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Developing Critical Reading Strategies for EFL Students – Tracking the Impact of Mind Mapping on the Reading Comprehension of Second Year Students

Dissertation submitted to the department of English in Partial Fulfillment of the Requirement for the Master's Degree in Didactique de l'Anglais

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Dedication

Dear Allah, Blessed be You, who placed strength in my chest when doubt made it tremble, and who lit a path for me when I saw only darkness.

Dear Mama, do you remember the gentle words you spoke to remind me that I am capable, even when I hated myself?

Dear Papa, do you remember the silent sacrifices and the quiet presence of yours without speaking a word?

Dear Friends, do you remember the laughter we made during moments of stress and chaos?

Dear Classmates, do you remember the shared struggles and the nervous glances before exams?

Dear myself, do you remember how many times you wanted to give up but didn't?

I did it for you. All of you.

"And those who were seen dancing were thought to be insane by those who could not hear the music". – Friedrich Nietzsche

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Declaration

I hereby declare that this dissertation is the result of my own independent work and investigation, except where otherwise stated. All sources of information and data have been acknowledged appropriately by means of reference.

This dissertation has not been submitted, either in whole or in part, for any degree or diploma at this or any other institution.

I take full responsibility for the content and the views expressed in this work.

Abstract

The present study investigates the effectiveness of mind mapping as a critical reading strategy in enhancing the reading comprehension skills of EFL (English as a Foreign Language) learners. An experimental design was employed, involving two groups: an experimental group that received mind mapping strategy treatment and a control group that followed traditional reading instruction without exposure to the treatment. Both groups were administered pre-tests and post-tests to assess their reading comprehension performance. The results indicated a significant improvement in the post-test scores of the experimental group compared to their pre-test results, suggesting the positive impact of mind mapping on their critical reading abilities. Conversely, the control group demonstrated only marginal improvement, which may be attributed to natural learning progression rather than strategic intervention. The statistical analysis, including means and standard deviations, supported these findings, showing a marked difference between the two groups after the intervention. These results underscore the value of integrating mind mapping into EFL reading instruction to foster better comprehension and critical engagement with texts. The study recommends the incorporation of such visual learning strategies in EFL classrooms to promote deeper text analysis and improve learners' overall reading proficiency.

Keywords: Reading, Critical Reading, Critical Thinking, Strategy, Mind Mapping, EFL.

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General introduction

Background of the Study

Reading is one of the most important skills to learn a foreign language, especially in academic settings. In EFL (English as a Foreign Language) classrooms, reading does not only helps students to improve their vocabulary and grammar but also contributes to their overall language proficiency (Babayan, 2019; Krashen, 2004). However, university students are often required to go beyond basic comprehension as they should be able to engage with texts on a deeper scale, which involves analysing, evaluating, thinking critically, as well as connecting ideas together. This entire process is known as critical thinking (Al-Mahrooqi& Denman, 2018).
Unlike basic reading, critical reading involves careful thinking and reflection, as it requires students to examine the writer's message, evaluate the strength of ideas, as well as to connect concepts in a meaningful way. Unfortunately, many EFL learners face challenges in this area because they were not introduced to strategies that promote this type of thinking. As a result, their reading remains at a basic level (Al-Mahrooqi& Denman, 2018).

According to Hadj Said (2024), in many Algerian universities, reading tends to prioritise literal comprehension and text translation, which results students completing reading-related tasks without truly understanding the deeper meaning of texts. Therefore, this issue highlights the need for effective strategies that can help these students to engage more actively with texts, which eventually leads to improve their critical reading skills.

Among the strategies that have shown good results, mind-mapping stands out as a visual and interactive tool that helps with both understanding and thinking more deeply. It allows students to organise information using branches, keywords and links. By doing so, students should be able to break down complex texts and understand how different ideas are connected. In short, mind-mapping helps students to process information in an active and meaningful way (Sabbah, 2015). Although various other strategies such as SQ3R (which refers to –Survey, Question, Read, Recite, Review) and annotating, are commonly used to promote critical reading, visual strategies like mind-mapping are gaining more attention for their

ability to engage learners effectively, however, it remains underused in EFL reading sessions, especially in Algerian universities where traditional methods are still used (El Sayed, 2022).

1.1. Statement of the Problem

Even though reading is considered as a key component of English language learning, many EFL students still struggle to understand texts, further away from their literal meaning. In Algerian universities, reading often focuses on translation and simple comprehension questions, which often do not help students to analyse or evaluate texts critically. Therefore, learners may not be able to properly read due to the lack of ability to question ideas, connect information across different paragraphs, as well as identify bias if needed.

Despite the importance of developing critical reading skills in academic settings, this issue remains neglected in EFL classrooms. One reason for this is the limited usage of effective strategies that encourage deeper thinking. For instance, visual tools such as mind mapping are rarely included in reading sessions, even though they may actually help students to better understand and organise what they are reading. Therefore, the issue relies within what students are expected to do with texts (such as analysing and reflecting) and what they are actually being taught. Without the use of student-centred strategies like mind mapping, learners may continue to approach texts passively and not actively.

1.2. Aims of the Study

This study aims to explore the role of mind mapping as a critical reading strategy in developing reading skills among second-year students at Chadli Bendjedid University. It seeks to determine whether using mind maps can help learners organise information, understand texts, and think more critically during reading activities. Additionally, the study aims to provide EFL teachers with insights into integrating mind mapping into their reading instruction to enhance learners' comprehension and critical thinking skills. It also seeks to offer recommendations to curriculum designers through incorporating mind mapping as an effective tool in reading programs to reinforce critical thinking and information retention among EFL students.

1.3. Significance of the study

Critical reading remains a neglected skill in many Algerian EFL classrooms, limiting students' academic improvement. Allowing this gap to continue limits learners' ability to engage with texts critically. As previously mentioned, this study aims to promote the use of mind mapping as helpful tool to encourage more reflective reading practices among students and teachers alike.

1.4. Research Questions

The main motivation of this study is attempting to track mind mapping's efficiency in improving critical reading skills among EFL students. Thus, this research tries to find convincing answers to the following questions:

Q1: How effective is mind mapping as a strategy for developing critical reading among EFL learners?

Q2: What changes can be identified in students' reading performance after using mind mapping?

Q3: How do students perceive the use of mind mapping in their reading activities?

1.5. Research Hypotheses

Following the research questions, we hypothesize that :

H1: Mind mapping will have a positive impact on students' ability to analyze and understand texts critically.

H2: Students who are exposed to mind mapping will show noticeable improvement in their reading performance.

H3: Learners will have a generally positive attitude toward using mind mapping during reading tasks.

1.6. Methodology

To validate the hypotheses and answer the research questions, the present study will follow an experimental design to explore the impact of mind mapping as a critical reading strategy on critical reading performance of second-year English students at ChadliBendjedid University during the academic year of 2024/2025.

1.6.1. Data Gathering Tools

During the process of the study, there were five tools employed in a sequential manner: two questionnaires, two tests and a treatment. The first pre-experiment questionnaire was used to explore students' attitudes towards reading overall and their familiarity with mind mapping. A pre-test was then conducted to assess their initial reading comprehension skills. After that, a treatment focusing on mind mapping as a critical reading strategy was delivered to the students. Following the treatment, a post-test was given to evaluate any potential improvement. Finally, a post-treatment questionnaire was delivered to gather students' reflections on the use of mind mapping in reading.

1.6.2. Population and Sampling

This study targeted a population of 30 second year students of English at Chadli Bendjedid University. All participants were involved in the data collection process, which included two questionnaires, two reading comprehension tests, and a lesson focused on mind mapping as a critical reading strategy. The same group of students completed each stage in the same order: a first questionnaire, a pre-test, the instructional lesson, a post-test, and finally a second questionnaire. These second year students were chosen in particular because they are at a stage where developing effective reading strategies is essential for their academic progress, and mind mapping was introduced to help enhance their critical reading skills.

1.7. The Structure of the Study

The present study is structured into four main chapters. The first chapter is a general introduction that highlights the topic of critical reading development, the statement of the problem, the aims and significance of the study, the research questions and hypotheses, the methodology used, followed by the organization of the study and its limitations, as well as a general conclusion.

Chapter two, entitled *A General Overview on Mind Mapping as a Critical Reading Strategy*, provides a theoretical background of the study. It is divided into two chapters, the first one mainly talks about reading as a skill, and the second one is about mind mapping. It reviews the key concepts related to critical reading in EFL contexts, and discusses the nature and importance of reading strategies, with a special emphasis on mind mapping as a visual tool to enhance comprehension and analysis.

Chapter three, entitled *Methodology*, presents the research design adopted for this study. It provides details regarding data collection tools, including two questionnaires, two tests, and an instructional treatment on mind mapping, as well as the population and sampling.

Chapter four, entitled *Data Analysis*, provides an analysis of the data collected through the questionnaires and the tests. It interprets the data gathered from students to assess the impact of mind mapping as a critical reading strategy on their reading comprehension.

