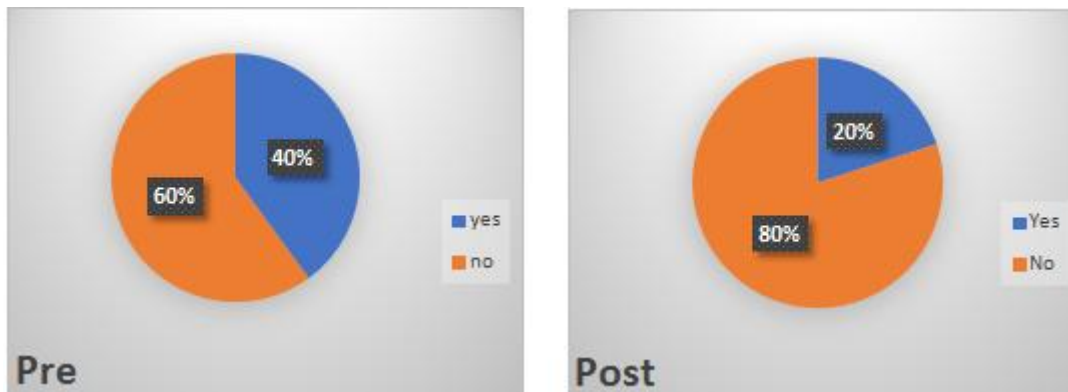
*Statement: **Did you have any note-taking courses before?***

Regarding the participants answers of the courses of note taking; the first graph of the pre test claimed that (60%) had a note taking's course and (40%) did not have it. However, within the post test, the students showed an increase percentage of (80%) in the yes responses, and (20%) within the no responses.

Figure 11.03: Types of Note-taking;
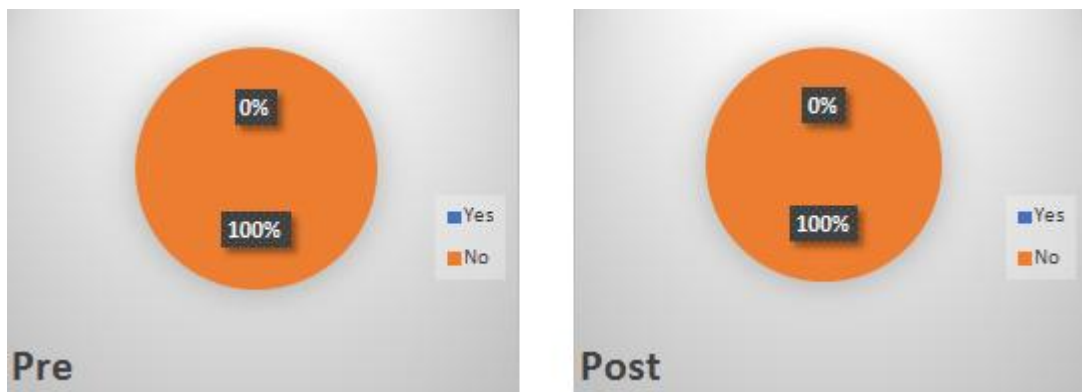
*Statement: **Do you know the types of note-taking?***

The results of the above figure showed that (100%) in both statistical circles of the pre test and the post test have negative responses with "NO" concerning the different types of note taking.

Figure 11.04: The use of abbreviation during taking notes;
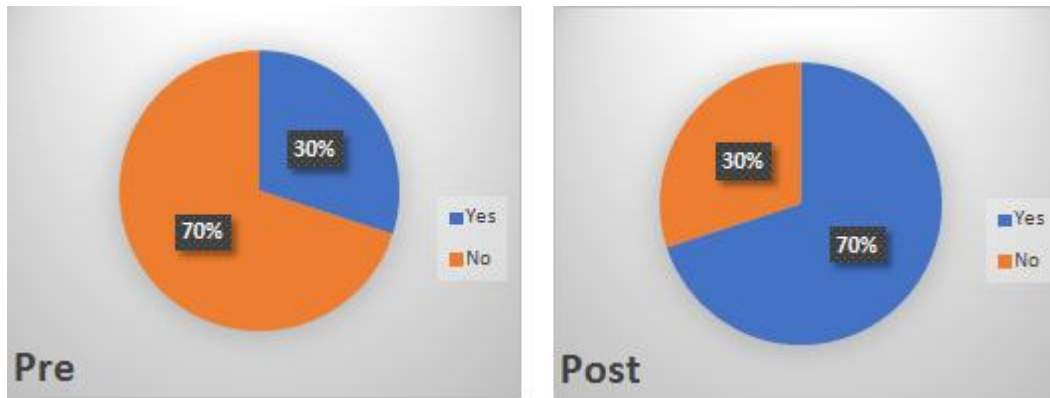
Statement; ***Do you use abbreviations when you take notes?***

It is observed in figure above regarding the use of abbreviation in notes taking, that the data in the pre test presented as (70%) for no responses and (30%) for the "yes" once. Where the post test has a contradiction in its results, (70%) of participant showed their use of abbreviations in notes taking and (30%) who did not prefer the use of them during their notes taking.

Figure 11.05: The use of full sentence note taking
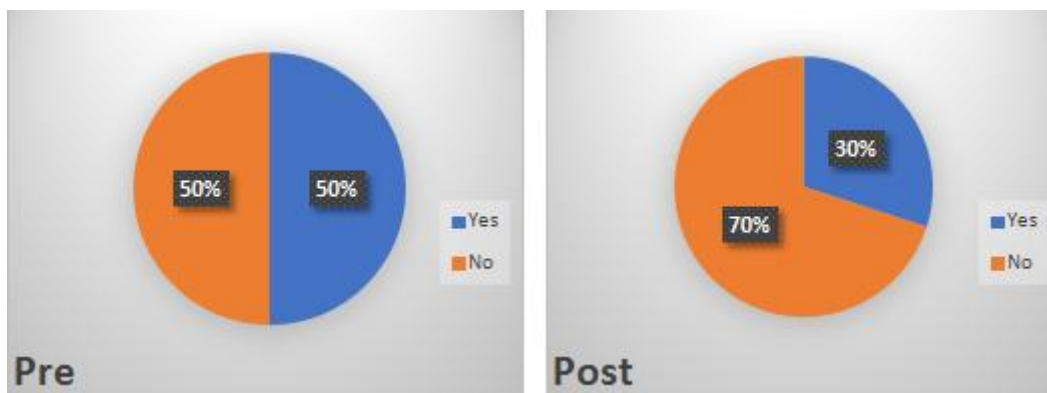
Statement: **Do you use full sentences in taking notes from the lecture?**

The above graphs of the use of full sentences in note taking; recorded in the first one, a half (50%) of the results are agreed with the use of full sentences in notes taking, and the other half (50%) showed their disagreement. In the second graph, the participants admitted a (70%) of disagreement and (30%) gave a positive answer about the use of full sentences.

Figure 11.06: The notes and revision of lessons

Statement: **Do you refer back to your notes when you revise your lectures?**

According to the above circles, the participants in the pre test confessed their revision of the notes with their lessons with (100%). However, the results in the post test have a decrease of (10%) for the students who do not use the notes during their lessons revision.

Figure 11.07: *The use of phone to take notes*
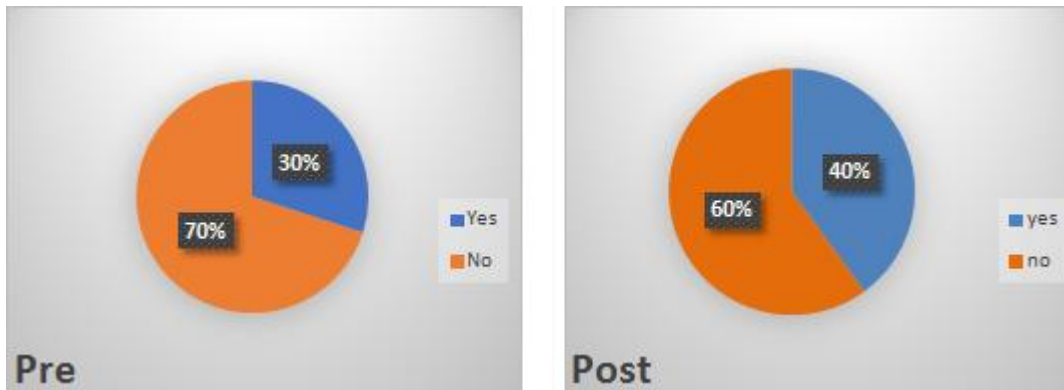
Statement; ***Do you use your phone to take notes?***

With a quick look to the use of phone during taking notes' data, showed that the participants in the both tests have an approximate result, however a (10%) highlights the difference between the two pies. The results in the pre test have a (70%) for students who did not use their phones to take notes and only (30%) of them who used it as a tool of notes taking, however, in the post test we noticed (10%) as an increased percentage from the students who prefer the use of phones to take notes.

Figure 11.08: *The use of papers to take notes;*

Statement; ***Do you prefer using papers to take notes?***

In relation to the previous statement, this statement explores the use of papers to take notes; we noticed that the results in both pre and post test have the same percentage of (90%) of participants who used to take notes on papers and (10%) who did not use the papers as taking notes tool.

Figure 11.09: The Cornell note taking system;
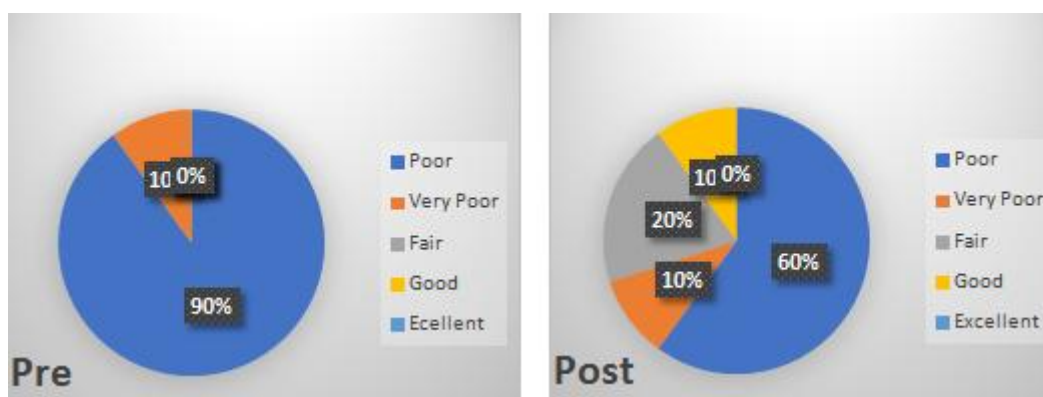
Statement: ***How do you evaluate your knowledge about the Cornell note-taking method?***

As shown in the above charts concerning the students' knowledge about the Cornell note taking system; the percentages of the pre test are balanced between the poor and very poor scales; where (90%) of the participants have a poor knowledge about the system and (10%) found that their information are very poor.

During the post test, the results decreased for (60%) of students who have poor knowledge about the Cornell system, and (10%) for the very poor acknowledged students; whereas the other percentages developed between the fair with (20%) and (10%) for those who have good information about the Cornell note taking system.

Figure 11.10: The notes organization;
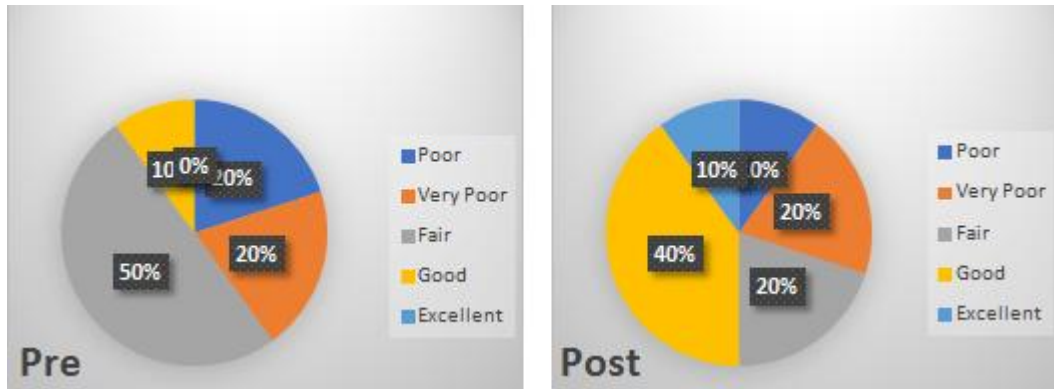
Statement: ***How do you evaluate your ability about the organization of your notes?***

Graphically shown in the above figures of the note's organization; within the pre test the majority of participants claimed their fair ability to organize their notes with (50%) and others are varying between poor (20%), very poor (20%) and good (10%).

However, the data of the post test are inclusive the five scales; where (40%) for the students who have a good ability for organizing their notes which shown an increased percentage from the pre test. Furthermore, we recorded (10%) for the poor and (10%) for the excellent manipulation for the above skill. As well as; only (20%) shown the fair responses and other (20%) for the very poor organized participants.

Figure 11.11: The main cues in notes taking;
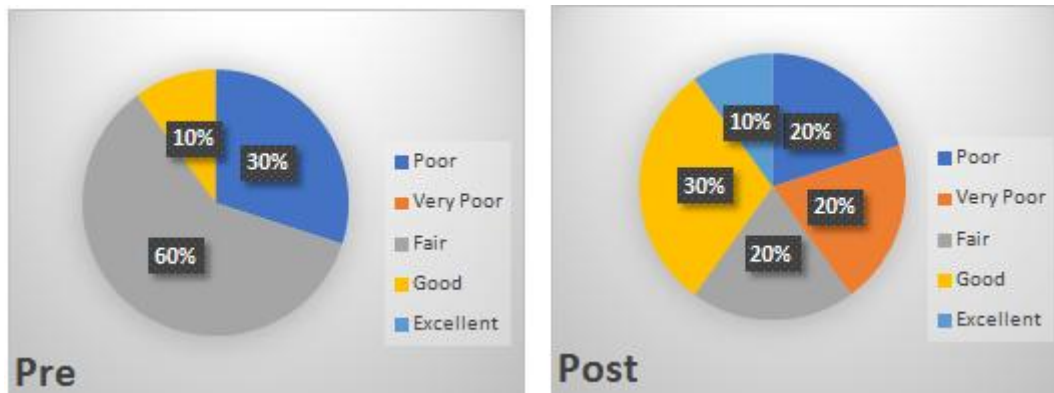
*Statement: **How do you evaluate your ability about mentioning the main cues in your notes? Example: Key words and questions***

The responses in the above charts for the main cues mentioning during taking notes; indicate, at first, a third of whole (30%) have poor ability; while (10%) confirmed their good ability to mention the keywords, questions and so on. Conversely (60%) claimed a fair average of the cues' use during taking notes.

The post test, in the other part; gave differed results from the five scales of the questionnaire; (30%) of the participants claimed that they have a good ability to mention the cues during taking notes, (10%) of them said that they have an excellent ability for the above sub-skill. Whereas, the rest of students have a (20%) in each of the poor, "very poor" and fair ability in the cues mentioning.

Figure 11.12: *The notes' summarizing*
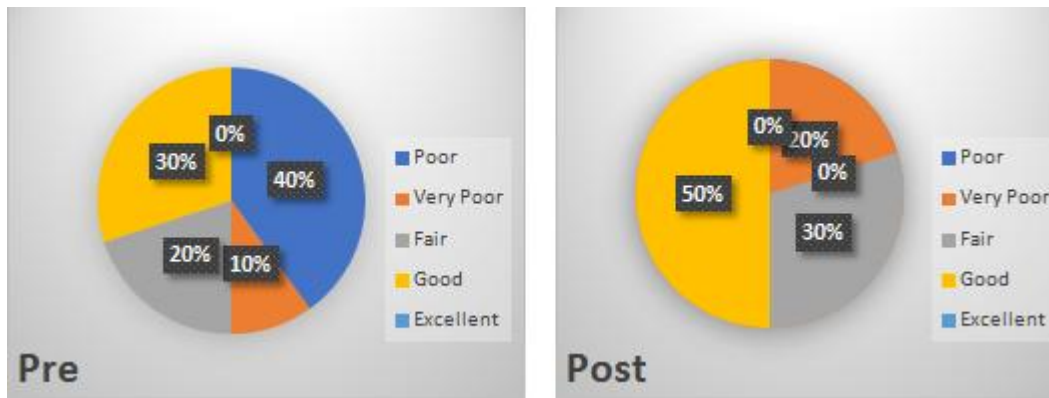
Statement: **How do you evaluate your ability about summarizing your notes?**

Noticeably from the statistical pie above, the pre test indicated that (40%) of students have poor ability of summarizing their notes, (10%) for the very poor and (20%) of students fairly can summarize; however, only (30%) from the whole have good ability to do the task above. Then, the data of the post test shown the half of the students (50%) are good in notes' summarizing, (30%) of the informants said that they are fair on it. The other two participants (20%) still poor in the above sub-skill.

Figure 11.13: *The recalling of information through notes taking*

Statement: **How do you evaluate your ability about the recalling of information through taking notes?**

As obtained in the figure above, the pre test data highlight more than half (80%) from the informants have a fair ability to recall information through notes taking, where (10%) have poor recalling with notes and one states very poor retrieval. In other part, the post test results indicate that (70%) have a fair recalling, (10%) are good in retrieve information through the use of notes and two of the participants (20%) do not have any ability to recall their notes.

Figure 11.14: Notes' page division
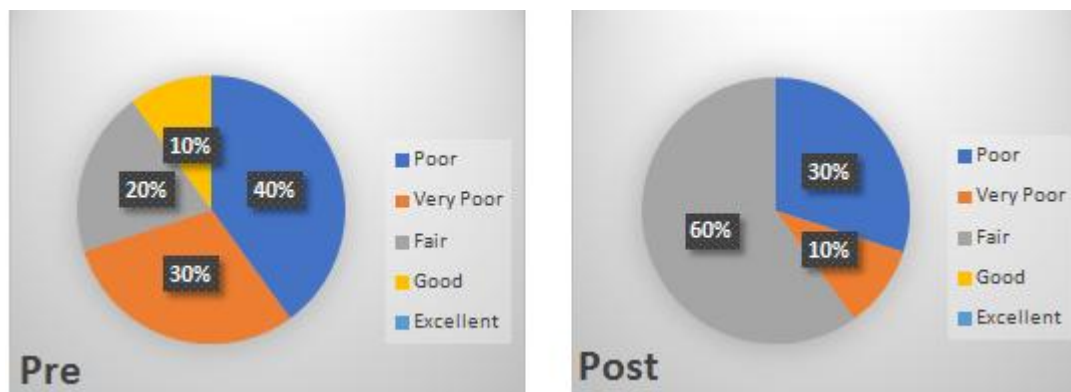
*Statement: **How do you evaluate your knowledge about the appropriate division for notes page?***

Variety of responses can be seen in the above charts which the several responses about the ability to divide the notes' page, the first one has several responses which said that (40%) of students have difficulties to divide their note' page, (30%) are very poor to do it. While (20%) of the informants are in the average to divide their pages and only one has a good level in the above sub-skill.

Whereas during the post test, more than half of the students (60%) claimed a fair ability to divide their page and the other once are differ from (30%) who are poor and (10%) for the very poor ability.

Figure 11.15: *The ideas reformulation during note taking*
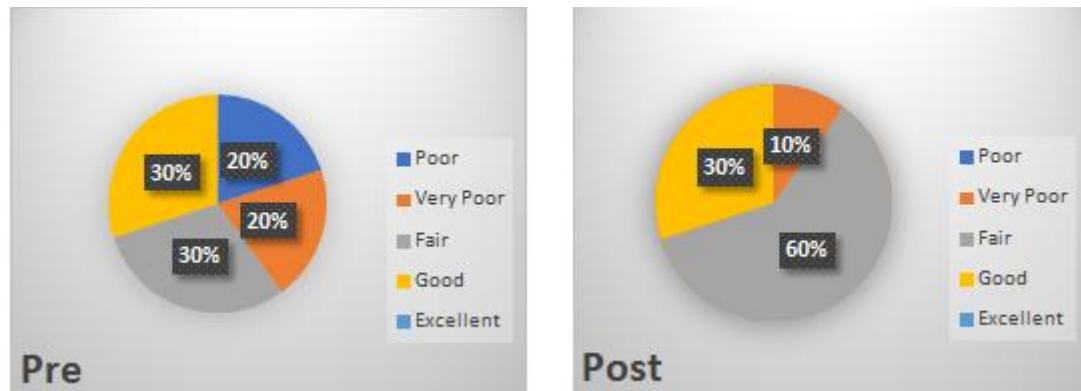
Statement: **How do you evaluate your ability about reformulating questions and information?**

From the above graphs, the data shown an approximate percentage between the results; the pre test tackled with (30%) of the participants that have a fair ability of reformulation, and other three informants (30%) have a good ability to do it. Conversely, a percentage of (20%) for each poor and very poor scales which refer to the ones who lack the ability to reformulate.

Whereas, more than half (60%) of the students, during the post test, have an average of reformulating ability, and (30%) are good in the reformulation process. However, only one (10%) from the whole has difficulties in reformulating.

Figure 11.16: *The own abbreviations creation*
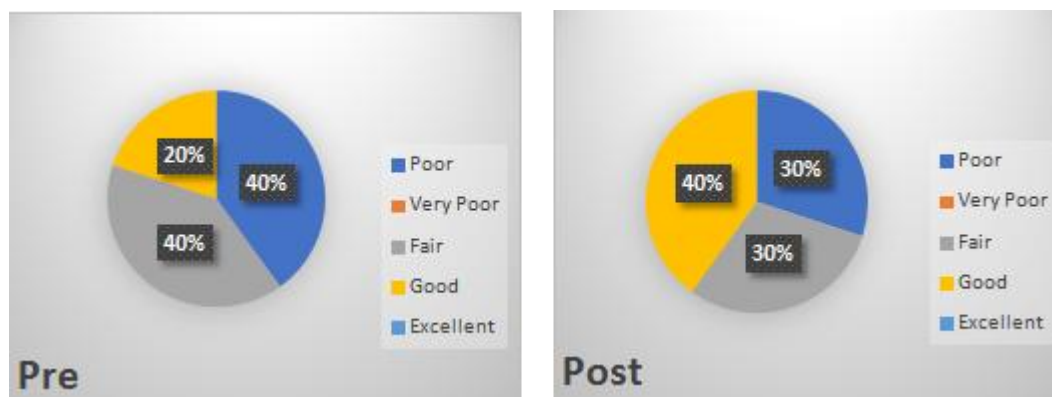
Statement: **How do you evaluate your ability about the creation of your own abbreviations?**

It is seen in the above statistical circles, during the pre questionnaire, the data shown (40%) of the students do not have an ability to create their own abbreviations, and other four of them (40%) are fairly able to make their creation. However, the rest two (20%) are good to do their abbreviations.

The responses of the post questionnaire balanced between (30%) for the informants who have a poor ability on the above creation, and a similar percentage (30%) for those who are fairly able to make their creation. And (40%) which shown four students who developed their ability to make their abbreviations.

The Paired-Samples T Test for Control group

Table 6:

Descriptive Statistics for the Control Group Pre and Post treatment results

Paired Samples Statistics		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Control_group_pre_Q	1.8875	10	.25311	.08004
	Control_group_post_Q	2.1188	10	.35776	.11313

According to the above table, that represents the paired sample statistics of the control group's QQ, the mean of the pre-QQ (M= 1.8875) is lower than the one in the post-QQ (M= 2.1188). As well, it shows the difference between the standard of deviation (σ), which indicates that in the pre-QQ (SD= .25311) is lower than the pre-QQ (SD= .35776).