Chapter five, entitled *Discussion and Recommendations*, discusses the outcomes of the research overall throughout mentioning the research questions and hypotheses. It offers implications, highlights the significance of using visual strategies like mind mapping in reading instruction, and provides recommendations for students, teachers and future researchers.

1.8. Limitations of the study

While this study aims to provide valuable insights into improving critical reading skills through mind mapping, the limitations of this study were in terms of timing of when the research was conducted. First, The data collection took place during the month of Ramadan, a period in which students were not fully responsive due to fasting and low energy levels. As a result, the number of participants was limited, which affects the overall representation of the findings. And second, due to the limited time, only one lesson was delivered, which may not fully achieve a long-term impact of using mind mapping as a critical reading strategy.

Chapter Two

Literature Review

Chapter Two

A General Overview on Mind Mapping as a Critical Reading Strategy

Introduction

This chapter provides a comprehensive exploration of reading skills and critical reading strategies within the context of English as a Foreign Language (EFL) learning. It is divided into two main sections. The first section examines the reading skill, encompassing its definition, importance, types, and factors influencing comprehension in EFL settings. The second section focuses on critical reading strategies, defining critical reading, discussing challenges faced by EFL learners, exploring effective reading strategies, and highlighting mind mapping as a powerful tool to enhance critical reading and thinking. The chapter concludes by discussing the implications of these strategies for EFL teaching practices, emphasizing the role of mind mapping in fostering deeper engagement with texts.

Section One : The Reading Skill

2.1. The Reading Skill in EFL Context

Reading is a complex, interactive cognitive-linguistic process that involves decoding written symbols and actively constructing meaning through the integration of text, background knowledge, and personal interpretation (Grabe&Stoller, 2011; Alderson, 2000). It encompasses lower-level skills, such as letter-sound recognition and word identification, alongside higher-order processes like inferencing, prediction, and critical analysis (Nation, 2009; Carrell, 2001). According to Rosenblatt's (1978) transactional theory, reading is a dynamic transaction between the reader and the text, shaped by the reader's schema, emotions, and context, positioning the reader as an active meaning-maker (Rosenblatt, 1978; Smith, 2004).

2.2. Historical Framework of Reading

The conception of reading has evolved over time, reflecting changing perspectives on how knowledge is constructed and understood. Traditionally, reading was viewed as abottom-up process, where the main task of the reader was to decode letters into words and extract literal meanings from a text

(Gough, 1972). This view neglected the active role of the reader's background knowledge and experience in making sense of the text.

In the 1970s and 1980s, cognitive perspectives challenged this view by emphasizingthe interactive nature of reading, where the reader plays an active role in combining their prior knowledge with the information presented in the text (Anderson & Pearson, 1984; Rumelhart, 1980). Subsequently, this view was enriched by transactional perspectives, which stressed the unique interaction between each reader and each text (Rosenblatt, 1978).

Today, reading is recognized as a constructivist process, influenced by linguistic, cognitive, motivational, and sociocultural factors (Grabe&Stoller, 2011; Alvermann et al., 2013). Readers are not passive recipients of information; instead, they are active participants who construct meanings through a dynamic process of inquiry, reflection, and interaction with the text and context (Brown &Campione, 1994).

2.3. Importance of Reading in EFL Learning

Reading plays a pivotal role in EFL learning by facilitating vocabulary acquisition, grammar comprehension, and overall language proficiency. Through exposure to diverse texts, learners encounter a wide range of lexical items, syntactic structures, and discourse patterns (Nuttall, 1996; Grabe&Stoller, 2002). Research highlights vocabulary knowledge as the strongest predictor of reading comprehension success (Schmitt, 2000; Laufer&Ravenhorst-Kalovski, 2010). Fluent reading also supports cross-linguistic transfer, where strong first-language (L1) reading skills enhance second-language (L2) reading once a proficiency threshold is reached (Cummins, 2001; Krashen, 2004). Additionally, reading strengthens other language domains, with regular engagement in complex texts improving spoken fluency and writing accuracy (Nation, 2009; Hedge, 2000). In EFL contexts with limited naturalistic English exposure, reading provides essential language immersion, fosters autonomous interaction with authentic texts, and promotes independent learning (Day & Bamford, 1998; Grabe& Zhang, 2013).

2.4. Types of Reading and Their Roles

EFL reading instruction incorporates various modes, each serving distinct purposes: intensive reading, extensive reading, skimming, and scanning. Intensive reading involves in-depth analysis of short

texts to enhance linguistic knowledge, while extensive reading promotes fluency and general comprehension through exposure to large volumes of text with minimal teacher intervention (Krashen, 2004; Day & Bamford, 1998). Skimming enables learners to quickly identify main ideas, and scanning facilitates locating specific information efficiently (Richards & Schmidt, 2002; Nuttall, 2005). Proficient EFL readers employ metacognitive strategies—such as predicting content, analyzing text structure, and monitoring comprehension—to shift from surface-level decoding to deeper processing, enhancing vocabulary, fluency, and comprehension across text genres (Ditzel et al., 2013; Nuttall, 1996; Grabe&Stoller, 2011).

2.5. Factors Influencing Reading Comprehension

Reading comprehension in EFL contexts is shaped by linguistic, cognitive, motivational, and textual factors. Linguistic competence, particularly vocabulary size and grammatical awareness, significantly impacts comprehension, as unfamiliar words hinder meaning extraction despite accurate decoding (Schmitt, 2000; Laufer&Ravenhorst-Kalovski, 2010). Prior knowledge activates schema, aiding inferencing and integration of new information (Anderson & Pearson, 1984; Carrell &Eisterhold, 1983). Metacognitive strategies, including planning, monitoring, and evaluating, enable readers to regulate understanding, identify comprehension gaps, and employ repair strategies like rereading or summarizing (Baker & Brown, 1984; Flavell, 1979). Motivational factors, such as intrinsic interest, confidence, and anxiety levels, influence engagement and persistence in reading tasks (Dörnyei, 1994; Guthrie &Wigfield, 2000).

Section Two: Critical Reading

2.6. Definition of Critical Reading

Critical reading involves a deep, analytical engagement with a text, extending beyond surface-level understanding to evaluate its ideas, structure, and meaning. It requires assessing the logic, tone, and organization of the text while questioning its credibility and implications (Hanfer, 1974; Maker, 1986). Hanfer (1974) describes critical reading as a thinking process strengthened by clear language use and concept questioning, while Maker (1986) emphasizes judging the believability of content. Together, these

perspectives highlight critical reading's role in fostering active, focused, and reflective interaction with texts, encouraging EFL learners to think deeply about content.

2.7. Challenges Faced by EFL Learners with Critical Reading

EFL learners encounter several obstacles in developing critical reading skills. Limited language proficiency, particularly in vocabulary and syntax, restricts their ability to move beyond basic comprehension to deeper analysis (Shamida et al., 2023). Additionally, unfamiliarity with critical reading strategies hinders their capacity to interpret and evaluate texts critically (Le et al., 2024). These challenges not only impair reading performance but also impede academic progress and language development. Addressing these issues requires integrating language instruction with critical reading strategies in EFL classrooms (Shamida et al., 2023; Le et al., 2024).

2.8. Overview of Reading Strategies in EFL

Effective reading strategies are essential for developing proficient and independent readers, particularly in English as a Foreign Language (EFL) contexts (EAP Foundation, 2021; Okasha, 2020). These strategies help learners become more active, purposeful, and efficient in their reading, laying a strong foundation for advanced skills such as critical analysis (Okasha, 2020). Among these techniques are skimming, scanning, and summarizing, which enable readers to quickly grasp main ideas, find specific information, and consolidate key points (EAP Foundation, 2021). Additionally, strategies such as questioning, making predictions, activating prior knowledge, visualizing, making inferences, evaluating, and mind mapping further deepen understanding and engagement (Brown &Campione, 1994; Harvey &Goudvis, 2007; Grabe&Stoller, 2019). Mind mapping, in particular, involves organizing information visually to show relationships between ideas, allowing readers to connect and synthesize knowledge in a more coherent and memorable way (Harvey &Goudvis, 2007; Block & Israel, 2004). Together, these strategies empower EFL learners to move from passive recipients of information to active, proficient, and critical readers who can navigate, interpret, and reflect upon a range of texts with confidence.

2.8.1. Questioning

Questioning involves forming questions before, during, and after reading in order to guide understanding and foster curiosity (Harvey &Goudvis, 2007; Paul & Elder, 2006). Readers who employ this strategy move from passive recipients of information to active participants in the reading process (Brown &Campione, 1994). Furthermore, developing questions about the author's main ideas, motives, and assumptions helps readers to challenge and critique the text's credibility and bias (Wallace, 2001; Grabe&Stoller, 2019).

2.8.2. Making Predictions

Making predictions is another key strategy that involves using clues from the text to anticipate what might happen next or what the author might say (Harvey &Goudvis, 2007; Pearson & Gallagher, 1983). This forward-thinking approach assists readers in developing a purpose for reading and staying engaged, as well as in checking their understanding against subsequent content (Alvermann et al., 2013; Grabe&Stoller, 2019).