Table 7:

Control Group's Paired Samples T-test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Control_group_pre_Q - Control_group_post_Q	-.23125	.41253	.13045	-.52636	.06386	-1.773	9	.110

The data obtained in the table above shows that the p value (the sig 2 tailed) ,110 is greater than its significant level 0.05 {**P > 0.05**}. In other words, the null hypothesis is observed and there is no effect and no difference between the control group pre and post-QQ.

Independent-Samples T Test of the Pretreatment questionnaire

Table 8:

Groups' Statistics in the Pre-QQ

Group Statistics					
	GROUP	N	Mean	Std. Deviation	Std. Error Mean
PRE_SCORE	Experimental group	10	35.1000	4.06749	1.28625
	Control group	10	30.2000	4.04969	1.28062

From the information presented in the table, we can see that the mean score of the experimental group (M= 35.10; Std= 4.064) is superior than the mean score of the control group (M=30.20; Std= 4.049).

Table 9:

The Independent T-test of the Groups in the Pre treatment questionnaire

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PRE_SCORE	Equal variances assumed	.556	.466	2.700	18	.15	4.90000	1.81506	1.08670	8.71330
	Equal variances not assumed			2.700	18.000	.15	4.90000	1.81506	1.08669	8.71331

Header spanning: **Independent Samples Test**

As the table indicates, the p-value (,15) is greater than 0.05. Based on this, the independent sample t-test confirmed that there is no difference between both groups before the treatment.

Independent-Samples T Test of the Post treatment questionnaire

Table 10:

Groups' Statistics in the Post treatment questionnaire

Group Statistics					
	GROUP	N	Mean	Std. Deviation	Std. Error Mean
POST_SCORE	Experimental group	10	43.4000	4.11501	1.30128
	Control group	10	33.9000	5.72422	1.81016

The table reveals that the mean score for the experimental group **(M=43.40)** is greater than the mean score of the control group **(M= 33.90).** yet we notice that the standard of deviation of the post score for the experimental group **(Std=4.11)** is less than the standard deviation of the post score for the control **group (Std= 5.72).** Hence, that means that the data in the control group are more variable than the experimental group.

Table 11:

The Independent T-test of the Groups in the Post-questionnaire

Independent Samples Test									
	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lowe	Upper

								r	
POST SCORE	Equal variances assumed	4.635	.045	4.261	18	.001	9.50000	2.22935	4.81631	14.18369
	Equal variances not assumed			4.261	18.000	.001	9.50000	2.22935	4.78200	14.21800

From the independent t test of the post treatment questionnaire results, we notice that the **p-value (,001**) is lower than **0.05.** Upon this, the independent sample t-test revealed that there is a significant disparity in level between the groups. So, it can be concluded that **H0** is rejected and **H1** is accepted. In other words, there is a difference between the experimental and the control group's results after the treatment period.

The Cornell notes analysis of three sessions:

The bellow histograms represent the main four criteria "format, the cue column, the notes' column and the summary" of the Cornell notes system manipulated by the participants of the current study during three successive sessions of the treatment.

First Cornell notes

	headings	page devision	Titles	questions	keywords	main ideas	abbreviations	highlightings	summarizing
Poor			1	5			2	3	
Good					1		5	5	
Excellent	10	10	9	5	9	10	3	2	10

■ Poor ■ Good ■ Excellent
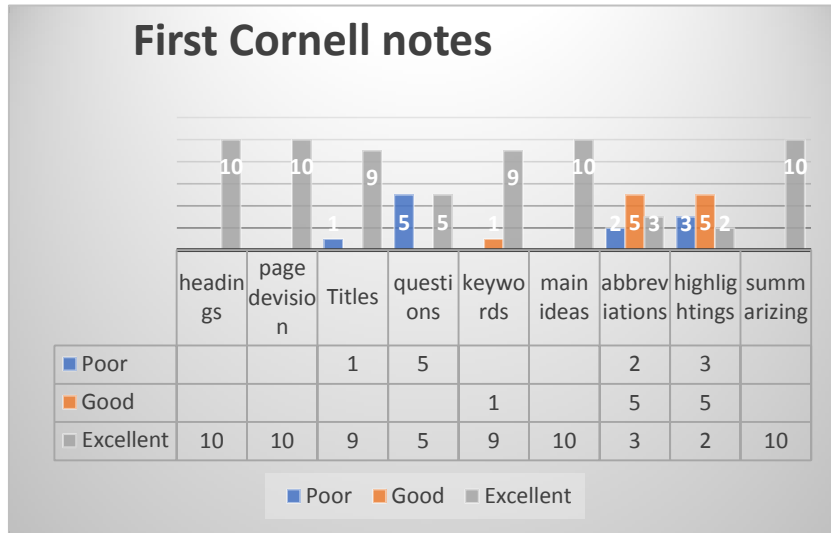
Figure 12 The First Cornell notes

The first session was a Cornell template's notes-based session; it demonstrated that the students were good enough in fulfilling the first two elements of the Cornell format "headings and page division", whereas it is noticed that numbers are balanced from each column. Within the cue column, the results are major between poor and excellent and only few in the good; where most of them were excellent in mentioning the main titles and the keywords and only one student at each who represented poor and good.

However, half of the students were able to mention the main questions and the others were not. As well as, results in the notes' column indicated that the 10 students took their notes and wrote down appropriately the main ideas of the session, in the abbreviation and highlighting of the main items, we can see diverging numbers. Furthermore, they were excellent in summarizing their notes.
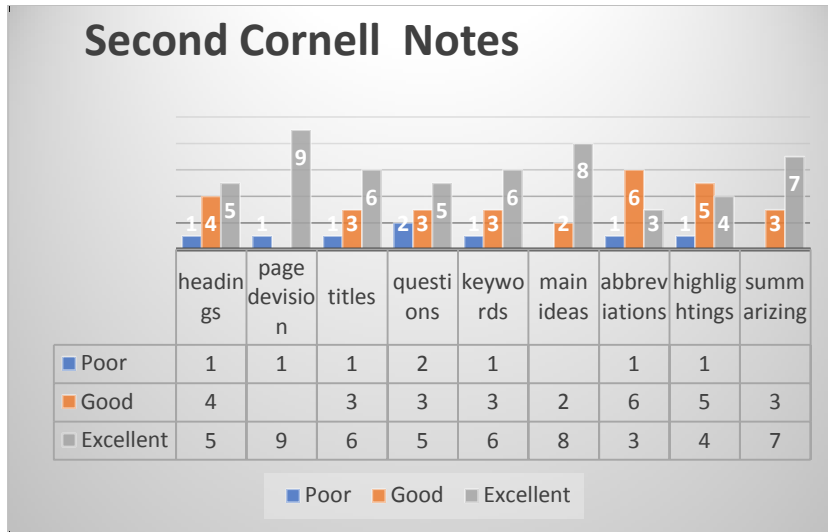
Figure 12 The second Cornell Notes

During the second session, the results are varying between poor, good and excellent; more than the first session. We can easily notice the decrease of the format's well-manipulated level through the different numbers appeared in the headings and page division. Whereas the cue column "titles, questions, keywords" contains much more participants in the good and the poor averages which highlight the diminishing of student's ability in the mentioned criteria.

Conversely, the note column's "main ideas, abbreviations, highlighting" results demonstrate a centralization in the good scale more than the excellent and the poor ones. And the summary results declined between good and excellent.
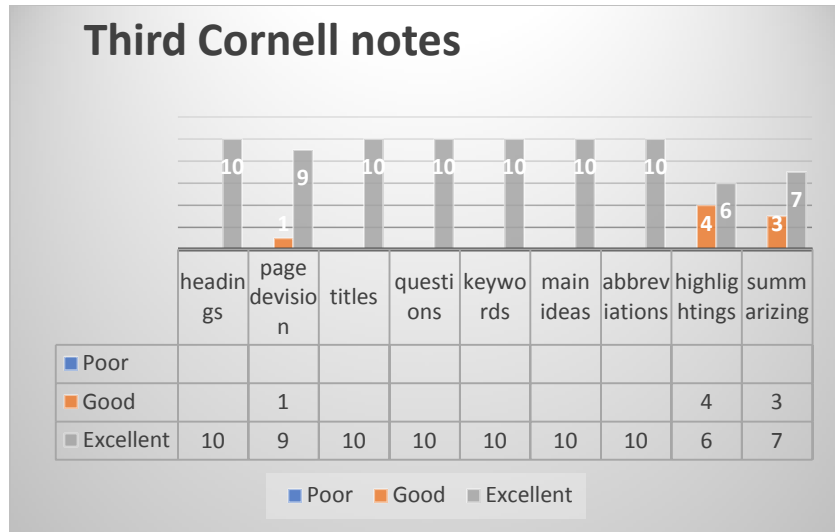
Figure 13:The third Cornell notes

The third session of the treatment 's data summarized an excellent outcome in the four criteria of the Cornell notes analysis. The data were centered on the excellent level with a minority in the good one, and a total absence of the poor level of manipulation. These results clarified the well manipulation of the Cornell system by the participants.

Analysis of the achievement tests:

As it is mentioned in the third chapter, we used two achievement tests to test the variable of the retrieval. The tables below indicate the scores each participant got in each test.

Table 12 :

The students' marks of the first and second achievement tests

First achievement test out of 5		Second achievement test out of 5	
Experimental group	**Control group**	**Experimental group**	**Control group**
3	2	3.5	1.5
4.5	3	3.5	1
4	1	2.5	1.5
5	1.5	3.75	1.5
4	2	2.75	2
4.5	3	3	1.5
4.25	1.5	3.5	0.5
3	3	4	2.5
3	1.75	3.75	0
4.5	075	4	2

Data analysis was conducted using the Statistical Package for Social Science (SPSS). Both descriptive statistics (means and standard deviations) and the independent sample t-test were used to discover the difference between the both groups when it comes to retrieving information

Table 13:

Groups' statistics of the first achievement test

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Achievement test 1 score	Experimental group	10	3.9750	.73077	.23109
	Control group	10	1.9500	.82327	.26034

As we can see from the table, the mean score for the experimental group (M= 3.97) is greater than the mean score of the control group (M= 1.95)

Table 14: *Independent sample test of the first achievement test*

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Achievement 1 score	Equal variances assumed	.117	.737	5.817	18	.000016	2.02500	.34811	1.29365	2.75635
	Equal variances not assumed			5.817	17.750	.000016	2.02500	.34811	1.29291	2.75709

From the independent sample t test results of the first acheivement, we notice that the **p-value (,000016**) is lower than **0.05.** Upon this, the independent sample t-test revealed that there is a significant disparity in level between the groups. So, it can be concluded that the Cornell note taking method has an effect on the students' retrieval of information, and by that we reject the Null hypothesis.

As we can see from the table, the mean score for the experimental group (M= 3.42) is greater than the mean score of the control group (M= 1.40).

Table 15: *Groups' statistics of the 2nd achievement test*

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
2nd achievement test Score	Experimental group	10	3.4250	.51438	.16266
	Control group	10	1.4000	.73786	.23333

Table 16: *independent sample test for the 2nd achievement test*

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
2nd achievement test score	Equal variances assumed	.602	.448	7.119	18	.00001	2.02500	.28443	1.42743	2.62257
	Equal variances not assumed			7.119	16.076	.00001	2.02500	.28443	1.42226	2.62774

As we can see from the results of the independent sample t test for second achievement test, we notice that the **p-value (,00001**) is lower than **0.05.** therefore, the independent sample t-test revealed that there is a difference between the groups. So, it can be concluded that **H0** is rejected and **H1** is accepted. In other words, there is a difference between the experimental and control group retrieval of information.

The analysis of the 3rd achievement test:

As mentioned in the pervious chapter, a 3rd achievement test was allocated for both groups as final quiz to test their retrieval after the treatment. The table below indicates their marks.

Table 17:

The students' marks of the third achievement test

The 3rd achievement test marks out of 10	
Experimental group	Control group
9	6.5
9	7
6.5	0.5
9	3
8.5	6.5
7	3.5

7	5.5
7.5	4.5
6.5	1
8.5	2.5

An independent t test analysis was conducted using SPSS, to compare between the groups and test the hypothesis.

Table 18:

Groups' statistics of the third achievement test

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Quiz score	Experimental group	10	7.8500	1.05541	.33375
	Control group	10	4.0500	2.32678	.73579

The results above indicate that the mean score of the experimental group (M= 7.85) is greater than the mean score of the control group (M= 4.05). whereas, the Std in the experimental group (STD= 1.05) is lower than the Std of the control group (STD=2.32), which means that the data of the control group is variable than the data of experimental.

Table 19 : Independent sample t test of the third achievement test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
Independent Samples Test										
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Quiz score	Equal variances assumed	7.692	.013	4.703	18	.00017	3.80000	.80795	2.10257	5.49743
	Equal variances not assumed			4.703	12.553	.00017	3.80000	.80795	2.04820	5.55180

We can see from the results of the third achievement test that was allocated after the treatment, we notice that the **p-value (,00017**) is lower than **0.05.** therefore, the independent sample t-test revealed that there is a difference between the groups. As a result, there is a difference between the experimental group retrieval of information and the control group after the treatment. By that, we reject H0 and accept H1.

Discussion of the results:

As it was mentioned before, the aim behind this study is to test whether the Cornell note taking system has an effect on the students' retrieval or not. In order to approve or reject the null and alternative hypothesis, the data were collected from 20 participants from third year EFL undergraduate students, using pre and post treatment questionnaires, along with 2 achievement tests during the treatment and a third achievement test after the treatment. the collected data was analysed using SPSS.

The first set analysed the students' perception to taking notes in general and the Cornell method before and after the treatment. the average scores of the experimental and control groups were compared in order to determine the differences between them. The pre-questionnaire scores obtained from the Independent Samples t-test revealed a resemblance in level between the two groups. On the other hand, the post-questionnaire scores revealed there is a difference between the groups which proves the impact of the treatment on the participants.

The results of the independent sample t-tests revealed important insights into the effects of the Cornell note-taking method on students' retrieval abilities. The analysis of the pre-treatment questionnaire showed no significant difference between the experimental and control groups before the treatment, as indicated by a p-value (0.15) greater than the significance level of 0.05. However, the post-treatment questionnaire results demonstrated a significant disparity between the groups, with a p-value (0.001) lower than the significance level. This significant difference after the treatment period led to the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (H1), suggesting that the Cornell note-taking method

had a positive impact on the levels reported by the experimental group compared to the control group.

In addition to the questionnaire results, the independent sample t-tests for the achievement tests further supported the effectiveness of the Cornell note-taking method in improving information retrieval. The analysis of the first achievement test showed a significant difference between the experimental and control groups, with a p-value (0.000016) below the significance level. This finding provides evidence that the Cornell note-taking method positively influenced the retrieval of information, leading to the rejection of the null hypothesis.

Similarly, the second achievement test yielded a significant difference between the experimental and control groups, with a p-value (0.00001) lower than the significance level. These results further confirm the effectiveness of the Cornell note-taking method in enhancing students' retrieval abilities.

Furthermore, the analysis of the third achievement test administered after the treatment revealed a significant difference between the experimental and control groups, with a p-value (0.00017) below the significance level. This finding underscores the impact of the Cornell note-taking method on students' retrieval of information.

When interpreting these findings, it is important to consider various factors that can influence memory retrieval. Previous research has highlighted the potential effects of factors such as the time of day, age, gender, and attention on memory retrieval. For instance, studies have suggested that the time of day may affect the efficiency of memory retrieval, with different time periods favoring short-term or long-term memory recall. Age has also been shown to play a role, as younger individuals tend to demonstrate stronger memory recall compared to older

individuals. Additionally, gender differences have been observed, with some studies indicating superior memory retrieval performance in women. Furthermore, attention during the learning process has been found to be crucial for successful memory retrieval.

Given the potential influence of these factors, future studies should aim to control for them to obtain a more comprehensive understanding of the relationship between the Cornell note-taking method and students' information retrieval abilities. By considering these factors, researchers can gain deeper insights into the effectiveness of the Cornell note-taking method and its impact on memory recall.

Conclusion

The chapter described the research methodology, the research paradigm and approach adopted, the research instruments employed, the population selected and the sampling technique used in this research. In addition to that, it explained how we collected and analysed data, and how we interpreted the findings. It included an accurate statistical analysis that was applied to the t-test results. In essence, the results supported the alternative hypothesis, which suggested that the Cornell note- taking system has an impact on students' information retrieval.

General conclusion

Taking notes is a vital academic task that aids students in remembering what they have learned and reviewing materials for re-use in revision and assignments. The research described in this dissertation is primarily motivated by a desire to understand the impact of the Cornell note-taking system on students' information retrieval. The results given hereunderline the importance of this strategy on both the students' accomplishment in tests andtheir recalling of material.

The results of this investigation highlight the benefits of the Cornell note-taking method. It can be concluded that this method of taking notes improves students' information retrieval. The approach encourages students to actively engage with the topic, organise their notes in a systematic way, and review the material on a regular basis, all of which can help them grasp and retain the information. The Cornell note-taking approach encourages students to summarise the key points of the lecture or reading and to reflect on the information they have learned, which fosters critical thinking and analytical skills. The approach also aids students in prioritising knowledge and concentrating on the most crucial ideas, which can be especially useful while preparing for exams.

Overall, it has been demonstrated that the Cornell note-taking technique is a useful tool for students to enhance their ability to find information and improve the outcomes of their learning. It is crucial to keep in mind that the system's efficiency can change based on the preferences and learning interests of individual students. Therefore, it is suggested that students explore several note-taking strategies to determine the one that works most effectively   for   them.

Limitations of the study:

During the journey of the current study, we faced some kinds of limitations and obstacles. This section is dedicated for mentioning the possible limitations to be avoided by the future researchers with some study recommendations that must be apply for better outcomes:

- One of the initial limitations that impacted our research is the arbitrary design of the whole study, from the beginning, which led us to plan for the study twice. In other words, the experimental study was performed with the second year undergraduate English students and it failed because of some circumstances; such as not maintaining the main rules of the quasi-experimental.

- Since we opted for another experiment, we only had a short time before the exams.

The latter led us to conduct the experiment without a pilot study, as well, the sessions were restricted only for three sessions of treatments and only two achievement tests. And these can be considered as motivational reasons for future researchers to conduct a pilot study, opt for a well-organized plan and to manage appropriately their time for their investigation.

- Moreover, the absentees, during the treatment sessions, obliged the researchers to work only with 20 participants which led to only ten in each group. And by that, the chances to collaborate with more members were reduced. Therefore, it is advised for the future researchers to conduct their research in a fundamental course which has an obligatory attendance to decrease the number of absentees.

- The use of questionnaire, as a pre and post-test, had constricted the ability of making the comparison between the true groups because of the responses' insincerity. It is

preferred for the coming researchers to use another research' tool to collect their data appropriately.

- The present study is considered as the first study which linked the Cornell note-taking method with the retrieval of information in Algeria and from the rare in the world. Hence the inadequacy of previous literature sources was a main obstacle to relate the two variables of the study in the previous studies.

- The choose of the quasi experimental rather than the true experiment restricted the internal validity of our study.

Recommendations:

Considering the results of this study, the researchers has suggested the following recommendations for the future researchers' benefits and for further investigations and studies on the Cornell note taking system in EFL classes and other branches in Algeria;

- It is important to note that our researcher is considered as the first investigation on the effect of the Cornell system on the student's retrieval of information in Algeria, which shown a positive outcome on the EFL students. Thus, more studies are needed and opened to other disciplines in order to strengthen its existence in the Algerian universities.

- From the analysis above the researchers recommend integrating the note-taking techniques in the university curriculum to encourage the students to develop their self responsibility and autonomous.

- The benefits shown from the use of the Cornell note taking system on the students' retrieval and other skills as well were restricted because of the small size sample. Then future researchers must try to increase the number of participants as much as possible to generalize the results easily.

- For future studies on the Cornell note method, we suggest an investigation about the effect of the Cornell note taking method on teachers' lesson planning.

REFRENCES

Akintunde, O. (2013). Effects of Cornell, Verbatim and Outline NoteTaking Strategies on

    Students' Retrieval of Lecture Information in Nigeria. Journal of Education

    and Practice, 25 (4), 67-73

Anderson, J. R. (1981). Interference: the relationship between response latency and response

    accuracy. J. Exp. Psychol.: Hum. Learn. Mem. 7:326~3

Anderson, T. H., and Armbruster, B. B. (1986) The value of taking notes duringlectures.

    Retrieved September 21, 2015, from

    https://www.ideals.illinois.edu/bitstream/handle/2142/17574/ctrstreadtechrepv01986i003

  74_opt.pdf?sequence=1

Atkinson, Richard C., and Richard M. Shiffrin. (1984). "Human memory: A proposed system

    and its control processes." *Psychology of learning and motivation*. Vol. 2. Academic press,

Bahrick, H. P. (1984). Semantic memory content in permastore: Fifty years of memory

    for Spanish learned in school, Journal of Experimental Psycholog

Bahrick, H. P. (1979). Maintenance of knowledge: Questions about memory we forgot to ask.

    Journal of Experimental Psychology: General, 108, 296–308.

Bahrick, H. P., & Hall, L. K. (2005). The importance of retrieval failures to long-term retention:

    A metacognitive explanation of the spacing effect. Journal of *Memory and Language*,

Bahrick, H. P., Bahrick, L. E., Bahrick, A. S., & Bahrick, P. E. (1993). Maintenance of foreign

    language vocabulary and the spacing effect. Psychological Science, 4,316–321.

Baker, L., & Lombardi, B. R. (1985). Students' lecture notes and their relation to test

performance. Teaching of Psychology, 12, 28-32. doi: 10.1207/s15328023top1201_9

Ball CT, Little JC. A comparison of involuntary autobiographical memory retrievals.

Applied Cognitive Psychology 2006;20:1167–1179.

Barbier, M. L., Roussey J. Y., Piolat, A. & Olive T. (2006). Note-taking in second language:

Language procedures and self evaluation of the difficulties. Current Psychology Letters,

20 (3), 1-14.

Barnett, J., Di Veata, F,Rogozinski, J. (1981). What is learned in note-taking? Journal of

Educational Psychology, 73, 181-192.

Barzykowski, K., Staugaard, S. R., & Mazzoni, G. (2021). Retrieval effort or intention: Which is

more important for participants' classification of involuntary and voluntary memories?.

British Journal of Psychology, 112(4), 1080-1102.

Bernhardt, P. (2013) "The Advancement Via Individual Determination (AVID) Program:

Providing Cultural Capital and College Access to Low-Income Students." *School

Community Journal* 23.1: 203-222.

Berntsen D, (2004). The episodic nature of involuntary autobiographical memories. *Memory

&Cognition*;32:789–803

Berntsen D, Rubin D. (2008). The reappearance hypothesis revisited: Recurrent involuntary

memories after traumatic events and in everyday life. *Memory & Cognition*;36:449–460

Berntsen, D. (2009) An introduction to the unbidden past. Cambridge University Press;.

Involuntary autobiographical memories.

Biederman, I. (1987). Recognition-by-components: a theory of human image understanding.

Psychological review, 94(2), 115.1-32.

Bligh, D. (2000). What's the use of lectures? San Francisco, CA: Jossey-Bass.

Boch, F, Piolat, A. (2005). Note Taking and Learning: A Summary of Research. The WAC
Journal, 101.

Bonner, J., & Holliday, W. (2006). How college students engage in notetaking strategies. Journal
of research in science teaching.

Bouton, M. E. & Brooks, D. C., (1994). A retrieval cue for extinction attenuates response
recovery (renewal) caused by a return to the conditioning context. Journal of
Experimental Psychology: Animal Behavior Processes, 20, 366-379

Bouton, M. E. (1993). Context, time, and memory retrieval in the interference paradigms of
Pavlovian learning. Psychological bulletin, 114(1), 80.