2.8.3. Activating Prior Knowledge

Before reading, proficient readers activate their background knowledge and connect it to the new material (Anderson & Pearson, 1984; Harvey &Goudvis, 2007). Activating prior knowledge enhances comprehension and retention because it allows readers to form a framework into which new information can be integrated (Brown &Campione, 1994; Grabe&Stoller, 2019).

2.8.4. Summarising

Summarizing involves identifying main ideas, key details, and the overall structure of the text and then condensing this information into a brief, coherent form (Palincsar& Brown, 1984; Harvey &Goudvis, 2007). This strategy is particularly useful for developing a deep understanding of the material, retaining information, and distinguishing main points from minor details (Duke & Pearson, 2002; Grabe&Stoller, 2019).

2.8.5. Visualising

Visualizing, or creating mental images of what the text describes, supports readers' ability to connect to the content on a deeper level (Harvey &Goudvis, 2007; Block & Israel, 2004). By forming vivid mental pictures, readers can more easily remember details and appreciate relationships within the text (Zimmerman & Hutchins, 2003; Grabe&Stoller, 2019).

2.8.6. Making Inferences

Making inferences involves drawing logical conclusions based on explicit information and a reader's background knowledge (Duke & Pearson, 2002; Harvey &Goudvis, 2007). Readers use this strategy to fill gaps in the text, interpret motives, and uncover meanings not directly stated by the author (Block & Israel, 2004; Grabe&Stoller, 2019).

2.8.7. Evaluation

Evaluation is a higher-order thinking strategy where readers make judgments about the credibility, reliability, and validity of the information presented (Paul & Elder, 2006; Grabe&Stoller, 2019). Critically evaluating a text involves assessing the author's bias, identifying logical fallacies, and reflecting on whether the text supports or contradicts the reader's own perspectives (Wallace, 2001; Fisher & Frey, 2015).

2.9. Mind Mapping as a Critical Reading Strategy

Mind mapping is a visual learning strategy that significantly enhances critical reading in EFL contexts. By organizing information hierarchically, mind maps help learners generate ideas, structure thoughts, and connect concepts (Buzan&Buzan, cited in Budd, 2003). Research indicates that mind mapping improves comprehension and retention by enabling learners to visualize relationships between vocabulary, grammar, and ideas (Sabbah, 2015; Al Shamalat& Abdul Ghani, 2020). It fosters critical thinking by encouraging students to analyze and synthesize information, recognizing patterns and connections within texts (Wulandari, 2020). By providing a clear, organized framework, mind mapping supports EFL learners in processing complex texts and developing critical reading skills (El Sayed, 2022).

2.10. Cognitive Benefit of Mind Mapping in EFL Reading

Mind mapping plays a significant role in enhancing the cognitive processes involved in reading, particularly for English as a Foreign Language (EFL) learners (Buzan&Buzan, 2003; Al-Jarf, 2009; Wulandari, 2020). It assists in organizing and structuring information in a way that resonates with how the human brain naturally prefers to process and remember knowledge (Sweller, 2011; Eppler, 2006). Instead of addressing a text in a linear, disconnected fashion, mind maps enable learners to break large amounts of information into manageable "chunks"—this phenomenon, known as "chunking"—makes reading less overwhelming and more systematic (Sweller, 2011; Paul & Elder, 2006).

Furthermore, the use of color, keywords, and images to connect main ideas and details assists learners in reducing their cognitive load (Buzan&Buzan, 2003; Al-Jarf, 2009). Instead of straining their working memory trying to remember disparate facts, the mind map serves as a visual framework, guiding their understanding and retention (Sweller, 2011; Wulandari, 2020). Visual organization lets learners see the "big picture"—how main ideas relate to finer details and how different components connect to form a coherent whole (Eppler, 2006; Al-Jarf, 2009).

Additionally, this form of processing strengthens retention because information is encoded both verbally and visually, creating multiple memory traces that aid retrieval (Buzan&Buzan, 2003; Al-Jarf, 2009). Consequently, mind mapping has a powerful cognitive benefit in reading; it transforms passive reading into an active, constructive process that profoundly supports understanding, memory, and eventual application of knowledge in a new context (Brown &Campione, 1994; Harvey &Goudvis, 2007).

2.11. Pedagogical Applications of Mind Mapping in EFL Classrooms

The use of mind mapping in EFL classrooms extends far beyond a mere tool for note-taking; it profoundly transforms pedagogy by making reading a more interactive, collaborative, and student-centered activity (Brown &Campione, 1994; Harvey &Goudvis, 2007). Teachers can integrate mind maps at all stages of reading lessons to maximize engagement and deep understanding (Dörnyei, 1994; Al-Jarf, 2009).

Before reading, for example, a teacher may employ a mind map to activate students' background knowledge and curiosity about a text's topic (Anderson & Pearson, 1984; Harvey &Goudvis, 2007). By placing a central concept —such as "Environment"—in the center of the map, the teacher invites the whole class to contribute related words, phrases, or ideas, thereby strengthening their readiness to connect their own knowledge to the text (Brown &Campione, 1994; Al-Jarf, 2009).

During reading, mind maps can serve as a powerful tool to help learners track main ideas and details in a text (Dörnyei, 1994; Harvey &Goudvis, 2007). Instead of passively consuming information, students become active participants, adding points to their mind maps as their understanding develops (Brown &Campione, 1994; Al-Jarf, 2009). This process not only assists in organizing their thoughts but also makes reading more interactive and purposeful (Buzan&Buzan, 2003; Eppler, 2006).

After reading, mind maps become a useful medium for summarizing content, drawing inferences, and identifying cause-and-effector relationships within the text (Dörnyei, 1994; Al-Jarf, 2009). Pair or group activities around mind mapping foster collaboration, communication, and negotiation of meanings in English, adding a valuable interpersonal dimension to the reading experience (Brown &Campione, 1994; Harvey &Goudvis, 2007).

Furthermore, mind mapping supports the development of higher-order thinking skills, such as analysis, evaluation, and synthesis, which are essential components of proficient reading (Paul & Elder, 2006; Al-Jarf, 2009). By organizing information, spotting patterns, and making connections, EFL learners move from literal understanding toward a more sophisticated, critical view of texts (Buzan&Buzan, 2003; Brown &Campione, 1994).

Importantly, this pedagogy lets all learners, regardless of their linguistic ability, visualize their thinking and contribute to a shared understanding of reading material (Harvey &Goudvis, 2007; Al-Jarf, 2009). Consequently, mind mapping not only makes reading more accessible and enjoyable for EFL students but also prepares them to become more independent, proficient, and strategic readers in their future language use (Buzan&Buzan, 2003; Dörnyei, 1994).

Conclusion

This chapter has provided a comprehensive overview of reading skills and critical reading strategies in EFL learning. The first section outlined the nature, importance, types, and factors influencing reading comprehension, emphasizing its foundational role in language acquisition. The second section explored critical reading, its challenges, and effective strategies, with a particular focus on mind mapping as a visual tool to enhance comprehension and critical thinking. By integrating mind mapping into EFL instruction, teachers can empower learners to engage more deeply with texts, fostering both linguistic and analytical skills. These insights highlight the need for strategic approaches to reading instruction to support EFL learners' academic and language development.

Chapter Three

Methodology

Chapter Three

Methodology

Introduction

This chapter is concerned with the practical part to support the literature review provided in chapter two. It involves the methodology used to answer the research questions, the research design, the means, and the procedures of the research.

3.1. Research Location

This research was conducted in the English department at ChadliBendjedid University – El Tarf in eastern Algeria, with the aim to explore the role of mind mapping as a critical reading strategy among EFL students.

3.2. Population and Sampling

The sample of this study consisted of second-year EFL students at ChadliBendjedid University during the 2024/2025 academic year. The sampling process involved two groups of 15 students in each, one represents the control group, while the other one represents the experiment group of students who were selected based on their availability and relevance to the research topic. The data was collected through three sessions using two questionnaires and two tests, delivered to the same group. The choice of 2nd year students was intentional, as they already have an intermediate level of English, yet still face challenges in applying effective reading strategies. This study aims to assess their awareness and development of critical reading strategies using a structured lesson and analysis of their responses before and after the treatment. It is worth mentioning that regarding the three sessions dedicated to data collection, the teacher of 2nd year students was so welcoming and allowed to carry out the collecting process freely.

3.3. Research Design

This research usedan experimental design, focusing on evaluating the impact of mind mapping on students' critical reading strategies. An experimental approach was chosen as the study explores learners' perceptions and performance based on their responses. A mixed-methods approach was employed to analyse the data collected through two questionnaires and two tests.

3.4. The research instruments

In order to gather data for this research, there were three instruments involved, which were two questionnaires, two tests and a treatment, all given to students.

3.4.1.Pre-experiment Questionnaire

In the first session, the first questionnaire was designed to assess the students' initial level of awareness and use of critical reading strategies overall and mind mapping on a specific scale. It was designed to identify the extent to which 2nd year EFL students at ChadliBendjedid University understand and apply mind mapping when they engage with different pieces of writing. The questionnaire included both closed and open-ended questions, covering aspects such as reading habits, familiarity with mind mapping, as well as students' thoughts on the effectiveness of it as a critical reading strategy.