Bouton, M. E. (1993). Context, time, and memory retrieval in the interference paradigms of
Pavlovian learning. Psychological Bulletin, 114, 80-99

Bouton, M. E. (1997). Signals for whether versus when an event will occur. In M. E. Bouton &
M. S. Fanselow (Eds.), Learning, motivation, and cognition: The functional behaviorism
of Robert C. Bolles (pp. 385–409).

Bower, G, Reitman, J (1972). Mnemonic elaboration in multilist learning. Journal of Verbal
Learning and Verbal Behavior, 11, 478–485.

Boyle, J. R. (2007). The process of note taking: Implications for students with mild disabilities.
The Clearing House, 80(5), 227-232.

Boyle, J. R. (2010). Strategic note-taking for middle-school students with learning disabilities in
science classes. Learning Disability Quarterly, 33(2), 93-109. Retrieved from
http://web.ebscohost.com.proxy.library.ndsu.edu/ehost/detail?vid=1&hid=111&sid=bc2d
7aed-6237-4c56-8dec-c8cf27dbfdd6%40sessionmgr112

Brem, A.K, Ran, K, Pascual-Leone, A. (2013). Learning and memory. Handb Clin
Neurol.;116:693- 737. doi: 10.1016/B978-0-444-53497-2.00055-3. PMID: 24112934;
PMCID:

PMC4248571.

Bretzing B, Kulhavy, R, Caterino, L (1987). Note-taking by junior high students. Journal of
Educational Research, 80 (6), 359-362.

Broe, D. (2013). The effects of teaching Cornell notes on student achievement. (Unpublished
master's thesis), Minot State University. Minot, North Dakota.

Broota, K. D. (1989). Experimental design in behavioral research. *New Age International*.

Bruce, D., & Fagan, R. L. (1970). More on the recognition and free recall of organized lists.
Journal of Experimental Psychology,85, 153-154

Buckner, Randy L., Mark, E. (2001):. "The cognitive neuroscience og remembering."
Nature Reviews Neuroscience 2.9 624-634.

Buckner, Randy L., and Steven E. Petersen (1996). "What does neuroimaging tell us about the
role of prefrontal cortex in memory retrieval?." *Seminars in Neuroscience*. Vol. 8. No. 1.
Academic Press,.

Burns, N., Grove, S.K. (1999) Understanding Nursing Research. (2nd edn).

Carrier, C, Titus, A. (1979). The Effects of Notetaking: A Review of Studies. In contemporary
educational psychology (p. 299).

Carrier, C. (1983). Notetaking research. Journal of Instructional Development, 6(3), 19-26.

Carrier, C., Williams, M., Dalgaard, B. (1988). College students' perceptions of notetaking and
their relationship to selected learner characteristics and course achievement. Research in
Higher Education, 28, 223-239.

Cary. R, Savage, Deckersbach, T., Heckers, S., Wagner, A. D., Schacter, D. L., Alpert, N. M. ...
& Rauch, S. L. (2001). Prefrontal regions supporting spontaneous and directed
application of verbal learning strategies: evidence from PET. Brain, 124(1), 219-231

Chen, Y.(2007). Learning to learn: The impact of strategy training. ELT, 6(1), 20-29.

Clayton, K., & Habibi, A. (1991) . Contribution of temporal contiguity to the spatial priming
effect. *Journal of Experimental Psychology : Learning, Memory, and Cognition*, 17, 263–
271

Cofer, C. N., Bruce, D. R., & Reicher, G. M. (1966). Clustering in free recall as a function of
certain methodological variations. Journal of Experimental Psychology,71

Cohen, B. H. (1963). An investigation of recoding in free recall. Journal of Experimental
Psychology,65

Comte, A . (1856). A general view of positivism. London: Smith Elder & Co.
Connor, J. M. (1977). Effects of organization and expectancy on recall and recognition.
Memory & Cognition,5

Cottrell, S. (2003). The study skills handbook.

Craik, F., Lockhart, R. (1972). Levels of processing: A framework for memory research. Journal
of Verbal Learning and Verbal Behavior, 11, 671–684.

Craik, F. I. M., Govoni, R., Naveh-Benjamin, M., & Anderson, N. D. (1996). The effects of
divided attention on encoding and retrieval processes in human memory. *Journal of
Experimental Psychology: General*, 125

Creswell, J. W., Klassen, A. C., Plano Clark, V. L., & Smith, K. C. (2011). Best practices for

mixed methods research in the health sciences. Bethesda (Maryland): National Institutes

of Health, 2013, 541-545.

Curiel, J. M. (1997). The use of identity and location information in mental map organization,

IN:

University of Notre Dame. Unpublished Master's thesis

Curiel, J. M., & Radvansky, G. A. (2002). Mental maps in memory retrieval and comprehension.

Memory, 10(2), 113-126.

Curiel, J.M., & Radvansky , G.A. (1998) . Mental organization of maps. Journal of Experimental

Psychology: Learning, Memory, and Cognition, 24

D'Agostino, P. R. (1969). The blocked-random effect in recall and recognition. Journal of Verbal

Learning & Verbal Behavior,8

Davoudi, M., Moattarian, N., & Zareian, G. (2015). Impact of Cornell Note-Taking Method

Instruction on Grammar Learning of Iranian EFL Learners. Journal of Studies in

Education, 2 (5), 252-265.

Dehn, M. J. (2010). Long-term memory problems in children and adolescents: Assessment,

Departments of Neurology and Neurological Surgery and Radiology (1996), Washington

University School of Medicine, St Louis, MO 63110, USA seminars in THE

NEUROSCIENCES, Vol 8,: pp 47–55 ©

Dewitt. (2007). The effects of note taking and mental re-hearsal on memory. Journal of

undergraduate Psychological Research .

DeZure, D., Kaplan, M, & Deerman, M.A. (2001).

DiVesta, F. J., & Gray, G. S. (1972). Listening and note taking. Journal of Educational psychology.

Downs, R. M., & Stea, D. (Eds.). (1973). Image and environment: Cognitive mapping and spatial behavior. Transaction Publishers. Düzel, E., Vargha-Khadem, F., Heinze, H. J., & Mishkin, M. (2001). Brain activity evidence for recognition without recollection after early hippocampal damage. Proceedings of the National Academy of Sciences, 98(14), 8101-8106.

Dehn, M. (2010). Long-term memory problems in children and adolescents: Assessment, Vol 8, 1996: pp 47–55.

DiVesta, F., Gray, G. (1972). Listening and note taking. Journal of Educational psychology.

Dolan, R. J. (1999). Recollection and familiarity in recognition memory: an eventrelated functional magnetic resonance imaging study. Journal of neuroscience, 19(10), 3962-3972.

Dolan, R. J. (1998). The functional roles of prefrontal cortex in episodic memory. I. Encoding. Brain: a journal of neurology, 121(7), 1239-1248.

Dunkel, A. (1988). Academic Listening and Lecture Notetaking for Ll/L2 Students: The Need to Investigate the Utility of the Axioms of Good Notetaking. TESL Canada Journal, 6 (1), 11-26.

Dunkel, P. (1988). The content of L1 and L2 students' lecture notes and its relation to test performence. TESOL Quarterly.

Dunkel, P., & Davy, S. (1989) The heuristic of lecture note-taking: Perceptions of American and international students regarding the value and practice of note-taking. English for Specific Purposes Journal, 8(1), 33-50

Duzel, E. T. W. Picton, R. Cabeza et al., "Comparative electrophysiological and hemodynamic measures of neural activation during memory-retrieval*," Human Brain Mapping,* vol. 13, no. 2, pp. 104–123, 2001.

Ebbinghaus, H. 1885/1964. Memory: A contribution to experimental psychology. New York: Dover

Einstein, G., Morris, J., Smith, S. (1985). Note-taking, individual differences, and memory for lecture information. *Journal of Educational Psychology*, 77(5), 522–532.

Ertmer, Peggy A., & Newby, Timothy J. (1993). Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective. *Performance Improvement Quarterly*, 6 (4).

Faber, J. E., Morris, J. D., & Lieberman, M. G. (2000). The effect of note taking on ninth grade students' comprehension. Reading Psychology, 21, 257-270. http://dx.doi.org/10.1080/02702710050144377

Fajardo, C. (1996). Note-taking: A useful device. English Teaching Forum, 34(2), 22-28.

Falout, J. (2002). Focused tasks to proceduralize TOEIC learning strategies. May 22-23, 2002. Proceedings of the 3rd Annual JALT PAN-SIG Conference (pp.38-44).

Farnoush, B., & Heidar, N. (2017). The Effectiveness of Note-Taking on Reading Comprehension of Iranian EFL Learners. International Journal of Applied Linguistics and English Literature .

Farnsworth, B. (2019). Qualitative vs quantitative research–What is what. Retrieved August 2019, from emotions: https://imotions. com/blog/qualitative- vs quantitative-research.

Ferris, D. (1996). Academic listening/speaking tasks for ESL students: Problems, suggestions, and implications. TESOL Quarterly.

Feyten, C. (1991). The Power of Listening Ability: An Overlooked Dimension in Language Acquisition.The Modern Language Journal.

Fisher, D., Frey, N., & Lapp, D. (2009). Meeting ayp in a high-need school: A formative experiment. Journal of Adolescent & Adult Literacy, 52(5), 386-396.

Fletcher. P. C., and Dolan, Raymond J. (1997) "Dissociating prefrontal and hippocampal function in episodic memory encoding." Nature 388.6642: 582-585. Fletcher, P. C., Shallice,

Fowler, F. J. (2002). Survey research methods, Newbury Park, CA, SAGE. Gall,

Françoise Boch, S. U. (2005). Note-taking and learning. The WAC Journal, Vol. 16.

Ganske, L. (1981). Note-taking: A significant and integral part of learning environment. Educational Communications and Technology Journal, 29, 155-175.

García-Gutiérrez, A., & Rosas, J. M. (2003). Context change as the mechanism of reinstatement in causal learning. Journal of Experimental Psychology: Animal Behavior Processes, 29(4), 292.

Gersten, R., S. Fuchs, l., P. William, J., & Baker, S. (2001). Teaching Reading Comprehension Strategies to Students With Learning Disabilities: A Review of Research. 71,279-320

Gilbert, J. (1989). Clear speech. Cambridge: Cambridge University Press.

Gray, Kenneth C., Edwin L. (2006). Other ways to win: Creating alternatives for high school graduates. Corwin Press,.

Guerin, S. A., & Miller, M. B. (2008). Semantic organization of study materials has opposite effects on recognition and recall. Psychonomic Bulletin & Review, 15, 302-308.

Gupta SC and VK Kapoor (1970): Fundamental of mathematical statistics, SC Publication, New Delhi, India.

Haladyna, T. M. (2004). Developing and validating multiple-choice test items (3. ed.). New Jersey, NJ: Lawrence Erlbaum Associates Publishers.

Hale, G. Courtney, R. (1991). Note taking and listening comprehension on the Test of English as a Foreign Language. Princeton, New Jersey: Educational Testing Service.

Hand-book of qualitative research, 3rd Edn. (pp. 105 – 117). California: Sage.

Hartley, J. (1980). Learning and Studying: A Research Perspective.

Hartley, J. (2002). Note taking in non-academic settings: a review. Applied Cognitive Psychology.

Hartley, J., Davies, I. (1978). Note-taking: A critical review. Programmed Learning & Educational Technology, 15 (3), 207-224.

Henson, R., Rugg, M., Shallice, T., Josephs, O., Dolan, R. (1999). Recollection and familiarity in recognition memory: an event-related functional magnetic resonance imaging study. Journal of neuroscience, 19(10), 3962-3972.

Higham, P. A., Zengel, B., Bartlett, L. K., & Hadwin, J. A. (2022). The benefits of successive relearning on multiple learning outcomes. Journal of Educational Psychology, 114(5), 928.

Howe, M. (1970). Using students' notes to examine the role of the individual learner in acquiring meaningful subject matter. Journal oF Educational psychology, 64,61-63. (b).

Howard, M. W., & Kahana, M. J. (1999). Contextual variability and serial position effects in free recall. Journal of Experimental Psychology: Learning, Memory, and Cognition, 25, 923–941.

Howe, M. A. (1970). Using students' notes to examine the role of the individual learner in acquiring meaningful subject matter. Journal oF Educational psychology, 64,61-63. (b).

Hunt, R., McDaniel, (1993). The enigma of organization and distinctiveness. Journal of Memory
and Language, 32, 421-445.

http://www.iqscorner.com/

https://www.reddit.com/

Hunt, R., & McDaniel, M. A. (1993). The enigma of organization and distinctiveness. Journal of
Memory and Language, 32, 421-445. Henson, R. N., Rugg, M. D., Shallice, T., Josephs,

Jacobs, Keil. (2008). A comparison of two note taking methods in a secondary English
classroom.Proceedings of the 4th Annual GRASP Symposium, Wichita State University.

Janes, J. L., Dunlosky, J., Rawson, K. A., & Jasnow, A. (2020). Successive relearning improves
performance on a high-stakes exam in a difficult biopsychology course. Applied
Cognitive Psychology, 34, 1118–1132

Joe, W. (2022), Take Note: Popular Study Method has 'Cornell' Written
All   Over   It,   Cornell   University,   California;
https://alumni.cornell.edu/cornellians/cornellnotes/

Johnstone, A., Su, W. (1994). Lectures--- a learning experience? *Education chemistry*, 31 (1),
75-76, 79.

K.Velanova, C. Lustig ,L. L. Jacoby, R.L. (2007) "Evidence for frontally mediated controlled
processing differences in older adults," Cerebral Cortex,vol.17,no.5,pp.1033–1046,.

Kabir, S. M. S. (2016). Methods Of Data Collection Basic Guidelines for Research: An
Introductory Approach for All Disciplines (first ed., pp. 201- 275).

Kahn I, Davachi L, Wagner AD (2004) Functional-neuroanatomic correlates of recollection:
implications for models of recognition memory. J Neurosci 24:4172– 4180.

Kaur, S. P. (2013). Variables in research. Indian Journal of Research and Reports in Medical

Sciences, 3(4), 36-38.

Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for

social work research. Social sciences, 8(9), 255.

Kazdine, A. (2000). Encyclopedia of Psychology (Vol. 8).

Kesselman-Turkel, J. Peterson, F. (1982) Note taking made easy. Lincolnwood (IL):

Contemporary Books.

Kesselman-Turkel, J. Peterson, F. (2003) Note taking made easy (Study Smart Series 1st

Edition). Wisconsin, USA: University of Wisconsin Press.

Kiewra, K. A. (1984). Acquiring effective notetaking skills: An alternative to professional

notetaking. *Journal of Reading*, 27,299–302.

Kiewra, K. A., Benton, S. L. (1988). The relationship between information-processing ability

and note taking. *Contemporary Educational Psychology*, 13, 33-44. doi: 10.1016/0361-

476X(88)90004-5

Kiewra, K. , N., Christian, D., McShane, A., Meyerhoffer, M., Roskelley, D. (1991). Note-taking

functions and techniques. Journal of Educational Psychology.

Kinoshita, S. (2001). The role of involuntary aware memory in the implicit stem and fragment

completion tasks: A selective review. Psychonomic Bulletin & Review, 8(1), 58-69.

Kintsch, W. (1968). Recognition and free recall of organized lists. Journal of Experimental

Psychology,78

Kintsch, W. (1970) "Recognition memory in bilingual subjects." Journal of verbal learning and

verbal behavior 9.4 :405-409.

Kish, L. (1965). Sampling organizations and groups of unequal sizes. American sociological

review, 564-572.

Kivunja, C., & Kuyini, A. B. (2017). Understanding and applying research paradigms in educational contexts. International Journal of higher education, 6(5), 26-41.

Konishi S, Wheeler ME, Donaldson DI, Buckner RL (2000) Neural correlates of episodic retrieval success. *Neuroimage* 12:276–286

Koren, S. (1997). Listening to lectures in L2: Taking notes in L1. TESL-EJ, 2(4).

Krashen, S. (1994). The pleasure hypothesis. Georgetown University Round Table on Languages and Linguistics. *Washington DC: Georgetown U.* Press

Kvavilashvili L, Mandler G. (2004) Out of one's mind: A study of involuntary semantic memories. Cognitive Psychology;48:47–94.

Lather, P. (1986). Research as praxis. Harvard Educational Review, 56(3), 257-277. https://doi.org/10.17763/haer.56.3.bj2h231877069482

Lieberman, D.A. (2000). Learning: Behavior and cognition. Belmont, CA: Wadsworth.

Lindberg-Risch, N, Kiewra, K. A. (1990). Content and form variations in note taking: effects among junior high students. Journal of Educational Psychology, 83(6), 355–357.

Lonka, K., Lindblom-Ylanne, S., & & Maury, S. (1994). The effect of study strategies on learning from texts. Learning and Instruction.

Lowes, R., Peters, H., & Turner, M. (2004). The International Student's guide: Studying English at University.

Lonka, K., Lindblom-Ylanne, S., & & Maury, S. (1994). The effect of study strategies on learning from texts. Learning and Instruction.

M., C., & Carlson, R. A. (1999). External support and development of problem-solving routines. Journal of experimental psychology: learning, memory, and cognition.

Mace, J. H. (2007). Involuntary memory. Malden, *MA: Blackwell*;.

Mackenzie, N. & Knipe, S. (2006). Research dilemmas: paradigms, methods and methodology. Issues In Educational Research,

Mandler, G. (1972). Organization and recognition. In E. Tulving & W. Donaldson (Eds.), Organization of memory(pp. 139-166). *New York: Academic* Press

Mandler, G. (1980). "Recognizing: The judgment of previous occurrence." Psychological review 87.3 252

Marsh, E., Sink, H. (2010). Application of cognitive psychology.

May, C. P., Einstein, G. O., & Freedman, S. (2013). A Five-Day Unit Lesson Plan for High School Psychology Teachers. Memory, 6-7

McCabe, David P., Henry. L. R, Jeffrey D. (2011). "Automatic processing influences free recall: Converging evidence from the process dissociation procedure and remember-know judgments." Memory & Cognition 39: 389-402.

McDougall, R. (1904). Recognition and recall. Journal of Philosophy, Psychology, and Scientific Methods, 1, 229-233

McNamara, T.P., Ratcliff, R., McKoon, G. (1984). The mental representation of knowledge acquired from maps. Journal of *Experimental Psychology : Learning, Memory, and Cognition, 10*

Mensink, G. J., Raaijmakers, J. G. W. (1988). A model for interference and forgetting. Psychol. Rev. 95:434-55

Metcalfe, J, Bennet, B. M. (2018): "An encoding and retrieval model of single-trial free recall." Journal of Verbal Learning and Verbal Behavior 20.2 (1981): 161-189. McDermott, Kathleen B., and Henry L. Roediger. "Memory (encoding, storage,

retrieval)." General Psychology FA 2018. Noba Project: Milwaukie, OR 117-153.

Melton, A. (1963). Implications of short-term memory for a general theory of memory. Journal
of Verbal Learning and Verbal Behavior, 2, 1–21.

Miller, G. A. (1962). The science of mental life. London: Penguin Books;. Psychology
MorenoCastilla, P., Guzman-Ramos, K., & Bermudez-Rattoni, F. (2018). Object
recognition and object location recognition memory–the role of dopamine and
noradrenaline. Handbook of behavioral neuroscience, 27, 403-413. Naim, M., Katkov,
M., Romani, S., & Tsodyks, M. (2020). Fundamental law of memory recall. Physical
review letters, 124(1), 018101.

Mohammad Akram Alzu'bi, (2019). The Influence of Suggested Cornell Note-taking Method on
Improving Writing Composition Skills of Jordanian EFL Learners. Journal of Language
Teaching and Research, Vol. 10, No. 4, pp. 863-871, July.

Mohammad Davoudi, Neda Moattarian, Gholamreza Zareian 2015 . Impact of Cornell
NoteTaking Method Instruction on Grammar Learning of Iranian EFL Learners, May 28,
2015, Journal of Studies in Education ISSN 2162-6952 ,2015, Vol. 5, No. 2,p 253-256

Motallebzadeh, K., Mamdoodi, N. (2011). Language learning strategies: A key factor to
improvement of TOEFLcandidates' reading comprehension ability. International Journal
of Linguistics.

Mulligan, N. W. (1998). The role of attention during encoding in implicit and explicit memory.
Journal of Experimental Psychology: Learning, Memory, & Cognition,24

Muraina, M. (2014). impact of note taking and study habit on academic performance among
selected secondary school students. international journal of education and research vol. 2.

Murairwa, S. (2015). Voluntary sampling design. International Journal of *Advanced Research in*

Management and Social Sciences, 4(2), 185-200.

Naveh-Benjamin, M., Craik, F. I. M., Perretta, J. G., Tonev, S. T. (2000). The effects of

divided attention on encoding and retrieval processes: The resiliency of retrieval

processes. Quarterly Journal of *Experimental Psychology*,

Neely, J. H., Balota, D. A. (1981). Test-expectancy and semantic organization effects in recall

and recognition. Memory & Cognition, 9, 283-300

Neville, C. (2006). effective learning services. New York, NY: Guilford Press.

Nunan, D. (1991). Methods in second language classroom-oriented research: A critical review.

Studies in second language acquisition, 13(2), 249-274.

Nunan, D. (n.d.). Practical English language teaching. New York, NY: McGraw-Hill.

Nwokoreze, U. (1990). Note-taking. English Teaching Forum, 33(2), 39-40.

Nyberg L, Tulving E, Habib R, Nilsson LG, Kapur S, Houle, S, Cabeza, R, McIntosh, R. (1996)

Functional brain maps of retrieval mode and recovery of episodic information.

NeuroReport in pres

O'Malley, J., Chamot, A. (1990). Learning strategies in second language acquisition. Cambridge,

NY: Cambridge University Press.

O'Malley, M. J., Chamot, A. (1990). Learning strategies in second language acquisition.

Cambridge University Press.

OpenStax, Learning, L. (n.d.). General Psychology.

Ornstein, A. C. (1994). Homework, studying, and note-taking: Essential skills

Palmatier, R. (1971). Comparison of four note-taking procedures. Journal of Reading,14(4), 235-

240.

Palmatier, R., Bennett, J. (1974). Notetaking habits of college students. Journal of reading , 18,215-218.

Pandey, P., Pandey, M. M. (2015). Research Methodology: Tools and Techniques (Vol. 1). Romania: Bridge Center.

Patton, M. Q. (1990). Qualitative evaluation and research methods, 2nd ed. Newbury Park: Sage

Pauk, W. (2001). How to study in college. Boston: Houghton Mifflin Company.

Peck, K., Hannafin, M. (1983). The effects of note-taking pre-training

Phakiti, A. (2006). Modeling cognitive and metacognitive strategies and their relationship to EFL reading performance. Melborn Papers in Language Testing.

Piolat, A. (2004). La prise de notes: Écriture de l'urgence [Note-taking: Emergency writing]. In

Piolat .A. (Ed.). Ecriture. Approches en sciences cognitives [Writing : Approaches Cognitive Science] (pp. 206-229). Aix-en-Provence: Presses Universitaires de Provence.

Piolat, A. (2006). La prise de notes [Note-taking] (second Ed.). Paris: Presses Universitaires de France.

Piolat, A., Olive, T., Kellogg, R. T. (2004). Cognitive effort during note taking. Applied Cognitive Psychology, 19, 291-312. doi: 10.1002/acp.1086

Piolat, A., Olive, T., Kellogg, R. T. (2005). Cognitive effort during note taking. In Applied cognitive psychology.