Section One: Your Reading Habits

This section attempts to gather information about the students' reading habits. It included 4 questions related to the frequency of reading, the strategies of note-taking, as well as what they struggle with the most during reading. By assessing these aspects, the section helps identify the extent to which students are exposed to reading strategies, which is essential to understand their current level of engagement with reading.

Section Two: Awareness of Mind Mapping

The second section aims to know the extent to which students' are aware about mind mapping as a critical reading strategy through 3 questions, along with different contexts in which it was used, as well as its potential effectiveness on an individual scale.

Section Three: Perception of Mind Mapping in Reading Comprehension

The final section of this questionnaire attempts to ask students' about their perceptions and attitudes regarding mind mapping in reading through 6 questions. It gathered their views on how mind mapping could aid comprehension and critical reading. It also assessed their confidence in analysing and organising ideas visually.

3.4.2.Pre-test

During the first session, the first test was administered to students. It aimed to assess students' initial ability to comprehend and extract relevant information from a reading passage without the use of any specific strategy. A non-fiction text titled *"The Impact o the Printing Press"* was provided, followed by a couple of comprehension questions. Its main objective was to observe how students approach the text critically and whether they can identify key ideas and details within the content.

3.4.3. The Experiment

In the second session, the treatment -mind mapping strategy- was introduced to the students. The session included an explanation of what mind maps are, how they function, and their role in improving reading comprehension. Visual examples were presented and discussed with the class. To encourage participation and ensure understanding, several students were invited to the board to create mind maps based on familiar topics. This practical activity aimed to prepare the students for applying the technique in the second test.

3.4.4. Post-test

In the third and last session, a post-test was designed to evaluate students' ability to apply the mind-mapping strategy after receiving an instructional treatment on how it works. Students were given the same reading text used in the pre-test and were asked to create a mind map based on its content. This task aimed to assess whether students could visually organise ideas, identify relationships, as well as structure information more effectively using the strategy.

3.4.5. Post-experiment Questionnaire

During the third session, a post-experiment questionnaire was distributed after the post-test. It consists of ten questions aimed at examining the students' thoughts on the use of mind mapping as a critical reading strategy. The questions addressed their perspectives regarding the strategy's usefulness, their level of understanding, and how confident they felt using mind maps for organising ideas. The responses provided insight into students' attitudes and the potential impact of the strategy on their reading habits.

Conclusion

In conclusion, the methodology adopted in this chapter was designed to effectively investigate the impact of mind mapping on EFL students' critical reading skills. The combination of the questionnaires, tests, and a treatment session provided a comprehensive way to assess both the students' performance and their attitudes toward this strategy. The control and experimental groups were carefully selected to allow for a clear comparison of results. Furthermore, the instruments were tailored to measure not only the improvement in reading ability but also the learners' awareness, confidence, and perception of mind mapping. Overall, this methodology sets a solid framework for evaluating whether mind mapping can be a useful tool to enhance the reading skills of EFL learners.

Chapter Four

Data Analysis

Introduction

After the fieldwork phase, the collected data was analysed, organised and arranged using tables. Each question of the questionnaires has its own table, in addition to a comment on each result found. Open-ended questions were the only questions that did not have tables as it was not possible to quantify their answers. The tests were analysed by calculating the mean and the standard deviation for both the experimental and the control group to assess their performance and variability. A p-value was computed to determine the statistical significance of the differences observed.

4.1. Analysis of the Pre-test Questionnaire

The analysis of the pre-test questionnaire is presented in the following tables, and a comment on each question is provided.

Section 1 : Your Reading Habits

Question 1: How often do you read academic texts in English ?

Table 1: Frequency of Reading Academic Texts in English

Option	Every day	A few times a week	Once a week	Rarely
Percentage	6.67%	80%	6.67%	6.67%
Population	2	24	2	2

According to table 1, (80%) of students reported reading academic texts in English a few times a week. Only (6.67%) said they read daily, while an equal percentage reported reading once a week or rarely.These findings suggest that students are fairly regularly exposed to academic reading tasks, which highlights the importance of developing effective strategies to approach such texts.

Question 2: How do you usually take notes while reading a text?

Table2: Frequency of Taking Notes While Reading Texts

Option	Highlighting important parts	Writing summaries	Making a list of key points	Drawing diagrams or charts	I don't usually take notes
Percentage	57.14%	14.29%	23.81%	4.76%	0%
Total number of responses	24	6	10	2	0

Students were allowed to select multiple strategies when asked about how they take notes while reading. As a result, the total number of responses (42) exceeded the number of participants (30). Table 2 show that (57.14%) of the responses involved highlighting important parts of a text, suggesting a strong reliance on identifying and recalling key information. Additionally, (23.81%) of responses involved making a list of key points, (14.29%) indicated writing summaries, and only (4.76%) preferred drawing diagrams or charts. Notably, no student selected the "I don't usually take notes" option, indicating that all participants engage in some form of active reading.

Question 3: Which part of reading comprehension do you struggle with the most ?

Table 3: Difficulties Regarding Reading Comprehension

Option	Understanding the main idea	Identifying key details	Seeing connections between ideas	Remembering information
Percentage	13.33%	26.67%	13.33%	46.67%
Population	4	8	4	14

Table 3 indicate that (46.67%) of students identified remembering information as their main issue regarding reading comprehension. In comparison, (26.67%) reported struggling with identifying key

details, while (13.33%) of students pointed to difficulties in understanding the main idea and seeing connections between ideas. These results suggest that many students struggle the most with retaining what they read, even more than understanding or analysing the content.

Question 4: How do you usually organise the information you read?

Table 4: Organising Read Information

Option	Writing it down in full sentences	Listing important points with no connection	Categorising and structuring ideas	Not organising information at all
Percentage	26.67%	40%	20%	13.33%
Population	8	12	6	4

The results reveal that (40%) of students tend to list important points without making clear connections, indicating a reliance on basic note-taking. Additionally, (26.67%) reported writing in full sentences, while (20%) indicated that they categorise and structure ideas, demonstrating a more organised approach. A smaller group, (13.33%), reported not organising information at all, which may reflect difficulties in engaging effectively with reading material. Overall, the majority of students depend on simple listing rather than more structured methods of organisation.

Section 2: Awareness of Mind Mapping

Question 5: Have you ever heard of the term "mind mapping"?

Table 5: Familiarity with Mind Mapping

Option	Yes, I do	No, I do not
Percentage	83.33%	16.67%
Population	25	5

According to table 5, (83.33%) of students reported prior knowledge of the term "mind mapping," while (16.67%) did not. This suggests that mind mapping is already a relatively well-known strategy among participants. The high level of awareness also reflects its growing recognition as an effective learning tool in academic settings.

Question 6: If you have used a mind map before, in what context did you use it?

Table 6: Contexts of Using Mind Maps

Option	Studying for exams	Organising ideas for writing	Summarising books or articles	Planning projects or presentations	I have never used a mind map
Percentage	42.86%	3.57%	14.29%	39.29%	0%
Total number of responses	24	2	8	22	0

When asked about the contexts in which they use mind maps, students were allowed to select multiple options. As a result, the total number of responses (56) exceeded the number of participants (30). The results show that (42.86%) of students use mind maps for studying for exams, followed closely by (39.29%) of students who use them for planning projects or presentations. A smaller portion, (14.29%) of students, use mind maps to summarise books and articles, while very few students use them to organise ideas for writing. Notably, none of the

students selected the option “I have never used mind maps before,” suggesting that all participants were at least somewhat familiar with the strategy, particularly in the contexts of exam preparation and project planning.

Question 7: If you have used a mind map, how helpful was it for understanding a text?

Table 7: Helpfulness of Mind Maps

Option	Very helpful	Somehow helpful	Not very helpful	Not helpful at all
Percentage	60%	33.33%	6.67%	0%
Population	18	10	2	0

According to the results, (60%) of students found mind mapping to be very helpful, while (33.33%) considered it somewhat helpful. A smaller portion of (6.67%), reported that it was not very helpful, and no students rated it as not helpful at all. These findings indicate that the majority of participants view mind mapping as a generally effective tool for supporting their understanding of texts.

Part 3 : Perceptions of Mind Mapping in Reading Comprehension

Question 8: How do you think a mind map could help in reading comprehension?

When asked about how a mind map could help in reading comprehension, students mostly had various answers, such as organising information in blocks, summarising key points, remembering important details, as well as visualising the structure of a topic. According to these results, it is clear that students have a positive perception of mind mapping as a critical reading strategy.

Question 9: Do you think using a mind map could help you improve your critical reading skills? Why or why not?

When asked about opinions concerning whether mind maps could help at improving critical reading skills or not, many students responded positively, explaining that mind maps helped them break down complex

texts, identify important ideas, and see relationships between concepts. These responses suggest that mind mapping can support the development of critical reading skills by making the reading process more active, organized, and thoughtful.

Question 10: Which of the following statements best describes your opinion on using diagrams or visual tools for studying?