Postman, L. (1963) . One-trial learning. In C. N. Cofer & B. S. Musgrave (Eds.), Verbal behavior and learning: Problems and processes. New York: McGraw-Hill, , pp. 295321

Quintus, L., Borr, M., Duffield, S., Napoleon, L., & Welch, A. (2012).The effect of the Cornell note-taking method on students' performance in a high school family and consumer sciences class.Journal of Family and Consumer Sciences Education,30(1), 27-38.

Available at http://www.natefacs.org/JFCSE/v30no1/v30no1 Quintus.pdf

Raaijmakers, J. G. W., Shiffrin, R. M. (1981). Search of associative memory. Psychological

Review, 88, 93–134.

Rafoth, M., Leal, L., DeFabo, L. (1993). Strategies for learning and remembering

Rahman, S. (2017). The advantages and disadvantages of using qualitative and quantitative

approaches and methods in language "testing and assessment" research: a literature

review. Journal of Education and Learning

Rahmani, M. & Sadeghi, K. (2011) Effects of Note-Taking Training on Reading Comprehension

and Recall. Reading Matrix: An International Online Journal, 11 (2), 116-128

Rasmussen, A. S., , D. (2009). The possible functions of involuntary autobiographical memories.

Applied Cognitive Psychology: The Official Journal of the Society for Applied Research

in Memory and Cognition, 23(8), 1137-1152.

Ravikiran A S. (2023); Population vs Sample: Definitions, Differences and Examples

;https://www.simplilearn.com/tutorials/machine-learning-tutorial/population-vs-sample

Rawson, K. A., Dunlosky, J. (2011). Optimizing schedules of retrieval practice for durable

and efficient learning: How much is enough? Journal of Experimental Psychology:

General, 140(3), 283–302.

Rawson, K. A., Dunlosky, J. (2012). When is practice testing most effective for improving the

durability and efficiency of student learning? Educational Psychology Review, 24(3),

419–435.

Rawson, K. A., Dunlosky, J. (2013). Relearning attenuates the benefits and costs of spacing.

Journal of Experimental Psychology: General, 142(4), 1113–1129.

Rawson, K. A., Dunlosky, J. Sciartelli, S. M. (2013). The power of successive relearning:

Improving performance on course exams and long-term retention. Educational

Psychology Review, 25

Rawson, K. A., Vaughn, K. E., Walsh, M., Dunlosky, J. (2018). Investigating and explaining

the effects of successive relearning on long-term retention. Journal of Experimental

Psychology: Applied, 24 recording of notes on the retention of aural instruction. Journal of

Educational

Reder, L. M. (1988). Strategic control of retrieval strategies. In Psychology of learning and

motivation (Vol. 22, pp. 227-259). Academic Press.

Robert J. Marzano, Debra J. Pickering, Jane E. Polloc; Classroom Instruction That Works.

Association for Supervision and Curriculum Development • Alexandria, Virginia USA.

00-01 2007.

Robert M. Groves (2004): Survey Errors and Survey Costs, ISBN 0-471-6785

Rohmana, Nur Ayuni Sari Dewi, La Miliha,2020 ; THE EFFECT OF CORNELL NOTE

TAKING METHOD ON STUDENTS' GRAMMAR LEARNING AT MAN 1

KENDARI. Volume 5 No. 1

Rohmana, Nur Ayuni Sari Dewi, La Miliha,2020 ; THE EFFECT OF CORNELL NOTE

TAKING METHOD ON STUDENTS' GRAMMAR LEARNING AT MAN 1

KENDARI. Volume 5 No. 1

Rohrer, D., & Wixted, J. T. (1994). An analysis of latency and interresponse time in free recall.

Memory & Cognition, 22, 511–524.

Rohrer, D., Wixted, J. T. (1994). An analysis of latency and interresponse time in free recall.

Memory & Cognition, 22, 511–524.

Rowntree, D. (1976). Learn how to Study: A Programmed Introd. to Better Study Techniques.

Macdonald & Jane's,

Roy, D., Brine, J., Murasawa, F. (2014). Usability of English note-taking applications in a foreign language context. In Computer Assisted Language Learning.

Rubin DC, Boals A, Berntsen D. Memory in posttraumatic stress disorder: Properties of voluntary and involuntary, traumatic and non-traumatic autobiographical memories in people with and without PTSD symptoms. Journal of Experimental Psychology: General 200

Schacter, D. L. (1987). Implicit memory: History and current status. Journal of experimental psychology: learning, memory, and cognition, 13(3), 501

Schlagman, S.; Kvavilashvili, L.; Schulz, J. (2007). Effects of age on involuntary autobiographical memories. In: Mace, John H., editor. Involuntary Memory. Malden: Blackwell;

Shader, M. (2014). "Notetaking Styles and Effectiveness for a Middle School Population."

Shiffrin, R. (1970). Forgetting: Trace erosion or retrieval failure? Science, 168, 1601–1603

Sinfield, S., Burns, T. (2003). Essential Study Skills: The Complete Guide.

Strean, W. (2011). Creating Student Engagement? HMM: Teaching and Learning with Humor, Music, and Movement. Creative Education, Vol.2 No.3.

Slote, M. (1985). Common-Sense Morality andConsequentialism. London: Routledge & Kegan Paul

Slotte, V., & Lonka, K. (2001). Note taking and essay writing. In G. Rijlaarsdam (Series Ed.)

Spaniol J, Davidson P.S, Kim A.S, Han H, Moscovitch. M, Grady L. (2009) Event-related fMRI studies of episodic encoding and retrieval: metaanalyses using activation likelihood estimation. Neuropsychologia 47:1765–1779

Spires, H. A., & Stone, P. D. (1989). The directed note taking activity: A self-questioning

    approach. Journal of Reading, 33(1), 36–39.

Stahl, N. A., King, J. R., & Henk, W. A. (1991). Enhancing students' note taking through

    training and evaluation. Journal of Reading, 34(8), 614-622.

Strean, W. B. (2011). Creating Student Engagement? HMM: Teaching and Learning with

        Humor, Music, and Movement. Creative Education, Vol.2 No.3.

Taraban, R., Kerr, M., RyNearson, K. (2004). Analytic and pragmatic factors in college students'

    metacognitive reading strategies. In Rearding psycology.

Titsworth, B. (2001). The effects of teacher immediacy, use of organizational lecture cues,and

    students' note taking on cognitive learning. Communication Education, 50(4), 283–297.

Titsworth, B., Kiewra, K. (2004). Spoken organizational lecture cues and student note-taking as

    facilitators of student learning. Contemporary Educational Psychology, 29(4). 447-61

Tulving, E. (1986). Episodic and semantic memory: Where should we go from here?. Behavioral

    and Brain Sciences, 9(3), 573-577.

Tulving, E. (1991). Interview. Journal of Cognitive Neuroscience, 3, 89–94

Tulving, E., Pearlstone, Z. (1966). Availability versus accessibility of information in memory

    for words. Journal of Verbal Learning and Verbal Behavior, 5, 381–391.

Vaughn, K. E., Dunlosky, J., & Rawson, K. A. (2016). Effects of successive relearning on recall:

    Does relearning override the effects of initial learning criterion? Memory & Cognition,

    44

Velanova, K., Lustig, C., Jacoby, L. L., Buckner, R. L. (2007). Evidence for frontally

mediated controlled processing differences in older adults. Cerebral cortex, 17(5), 1033-

1046.

Walter Pauk ;2000, How to study in college (7th ed.); Special Edition for Mesa State

College,p234.

Walter Pauk, Notetaking: The great cue column, Published online: 28 Jan 2010. This article was

downloaded by: [University of Birmingham], On: 29 January 2015, At: 23:44 Publisher:

Routledge

White, J. C. (1996). Note-taking strategies and traces of cognition in language learning. RELC

Journal, 27(1), 89-102. http://dx.doi.org/10.1177/003368829602700105

Wilckens, K. A., Kirk I. Erickson, and Mark E, W. (2012). "Age-related decline in   controlled

retrieval: the role of the PFC and sleep." Neural plasticity

Williams, G. T. D. (2004). Assessment of 8th grade students' attitudes and perceptions of

Cornell's note-taking. Unpublished doctoral dissertation, Union University.

https://www.proquest.com/openview/

Waters, H., Schneider, W. (2010). Metacognition, strategy use, and instruction.

Wilson, M. (2003). Discovering listening: Improving perceptual processing. ELT, 57(4), 335-

343.

Wu, Y., Tsai, T. (2010). Effects of note-taking instruction and note-taking languages on college

EFL students' listening comprehension. New Horizons in Education, 58(1), 120-132.

Zorn D. (2007), Increasing achievement scores with the use of the cornell note taking style,

Retrieved from: http://www.heritage.edu/library/mastersprojects/Zorn_Donald_2007.pd

APPENDECES

Appendix 1: The pre and post treatment questionnaire questions of the two groups:

Greetings!

As second-year master's students, we are currently conducting a study for our master's dissertation at Mohamed El Bachir El Ibrahimi University, entitled "The effect of the Cornell Note method on the students' retrieval of information". This study aims to investigate the effectiveness of the Cornell note-taking method use and its impact on the students' recalling of information. As a part of this study, we have designed a questionnaire to better understand and gather thoughts and knowledge about our topic.

Sincerely, we invite you to participate in this questionnaire which has two sections and will only take around seven minutes of your time.

This research is solely for academic purposes, and your assistance in completing the following questionnaire will be greatly appreciated. With the consent given by answering it, your participation and information will remain confidential and anonymous and only be used for research purposes.

We will very much appreciate your time and cooperation!

Thank you.

Please put a tick in the box which presents the appropriate answer according to you:

Do you use the note-taking method in your lecture?

☐ Yes

☐ No

Did you have any note-taking courses before?

☐ Yes

☐ No

Do you know the types of note-taking? Example: the traditional notes method, the charting notes method, the Cornell notes method…etc.

☐ Yes

☐ No

Do you use abbreviations when you take notes?

☐ Yes

☐ No

Do you use full sentences in taking notes from the lecture?

☐ Yes

☐ No

Do you refer back to your notes when you revise your lectures?

☐ Yes

☐ No

Do you use your phone to take notes?

☐ Yes

☐ No

Do you prefer using papers to take notes?

☐ Yes

☐ No

How do you evaluate your knowledge about the Cornell note-taking method?

☐ Very poor

☐ Poor

☐   Fair

☐   Good

☐   Excellent

How do you evaluate your ability in organization of your notes?

☐   Very poor

☐   Poor

☐   Fair

☐   Good

☐   Excellent

How do you evaluate your ability in mentioning the main cues in your notes? Example:

Key words and questions

☐   Very poor

☐   Poor

☐   Fair

☐   Good

☐   Excellent

How do you evaluate your ability in summarizing your notes?

☐   Very poor

☐   Poor

☐   Fair

☐   Good

☐   Excellent

How do you evaluate your ability in recalling of information through taking notes?

☐ Very poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

How do you evaluate your knowledge about the appropriate division for notes page?

☐ Very poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

How do you evaluate your ability in reformulating questions and information?

☐ Very poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

How do you evaluate your ability in creating your own abbreviations?

☐ Very poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

Appendix 2: Teacher's and participants' consent letters

Faculty of letters and foreign languages

English section

Teacher Informed Consent Letter

The present consent letter is designed for the teacher of SLT of the 3rd year students of English at BBA University, in order to ensure your approval for conducting our research, entitled, ' The effect of the Cornell note taking method on the student's retrieval of information' on your students.

For that reason, you are kindly invited to take part in this research study, within a period of 4 weeks.

Confidentiality, privacy, and anonymity of your personal information and the gathered data throughout the process of conducting this research work will be guaranteed.

If you approve to grant us the approval to test this method on your students, please sign the attached consent form. Your cooperation will be highly appreciated.

For further questions regarding this research study, you're welcomed to contact the researchers.

Researchers contact information	
Zougham Hanane	Bennia Rahma
Email: hananezougham@gmail.com	benniarahma@gmail.com

Teacher's signature

Kena Nener

Faculty of letters and foreign languages

Participant Informed Consent Letter

Experimental group

Research project title: The effect of the Cornell method on the students' retrieval of information.