Table 8: Opinions Regarding Using Diagrams and Visual Tools for Studying

Option	Very helpful	Helpful a bit	Not useful	I have never tried using them
Percentage	18	10	2	0
Population	60%	33.33%	6.67%	0%

Table 8 demonstrates that (60%) of students found diagrams and visual tools helpful for studying, while 33.33% found them somewhat helpful. Only (6.67%) reported that these tools were not useful, suggesting that the majority of students view visual aids as beneficial to their learning process. Notably, (0%) of participants stated that they had never used such tools, indicating that all students had, at some point, engaged with visual resources during their studies. Overall, these findings highlight the potential of visual aids to support comprehension and retention, particularly when dealing with complex or dense material.

Question 11: Would you be interested in learning how to use mind mapping as a reading strategy?

Table 9: Interest in Using Mind Mapping as a Reading Strategy

Option	Yes	Maybe	Not Really
Percentage	80%	20%	0%
Population	24	6	0

According to table 9, there is a strong interest in using mind mapping as a reading strategy. A significant (80%) of participants expressed interest by answering “yes,” while (20%) were open

to the idea, responding with "maybe." Notably, none of the participants rejected the idea. This reflects a generally positive attitude toward exploring mind mapping as a critical reading strategy and suggests that students may be willing to incorporate it into future learning activities.

Question 12: What do you expect to gain from learning about mind mapping? (Check all that apply)

Table 10: Expectations from Learning about Mind Mapping

Option	Better understanding of texts	Easier organisation of information	Improved memory retention	More confidence in answering comprehension questions
Percentage	34.6%	30.8%	19.2%	15.4%
Total number of responses	16	18	10	8

Table 10 demonstrates that (34.6%) of students expected mind mapping to make organizing information easier. Additionally, (30.8%) of students hoped it would help them better understand texts. A smaller percentage, (19.2%)of students, believed it could improve memory, while (15.4%) of students thought it would boost their confidence in answering comprehension questions. Overall, these findings suggest that students view mind mapping as a helpful strategy for enhancing both their understanding and organization of reading materials.

Question 13: On a scale of 1 to 5, how confident are you in your ability to analyse and organise ideas in a text? (1 = not confident at all, 5 = very confident)

Table 11: Confidence in Ability to Analyse and Organise Ideas

Option	1	2	3	4	5
Percentage	6.7%	0%	46.7%	40%	6.7%
Population	2	0	14	12	2

According to table 11, (46.7%) of students rated themselves as moderately confident, while another (40%) felt quite confident. Only (6.7%) felt highly confident, and another (6.7%) reported no confidence at all. These results reflect a generally positive perception of students' analytical and organizational skills, and suggest that mind mapping may further enhance their confidence when used as a critical reading strategy.

4.2. Analysis of the Pre-Test Results

Before implementing the experiment, a**pre-test was administered to both groups (experimental and control)** in order to measure their initial level of reading comprehension and to determine whether the two groups were homogenous in their ability to read and process texts in English.The pre-test was designed to assess students' initial level of reading comprehension before introducing mind mapping strategy. It included 6 questions based on a text titled "*The Impact of the Printing Press*" (See Appendix). The questions focused on both literal understanding and basic inference, aiming to evaluate how well students could identify key ideas, supporting details, and implied meaning in the text.

In the first part of the test, students answered three open-ended questions. They had to identify the main impact of the printing press, explain how it affected literacy and knowledge sharing, and describe both the positive and negative effects of spreading information. Most students were able to identify key ideas in a text. They recognised points such as "faster book production", "higher literacy rates" and "the wider spread of knowledge".

The second part asked students to group information and imagine a visual diagram like a mind map. They had to name three main categories from the text, select a central idea, and explain a possible challenge in organizing historical events visually.Many students correctly chose categories such as "Invention," "Impact on Society," and "Advantages and Disadvantages," showing they have some understanding of how to organize information. Most chose "the printing press" or "the revolution in reading and writing" as the central idea, which matches the text's main theme. Some students went further and suggested branches and sub points, which shows they had some experience with mind maps.On the other hand,

some answers were unclear or not well-developed, indicating that more teaching on visual learning and categorizing is needed. Some students also found it hard to show which ideas are more important than others, a key skill for making effective diagrams.

The students' answers were scored out of 6 points based on their understanding, completeness

The following tables present the pre-test scores of the students.

Table 12:Pre-test Scores of the Experimental Group

Student	Score (/6)	8	3.5/6
1	2.5/6	9	4.5/6
2	3/6	10	2/6
3	5/6	11	4/6
4	5/6	12	6/6
5	4/6	13	3/6
6	1/6	14	1.5/6
7	6/6	15	5/6
Mean		3.73	
Standard Deviation		1.58	

The experimental group showed an average performance (mean = 3.80, standard deviation ≈ 1.58) before receiving the treatment, which indicates that the group had a moderate and varied level of critical reading skills at the starting point.

Table 13: Pre-test Scores of the Control Group

Student	Score (/6)	8	3.5/6
1	5/6	9	6/6
2	1.5/6	10	1/6
3	2/6	11	4/6
4	6/6	12	6/6
5	4/6	13	5/6
6	2/6	14	3/6
7	4/6	15	2.5/6
Mean		3.70	
Standard Deviation		1.68	
Difference of Significance (P-Value)		0.96	

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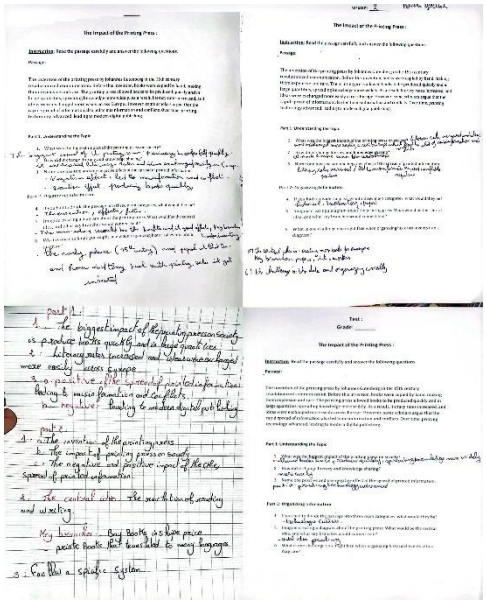
Similarly, the control group also demonstrated a comparable average performance (Mean = 3.70, standard deviation ≈ 1.68), with a similar degree of variation among students. This confirms that both groups were at a similar skill level at the starting point.

Analysis of the Scores

The analysis of the pre-test scores for both experimental and control groups indicates no significant difference between the two groups, as their Mean scores are very close (3.73 and 3.70) as well as the Standard Deviation (1.58 and 1.68). The P-Value (≈ 0.96) confirms that this minor difference is statistically insignificant as the groups were equivalent at the start. This means that before the experiment started, both groups were at the same level, therefore, any real difference that would appear in the post-test results, should be related to the experimental treatment.

Pictures down below demonstrate some of the students' results of the pre-test



4.3. The Experiment

The experimental group received a treatment on how to use mind mapping as a critical reading strategy. During the experiment which lasted for three sessions, students were introduced to the concept of mind maps, their structure, and their benefits for organising and understanding information. They were shown examples of mind maps related to reading texts and were guided to create their own mind maps.

4.4. Analysis of the Post-Test Results

Following the instructional lesson that introduced mind mapping as a critical reading strategy, a post-test required students to create a mind map based on the same text used in the first test. This test aimed to assess whether students were able to identify the main idea, extract supporting details, as well as organise them visually in a structured and meaningful way.

Table 14: Post-test Scores for the Experimental Group

Student	Score (/6)	8	4/6
1	5/6	9	4.5/6
2	5.5/6	10	4.5/6
3	6/6	11	5/6
4	6/6	12	6/6
5	5.5/6	13	5.5/6
6	4.5/6	14	5/6
7	6/6	15	6/6
Mean		5.27	
Standard Deviation		0.68	

After receiving a treatment, the experimental group showed a clear improvement in the post-test(Mean = 5.27, Standard Deviation = 0.68). The higher mean and lower standard deviation indicate not only better performance but also greater consistency among students.

Table 15: Post-test Scores of Control Group

Student	Score (/6)	8	4/6
1	5.5/6	9	6/6
2	2/6	10	1.5/6
3	3/6	11	4.5/6
4	6/6	12	5/6
5	4/6	13	5.5/6
6	2.5/6	14	3.5/6
7	4.5/6	15	2.5/6
Mean		4.00	
Standard Deviation		1.46	
Significance of Difference		0.0051	

The control group, which did not receive the treatment, showed a lower mean score (4.00) and a higher standard deviation (1.46) which indicates that their performance remained as it is, and did not improve as much as the experimental group.

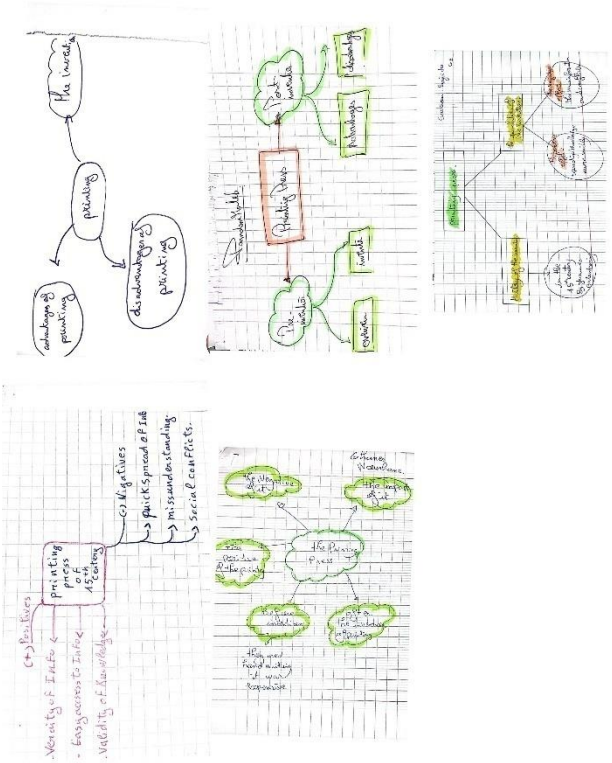
According to their answers, the results showed that students were in fact able to make a mind map based on the text given, through identifying the main idea alongside supporting details.

After a lesson on how to make a mind map, students took the post-test. This test asked them to visually organize the same text, “The Impact of the Printing Press.” The goal was to see how well the treatment helped them and to check if they could organize information visually. While the first test focused on reading comprehension and organizing ideas in writing, this test checked whether students could find the main idea, group related points, and build a clear and organized visual map.

All students made a mind map with the central idea focused on the printing press and its impact. This shows that the lesson on finding the main idea was helpful. In every map, the main topic stood out and was placed in the middle or top, with lines leading to related ideas.

Most students were able to group information under logical categories like “advantages,” “disadvantages,” “effects,” or “spread of knowledge.” Many used branches such as “positive effects,” “negative effects,” and “invention details,” with smaller points under each one. This shows that they used the techniques taught in class to turn information from the text into a visual format. Many students used design elements like color, shapes (like boxes or clouds), and arrows to show how ideas are connected. These design choices helped make the maps easier to read and understand. Some students used colors to separate different categories—for example, green for benefits and red for problems—showing that they were thinking carefully about how to present the information. Compared to the first test, most students improved in how they organized information. Their ability to summarize and structure ideas was more noticeable in this second test. This suggests that teaching them how to make mind maps helped them think more deeply and organize their thoughts better. The way they showed the connections between ideas shows they were moving from just reading to actively working with the text. Students who had trouble paraphrasing or sorting ideas in the pre-test seemed more confident this time. Their mind maps were better organized, which shows that visual learning methods can be especially helpful for students who prefer seeing ideas laid out in a diagram.

The following picture demonstrates examples of students’ answers



4.5. Analysis of the Post-test Questionnaire

The analysis of the pre-test questionnaire is presented in the following responses and a comment on each question is provided.

Question 1 : After using mind mapping, how do you feel about organising information?

Table 16: Thoughts about Organising Information

Option	Much easier than before	Somewhat easier	No difference	More difficult than before
Percentage	60%	40%	0%	0%
Population	18	12	0	0

According to the results, when participants were asked how they felt about organising information,(60%) of them reported that it was “much easier than before” while (40%) of them stated that it was “somewhat easier”. Notably, none of the participants (0%) reported that it was “more difficult than

before" or that there was "no difference". This suggests a generally positive perception of min mapping as a tool for enhancing the organisation of information.

Question 2: How did mind mapping help you with reading comprehension?

Table 17: Helping with Reading Comprehension

Option	Understanding the main idea	Identifying key points	Seeing connections between ideas	Memorising information	Summarising the text effectively
Percentage	23.3%	33.3%	13.3%	16.7%	16.7%
Population	7	10	4	5	5

.According to the results, the largest group of students (33.3%) reported that mind mapping helps with identifying key points in a text, while 23.3% believed it supported their understanding of the main idea. A smaller percentage (16.7%) found it useful for memorising information and summarising the text, and only (13.3%)mentioned that it helped them see connections between ideas. These findings suggest that students primarily view mind mapping as a valuable tool for highlighting important information and grasping the overall message of a text.

Question 3: Compared to your previous reading strategies, do you think mind mapping is more effective?

Table 18: Effectiveness of Mind Mapping

Option	Yes, definitely	Somewhat	Not really
Percentage	66.7%	33.3%	0%
Population	20	10	0

According to the results, (66.7%)of students believed that mind mapping was definitely effective, while (33.3%)felt it was somewhat effective. Notably, none of the participants considered it to be ineffective.

These findings indicate that mind mapping is generally perceived as a reliable and beneficial strategy for enhancing reading comprehension and overall learning.

Question 4: What challenge did you face while using mind maps?

Table 19: Challenges Faced While Using Mind Maps

Option	Choosing the right keywords	Structuring the information	Connecting ideas	Making the mind map visually clear	Running out of space or making it too cluttered
Percentage	43.5%	13%	13%	13%	17.5%
Population	20	6	6	6	8

According to the results,(43.5%) of students reported that selecting the right keywords is the most common challenge when using mind mapping. This was followed by difficulties such as running out of space or creating overly cluttered maps (17.4%). Additional challenges—including structuring information, connecting ideas, and ensuring visual clarity—were each identified by (13.0%) of respondents. These findings suggest that students primarily struggle with effectively selecting and organizing key ideas, which may affect the overall clarity and functionality of their mind maps.

Question 5: Did using a mind map change the way you engage with a text? If yes, how?

This open-ended question allowed students to reflect on how mind mapping influenced their reading habits. Many students reported that it improved their ability to focus on main ideas and enhanced their understanding of the relationships between different points in a text. These responses indicate that mind mapping supported the development of more active and engaged reading strategies. Overall, the students' reflections suggest that mind mapping had a positive impact on how they interact with and comprehend written material.

Question 6: Do you think mind mapping could be useful for other subjects beyond reading comprehension?

Table 20: Usefulness of Mind Mapping Beyond Reading Comprehension

Option	Yes, for summarising lectures and notes	Yes, for brainstorming ideas in writing	Yes, for organising research or projects	No, I don't think it is useful for other subjects
Percentage	33.3%	29.2%	37.5%	0%
Total number of responses	16	14	18	0

These results demonstrate that students perceive mind mapping as a useful tool beyond reading comprehension. The largest portion of responses (37.5%) indicated that it was particularly helpful for organising research or projects, followed by summarising lectures and notes (33.3%), and brainstorming ideas for writing tasks (29.2%). Notably, none of the participants considered it unhelpful for other academic subjects. These findings suggest that students view mind mapping as a flexible and valuable strategy that can effectively support learning across various academic disciplines.

Question 7: How confident do you feel about using mind mapping independently in the future?

Table 21: Confidence About Using Mind Mapping Independently

Option	Very confident	Somewhat confident	Unsure	Not confident at all
Percentage	53.3%	46.7%	0%	0%
Population	16	14	0	0

According to the results, (53.3%) of students reported feeling very confident in using mind mapping independently, while (46.7%) expressed a moderate level of confidence. None of the

students reported feeling unsure or lacking confidence. These findings suggest that the lesson was effective in fostering students' confidence and readiness to apply mind mapping as a strategy in their individual learning processes.

Question 8: Would you recommend mind mapping as a reading strategy to other students? Why or why not?

This question invited students to share their perspectives on whether they would recommend mind mapping to others. The majority of responses were positive, with students indicating that the strategy made reading more accessible and better organised. Additionally, several participants noted that mind mapping could assist peers who experience difficulties with comprehension or memory retention. Overall, these responses suggest that students not only found mind mapping beneficial for their own learning but also recognised its broader potential to support others.

Question 9: What improvements would you suggest for teaching mind mapping in the future?

This question invited students to share suggestions for enhancing the instruction of mind mapping. Some participants recommended providing more examples, clearer instructions, and additional time for practice. Others suggested incorporating colours or digital tools to make the process more engaging. These responses underscore the importance of clear, explicit instruction combined with practical, hands-on opportunities in enabling students to apply mind mapping strategies more effectively.

Question 10: On the scale of 1 to 5, how likely are you to continue using mind maps in your studies?

Table 18: Possibility of Using Mind Maps from Now On

Option	1	2	3	4	5
Percentage	0%	20%	13.3%	13.3%	53.4%
Population	0	6	4	4	16

More than half of the students (53.3%) indicated that they are very likely to use mind maps in the future. A smaller proportion selected intermediate options (ranging from 2 to 4), reflecting a moderate level of interest, while none of the participants chose the lowest option (1), which would indicate no intention to use the strategy. These findings suggest that the majority of students perceive mind mapping as a valuable tool and are open to incorporating it into their ongoing learning processes.