Name of Researchers: Zougham Hanane and Bennia Rahma (master2 students of BBA University)

Project Supervisors: Dr Douadi Fatima.

I understand that the purpose of this study is to test the effectiveness of the Cornell not taking method on the retrieval of information.

(Please complete the following by circling Yes or No for each question)

I have read and understand the Plain Language Statement.

Yes/No

I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers to all my questions.

Yes/No

I am aware that I will be observed in class.

Yes/No

I am aware that my notes will be taken and analysed by the researchers.

Yes/No

- I understand that my participation is voluntary, yet after signing this consent letter, any misunderstanding concerning the work must be overcome by asking the researchers.
- I understand that the information I provide will be treated in strictest confidence and that confidentiality of information provided is subject to legal limitations.
- I understand that my responses will be anonymised after analysis and prior to dissertation write-up and further publications.

Signature:

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project.

Representative Signature:

Date:

Supervisor's signature:

Faculty of letters and foreign languages

English section

Participant Informed Consent Letter

Control group

Research project title: The effect of the Cornell method on the students' retrieval of information.

Name of Researchers: Zougham Hanane and Bennia Rahma (master2 students of BBA University)

Project Supervisors: Dr Douadi Fatima.

Dear 3rd year students Group ,

The present consent letter is designed for 3rd year students of English at BBA University, Group in order to ensure your approval to be part of our research study, entitled, ' The effect of the Cornell note taking method on the student's retrieval of information'. At this phase of research, we want your approval to examine your note taking strategies in order to use the findings in our research

For that reason, you are kindly invited to take part in this research study, within a period of 4 weeks. A pre-test and post-test, will be held online in a form of a questionnaire, to explore your opinions, about note taking in general.

(Please complete the following by circling Yes or No for each question)

I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers to all my questions.

     Yes/No

I am aware that I will be observed in class.

     Yes/No

I am aware that my notes will be taken and analysed by the researchers.
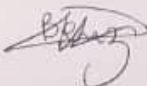
     Yes/No

- I understand that my participation is voluntary, yet after signing this consent letter, any misunderstanding concerning the work must be overcome by asking the researchers.
- I understand that the information I provide will be treated in strictest confidence and that confidentiality of information provided is subject to legal limitations.

- I understand that my responses will be anonymised after analysis and prior to thesis write-up and further publications

Yours sincerely.
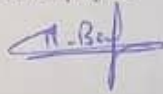
Researchers contact information	
Zougham Hanane	Bennia Rahma
Email: hananezougham@gmail.com	benniarahma@gmail.com

Signature:

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project.

Representative Signature:

Date:

Supervisor's signature:

Appendix 3 B: Samples of the students' achievement tests and quiz

QUIZ

Time: 1h30min

Question1: Explain what does widow Douglass and Miss Wilson represent? /10/Marks

A1: they represent both the religious society at the same time they represent the Hypocricity in that society because they teach Hack (How to) rules and etiquette and the religious side but they do something opposite of what they teach Hack. Also, they represent the owners of slaves at that period 3/3 ✓

Question2: what makes chapter 1 realistic?

A2: It describe the real life of that period (describe the owner of slaves and slavery) 2,5/3.5

Question3: In chapter one, what is a freedom for Hack? why?

A3: freedom for Hack is to live without a particular teaches, a simple life because the sisters tried to civilized him and teach him the rules, etiquettes, the religious inte did he why?

accept

2.5/3 6,5/10

Achievement Test₂ 'Experimental group'

Chandn3

Question:

What is the difference between realism and regionalism.

Answer:

Realism is writing the reality as it is, as well
as regionalism but realism is objective where
as regionalism is subjective, the writer feels
Nostalgic so he shown his emotions and
feelings

3,5/5

.... control group

Question:
the defne to between of realism and naturalism

naturalis is different
reponable
about of topical

....

....

Answer:
Realise present the World as it realis but
naturalism present the World like a photo

....

....

....

....

5/5
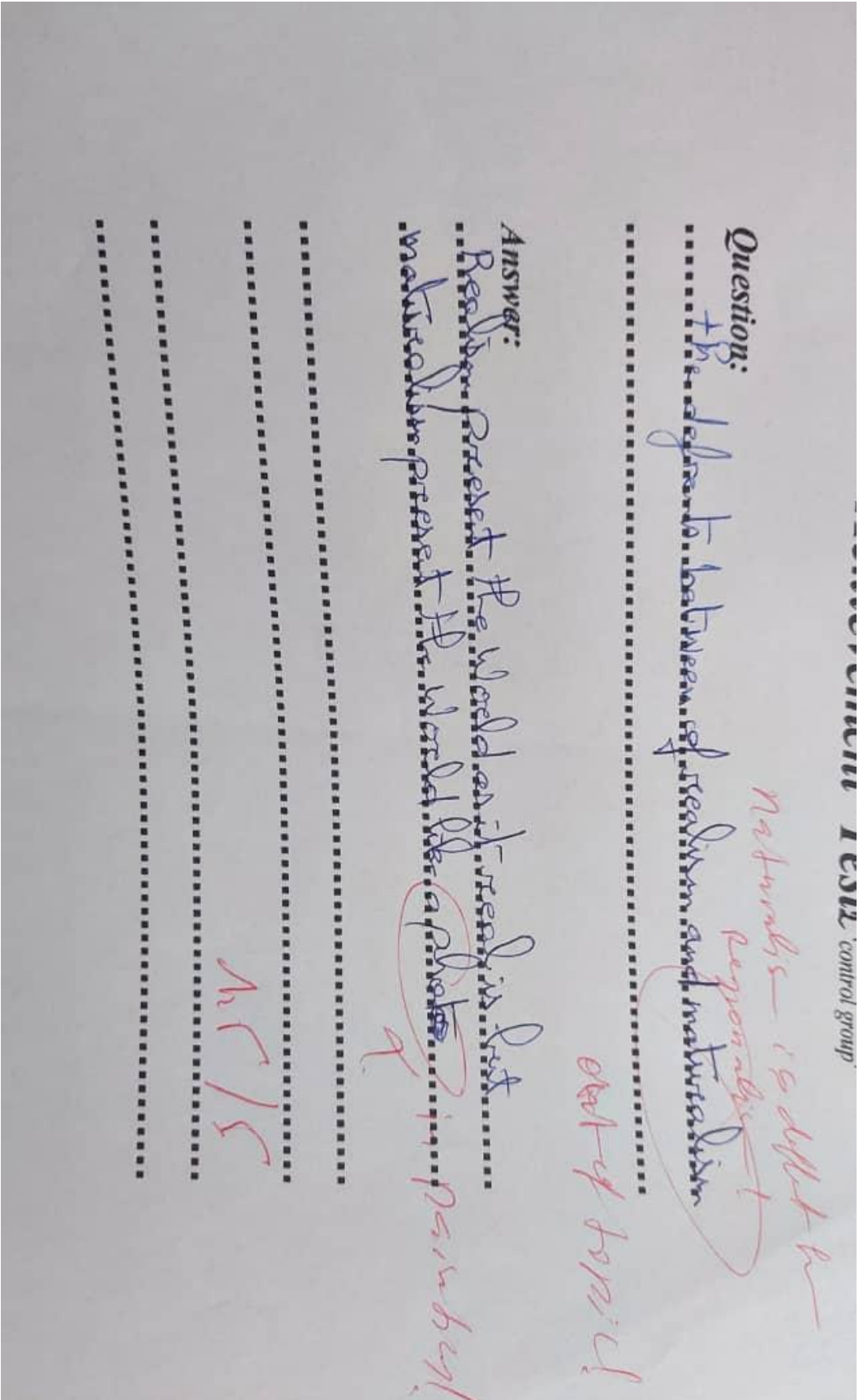
Achievement Test₁ 'Experimental group'

Question:
.........what are the causes of the..............
.civil war...?...

Answer:
....Different political economical interests between
the North and the South., the North was manufactured
and the south was agricultural........................
..Different interpretation of constitution......
...Slavery (slaves and free states)...........
....

*Achievement Test*₁ *'control group'*

Question:

.... The causes of civil war ....

....

Answer:

...1... Slavery system in America, which
.....The north wanted to go on.., but The
.....South wanted the system to end...,
...2... Abolitionists want slavery to end
.... ww are key ?
...3... South feers it will lose power in
.....The national government........

- u - Election of Abraham Lincoln incomplete
[Lincoln won The north   idea

3/5

                              Bensfia Mayssoune

        Some ideas are incomplete.

QUIZ *experimental group*

Time: ~~1h~~ 30min

Question1: What do Miss Watson and widow Douglas in chapter 1?

A1: They represent religion intolerance and religion hipocracy that chained Huck and did not let him act the way he wanted to. Religion hipocracy appears in teaching Huck about the story of Moses who saved the slaves, yet the sisters themselves owned slaves.

3/3✓

Question2: What makes chapter 1 realistic?

A2: The daily life of the Southerners, *and* the decribtion of the places and time (setting)

2✓/3✓

Question3: what is freedom for Huck in chapter 1?

A3: freedom for Huck is to be able to act the way he wants and to not be chained to the rules of the sisters who tried to civilize him by teaching him some manners like (praying before eating, wearing a certain type of clothes, banning him from smoking).

3/3

(9.5/10)

RÉSUMÉ

Le but de la présente étude est d'évaluer dans quelle mesure les étudiants sont capables de récupérer les informations en utilisant la méthode de prise de notes Cornell. Une étude quasi expérimentale a été menée sur un échantillon de 20 étudiants de langue Anglaise à l'Université Mohamed ElBashir ELIbrahimi. Les étudiants ont été divisés en deux groupes, un groupe expérimental et un autre témoin, dix individus dans chaque groupe. Les étudiants qui appartenaient au groupe témoin continuaient à prendre des notes en utilisant leur propre méthode habituelle. Tandis que les autres sur le groupe expérimental ont été invité à utiliser la méthode Cornell pendant les conférences du Literary Text Study. Pour déterminer le niveau de récupération de l'élève de la prise de notes et du système Cornell, un questionnaire a été mis en place avant et après l'expérience, ainsi que deux tests de réussite et un test t pour tester leur récupération d'informations, pendant et après la manipulation. Les données acquises ont été analysées statistiquement en utilisant le programme : Statistique Package for the Social Sciences (SPSS).

Les résultats de la recherche ont révélé que l'utilisation de la méthode de prise de notes de Cornell améliore la mémorisation de l'information chez les élèves.

Mots Clés: Notes Cornell System, étudiants de langue Anglaise, évaluer, Une étude quasi expérimentale, récupérer les informations

ملخص

الهدف من هذه الدراسة هو تقييم مدى قدرة الطلاب على استرجاع المعلومات باستخدام طريقة كورنيل لتدوين الملاحظات. أجرينا دراسة شبه تجريبية على عينة من 20 طالبا للغة الانجليزية بجامعة محمد البشير الإبراهيمي. تم تقسيمهم إلى مجموعتين من عشرة أفراد، مجموعة تجريبية وأخرى مرجعية (ضابطة). تم توجيه المجموعة الضابطة لمواصلة تدوين الملاحظات باستخدام طريقتهم المعتاد. دون تغيير أو تلاعب فيها. بينما تمت دعوة المجموعة التجريبية لاستخدام طريقة كورنيل خلال محاضرات دراسة النصوص الادبية. لتحديد مستوى فهم الطالب لتدوين الملاحظات ونظام كورنيل، تم استخدام استبيان قبل التجربة وبعدها، بالإضافة إلى اثنين من اختبارات الانجاز واختبار(تي) لتقييم استرجاع المعلومات، أثناء وبعد عملية تدوين الملاحظات. البيانات التي تم الحصول عليها تم تحليلها إحصائيا باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS.) أخيرا، كشفت نتائج البحث أن استخدام طريقة كورنيل لتدوين الملاحظات يحسن استحضار الطلاب للمعلومات المدونة .

الكلمات المفتاحية : نظام كورنيل , تقييم , طلاب اللغة الانجليزية ,استرجاع المعلومات , دراسة شبه تجريبية