Conclusion

The core motivation of this research was to examine the presence of mind mapping as a critical reading strategy among second year English students at Chadli Bendjedid University, and to explore how it can enhance their reading comprehension. This chapter provided the results obtained from analysing the two questionnaires and the two tests. It indicates that although students are exposed to reading English academic texts, they do not use advanced strategies regularly and face difficulties with comprehension and organization. However, students are familiar with the concept of mind mapping, and most of them hold a positive view of it. They believe it can help improve their understanding, retention, and confidence. Therefore, introducing and integrating mind mapping into their learning process may be an effective way to improve their academic reading skills.

Chapter Five

Discussion and Recommendations

Chapter Five

Discussion and Recommendations

Introduction

This final chapter attempts to discuss the findings, provide some implications and recommendations. Therefore, some suggestions have been put forward to raise both EFL teachers' and students' awareness about the effectiveness of using mind mapping in reading tasks. Besides, some techniques were suggested to EFL instructors and students in order to enhance reading comprehension and performance. Finally, some recommendations for future studies were proposed.

5.1. Findings Discussion

The results showed that students who used mind maps during reading tasks were better at finding key ideas, organizing information, and making logical connections between different parts of the text. This was especially clear in the experimental group's performance in the post-test, where they scored higher than the control group in questions that required deeper understanding—such as making inferences, identifying themes, and telling the difference between main and supporting ideas. These findings confirm the first hypothesis (H1), which suggested that mind mapping would help students analyze and understand texts in a more critical way.

Students in the experimental group also improved in skills like summarizing, understanding the writer's purpose, and connecting different ideas within a text. This improvement matches what students reported in the questionnaire. Many said that remembering information and understanding main ideas were their biggest challenges when reading. Mind mapping seemed to help with these problems, likely because it allowed them to clearly see and organize the information. In fact, 83.33% of the students said they had heard of mind maps before, and 80% said they were interested in learning how to use them as a reading strategy. This shows that students are open to using new techniques that could make reading easier and more effective.

Students also said that mind maps helped them organize their ideas, remember important details, and see how different points in a text are connected. These benefits likely made it easier for them to understand difficult texts. Mind maps break down complex information visually, which can lower mental effort and help students focus more on understanding meaning rather than just trying to follow the text. Overall, the better performance of the experimental group in the post-test supports the idea that mind mapping is a useful tool for developing stronger critical reading skills.

The second hypothesis (H2) suggested that students who learn to use mind maps would show clear progress in their reading performance. This was confirmed when comparing the pre-test and post-test scores of the experimental group. After using mind maps, students in this group performed much better in the post-test. They improved not only in basic comprehension, but also in more advanced skills like summarizing information, understanding the author's purpose, and making connections between ideas in a text.

In contrast, the control group—who did not use mind maps—only showed small improvements, likely due to practice or repeated exposure rather than a new strategy. This comparison shows that mind mapping had a real, positive effect on students' performance. It helped them move from simply understanding words and sentences to thinking more deeply about the meaning behind the text.

The questionnaire results also support this. Many students said they usually just highlight important points or make simple lists when reading. Only a few used more structured ways to organize what they read. In fact, most students said they did not connect ideas or group them clearly when taking notes. Mind mapping seemed to help them do this better. By providing a visual way to connect ideas, mind maps helped students organize their thoughts and understand the text in a more complete way. The difference in test results between the two groups confirms that this tool made a real difference in how well students performed.

The third hypothesis (H3) proposed that students would have a positive attitude toward using mind maps as a reading strategy—and the data strongly supports this. According to the questionnaire, 83.33% of students had already heard of mind mapping, and 80% said they were interested in learning

how to use it for reading. The remaining 20% responded with “maybe,” and no one rejected the idea. This shows that students are open and willing to try mind mapping in their academic work.

Most students also found mind maps helpful. When asked how useful mind maps were, many said they were “very helpful” or “somewhat helpful.” None of the students said mind maps were unhelpful. In open-ended questions, students explained that mind maps helped them organize their ideas, remember key information, and understand the structure of what they were reading. Some even said it made reading more enjoyable and less stressful. These responses show that mind mapping does not only improve academic performance, but also boosts motivation and confidence.

Students also mentioned that mind maps helped them understand difficult texts and focus on important ideas. This means that they see mind mapping as a way to improve their critical reading skills. In addition, when asked about using visual tools like diagrams, 93.33% said they were helpful in studying. This strong preference for visual learning tools suggests that mind mapping fits well with the learning styles of many EFL students. Overall, the positive attitudes and interest shown by students confirm that mind mapping is not just effective—it’s also engaging and encouraging for learners.

5.2. Implications

Based on the findings of the study, the results encourage the implementation of mind mapping as a critical reading strategy in the English department as a supportive method to enhance students’ reading comprehension and critical thinking skills.

5.2.1.Implications for EFL Classrooms

5.2.1.1. Implementation of Mind Mapping Strategy in Reading Classes

Mind mapping is not frequently applied in EFL classrooms in the Department of English at ChadliBendjedid University, El Tarf. Reading is often delivered in a traditional way where students rely mostly on underlying elements or answering questions related to the passages given. This leads to a lack of clear understanding of the text’s main ideas and supporting details.

Introducing students to the use of mind maps in reading lessons can notably help in improving their comprehension skills. Teachers can train students to use mind maps by asking them to read a short

passage and then draw a mind map that includes the title in the centre alongside main and sub-ideas coming out. This method can allow students to see the structure of the text clearly and retain information for a longer time.

Teachers can also benefit from the technique by designing mind mapping activities that encourage students to work individually or in pairs to create mind maps based on different types of texts, which can strengthen collaboration between students and create an active and enjoyable classroom environment where learners share their ideas and learn from each other. In addition to that, teachers can ask students to use colored markers, diagrams, and other visual aids to encourage them to use these tools creatively while making the mind maps. Lastly, students can be invited to present their mind maps in front of the class to enhance their speaking skills as a bonus and boost their confidence.

5.2.1.2. Developing Students' Vocabulary through Mind Mapping

In addition to improving reading comprehension, mind mapping can also be a tool to improve vocabulary acquisition as it is helpful for reading skills. Teachers can introduce a central keyword from the reading passage and ask students to create a mind map by brainstorming related words, synonyms, antonyms, collocations or word families. This activity does not only expand students' lexical knowledge, but also improves reading comprehension as it introduces students to new vocabulary, making it easier to understand different passages.

5.3. Recommendations for the Educational System

5.3.1.Training Teachers on the Use of Mind Mapping Strategies

It is highly recommended for the Ministry of Higher Education to organise training workshops and seminars for EFL teachers on the effective use of mind mapping as a critical reading strategy in EFL classrooms. These training sessions can introduce teachers to various types of mind maps and integrate them into their lesson plans.

5.3.2.Providing Technological Tools for Mind Mapping

Most classrooms in Algerian universities are not equipped with digital tools that facilitate mind mapping activities like mind mapping software. It is recommended that the educational authorities

provide such tools to support the implementation of mind mapping in reading classes. Teachers can use online mind mapping platforms like MindMeister, Coggle, or XMind to design interactive activities that students can participate in using their personal laptops or smart phones. This can modernize the reading module and make it more aligned with 21st-century learning needs.

5.4. Recommendations for Future Research

To facilitate and enhance future research on the use of mind mapping as a strategy for improving students' reading comprehension, the following recommendations are suggested :

• **Integrating mind mapping software tools** : This study looked at students making mind maps by hand, but future research could try using digital tools like MindMeister or XMind. These programs let students add colors, pictures, and links to make their mind maps more interesting and organized. Using software might make mind mapping easier and faster, especially for students who enjoy working on computers. Researchers can study whether these digital tools help students learn better than traditional hand-drawn mind maps.

• **Comparative studies between manual and digital mind mapping** : Future research can also compare hand-drawn mind maps with digital ones to see which method works better. Some students may learn more when they draw their own maps, while others may prefer the flexibility and speed of computer tools. Comparing the two can help teachers know which method to use for different types of learners or tasks. This kind of study can show which style is more helpful for remembering information and thinking deeply about texts.

• **Expanding to other language skills :** Although this study focused only on reading, mind maps can also help with writing, listening, and speaking. For example, students can use mind maps to plan their writing, take notes while listening, or prepare for a speech. Future research could explore how mind maps help with these skills and if they improve students' general language ability. This would show how mind mapping can beused in more parts of language learning.

• **Investigating long-term effects:**This research showed that mind mapping helps students in the short term, but it's also important to know what happens in the long run. Future researchers could check if

students still use mind maps after a few weeks or months, and whether this continues to improve their reading and learning. This would help us understand if mind mapping is a strategy students can keep using on their own, and if it has a long-lasting impact on their study habits and performance

Conclusion

In this chapter, research hypotheses were discussed, then we provided some implications for EFL classrooms in an attempt to improve the quality of reading comprehension at the Department of English through the integration of mind mapping as a critical reading strategy, which allows students to better organize and summarize information, identify main ideas, and connect supporting details in a logical and visual way. Mind mapping activities can also promote collaboration between students and create an enjoyable and motivating classroom environment where learners feel free to share ideas and learn from each other. Recommendations are also suggested for the educational system to facilitate the use of mind mapping by providing training sessions for teachers and offering necessary materials and resources. At the end, we proposed some recommendations for future studies to explore the effectiveness of mind mapping on other language skills and in different learning contexts.

General Conclusion

This dissertation set out to explore the role of mind mapping as a strategy to develop critical reading skills among second-year EFL students at Chadli Bendjedid University. Through a combination of questionnaires and tests, the study aimed to assess students' current reading habits, their challenges with comprehension, and the effectiveness of mind mapping as a tool to improve their reading performance.

The findings showed that while most students are regularly exposed to English academic texts, they often struggle with understanding, organizing, and remembering information. Many rely on basic note-taking techniques and have difficulty identifying main ideas or making connections within texts. However, the majority of students were familiar with mind maps and expressed interest in using them as a learning strategy.

The experimental part of the study provided strong evidence that mind mapping has a positive impact on reading comprehension. Students who used mind maps performed better in tasks that required critical thinking, such as summarizing, drawing inferences, and identifying key points. The results confirmed all three hypotheses: that mind mapping improves critical understanding, enhances overall reading performance, and is well-received by students.

In addition to helping students process complex texts more effectively, mind mapping also made reading more engaging and less stressful. Students appreciated the visual nature of the technique and reported increased motivation and confidence.

Overall, the study concludes that mind mapping is not only a practical and effective reading strategy, but also a learner-friendly tool that supports deeper engagement with texts. It is recommended that mind mapping be integrated into EFL reading instruction and that future research continue to explore its impact across different language skills and learning contexts. By equipping students with strategies like mind mapping, educators can help learners move beyond surface-level reading and develop the critical thinking skills needed for academic success.

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Résumé

L'étude présente examine l'efficacité des cartes mentales en tant que stratégie de lecture critique dans l'amélioration des compétences en compréhension écrite des apprenants d'anglais comme une langue étrangère (EFL). Un plan expérimental a été mis en place, impliquant deux groupes : un groupe expérimental ayant bénéficié d'un entraînement à la stratégie des cartes mentales, et un groupe témoin ayant suivi un enseignement traditionnel de la lecture sans exposition à cette stratégie. Les deux groupes ont passé un pré-test et un post-test afin d'évaluer leurs performances en compréhension écrite. Les résultats ont révélé une amélioration significative des scores au post-test chez le groupe expérimental par rapport à leurs résultats au pré-test, ce qui suggère un impact positif de l'utilisation des cartes mentales sur leurs capacités de lecture critique. En revanche, le groupe témoin n'a montré qu'une amélioration marginale, probablement due à une progression naturelle de l'apprentissage plutôt qu'à une intervention stratégique. L'analyse statistique, incluant les moyennes et les écarts-types, a confirmé ces résultats en montrant une différence marquée entre les deux groupes après l'intervention. Ces résultats soulignent l'intérêt d'intégrer les cartes mentales dans l'enseignement de la lecture en EFL afin de favoriser une meilleure compréhension et un engagement critique plus profond avec les textes. L'étude recommande l'incorporation de telles stratégies d'apprentissage visuel dans les classes d'EFL pour promouvoir une analyse plus approfondie des textes et améliorer la compétence générale en lecture des apprenants.

الملخص

تهدف هذه الدراسة إلى استقصاء مدى فعالية استراتيجية الخرائط الذهنية بوصفها أداة بصرية داعمة في تنمية مهارات الفهم القرائي النقدي لدى متعلمي اللغة الإنجليزية كلغة أجنبية. اعتمدت الدراسة على تصميم شبه تجريبي شمل مجموعتين: مجموعة تجريبية تلقت تدريبًا ممنهجًا على استخدام الخرائط الذهنية أثناء أنشطة القراءة، ومجموعة ضابطة تلقت تعليماً تقليديًا دون الاعتماد على هذه الاستراتيجية. خضع أفراد المجموعتين لاختبارين، قبلي وبعدي، لقياس مدى تطور مهارات الفهم القرائي لديهم.

كشفت النتائج عن تحسّن ملحوظ في أداء المجموعة التجريبية في الاختبار البعدي مقارنة بأدائها في الاختبار القبلي، مما يعكس الأثر الإيجابي المباشر لاستخدام الخرائط الذهنية في تطوير القراءة النقدية. في المقابل، لم تُظهر المجموعة الضابطة سوى تحسّن طفيف يمكن إرجاعه إلى عوامل التعلم الطبيعية وليس إلى تدخل منهجي واضح. وقد أكدت النتائج الإحصائية، المستندة إلى تحليل المتوسطات والانحرافات المعيارية، وجود فروق ذات دلالة بين المجموعتين لصالح المجموعة التجريبية بعد تطبيق البرنامج التدريبي.

بناءً على هذه النتائج، توصي الدراسة بتوظيف استراتيجيات التعلم البصري، لا سيما الخرائط الذهنية، ضمن منهجيات تعليم القراءة لمتعلمي اللغة الإنجليزية، لما لها من دور فعّال في تعزيز قدراتهم على تحليل النصوص بعمق، ورفع كفاءتهم في الفهم القرائي النقدي.

Appendices

Appendix A

Pre-test Questionnaire

Assessing Reading Strategies and Mind Mapping Awareness

Objective: This questionnaire aims to assess your current reading strategies, challenges, and awareness of mind mapping as a learning tool. Please answer the following questions honestly.

Part 1: Your Reading Habits

1. **How often do you read academic texts in English?**

   ☐Every day

   ☐A few times a week

   ☐Once a week

   ☐Rarely

2. **How do you usually take notes when reading a text?***(Check all that apply)*

   ☐Highlighting important parts

   ☐Writing summaries

   ☐Making lists of key points

   ☐Drawing diagrams or charts

   ☐I don’t usually take notes

3. **Which part of reading comprehension do you struggle with the most?**

   ☐Understanding the main idea

   ☐Identifying key details

   ☐Seeing connections between ideas

   ☐Remembering information

4. **How do you usually organize the information you read?**

   ☐I write it down in full sentences

   ☐I list important points without connecting them

   ☐I try to categorize and structure ideas

   ☐I don’t organize the information at all

Part 2: Awareness of Mind Mapping

5. **Have you ever heard of the term “mind mapping”?**

   ☐Yes, I know what it is and use it

   ☐Yes, I’ve heard of it but don’t use it

   ☐No, I have never heard of it

6. **If you have used a mind map before, in what context did you use it?***(Check all that apply)*

   ☐Studying for exams

☐Organizing ideas for writing

7. ☐Summarizing books or articles

   ☐Planning projects or presentations

   ☐I have never used a mind map

8. **If you have used a mind map, how helpful was it for understanding a text?**

   ☐Very helpful

   ☐Somewhat helpful

   ☐Not very helpful

   ☐Not helpful at all

Part 3: Perceptions of Mind Mapping in Reading Comprehension

8. **How do you think a mind map could help in reading comprehension?**

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9. **Do you think using a mind map could help you improve your critical reading skills? Why or why not?**

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10. **Which of the following statements best describes your opinion on using diagrams or visual tools for studying?**

    ☐They are very helpful for understanding and remembering information

11. ☐They help a little, but I still prefer traditional note-taking

    ☐I don't find them useful

    ☐I have never tried using them

12. **Would you be interested in learning how to use mind mapping as a reading strategy?**

    ☐Yes, definitely

    ☐Maybe

    ☐Not really

13. **What do you expect to gain from learning about mind mapping?***(Check all that apply)*

    ☐Better understanding of texts

    ☐Easier organization of information

    ☐Improved memory retention

    ☐More confidence in answering comprehension questions

14. **On a scale of 1 to 5, how confident are you in your ability to analyze and organize ideas in a text?**

    (1 = Not confident at all, 5 = Very confident)

    ☐1

    ☐2

□3

15. ☐4

☐5

Appendix B

Pre-treatment & Post-treatment Tests

1. **Pre-treatment Test**

Instruction: Read the passage carefully and answer the following questions.

Passage:

The invention of the printing press by Johannes Gutenberg in the 15th century revolutionized communication. Before this invention, books were copied by hand, making them expensive and rare. The printing press allowed books to be produced quickly and in large quantities, spreading knowledge more widely. As a result, literacy rates increased, and ideas were exchanged more easily across Europe. However, some scholars argue that the rapid spread of information also led to misinformation and conflicts. Over time, printing technology advanced, leading to modern digital publishing.

Part 1: Understanding the Topic

1. What was the biggest impact of the printing press on society?
2. How did it change literacy and knowledge sharing?
3. Name one positive and one negative effect of the spread of printed information.

Part 2: Organizing Information

4. If you had to divide the passage into three main categories, what would they be?

5. Imagine creating a diagram about the printing press. What would be the central idea, and what key branches would connect to it?
6. What is one challenge you might face when organizing historical events into a diagram?

2. Post-Treatment Test

Based on the given text, draw a mind map of its key concepts**.**

Appendix C

Post-test Questionnaire

Students' Feedback on Using Mind Mapping for Reading Comprehension

Objective: Assess whether students found mind mapping helpful and how it affected their reading strategies.

1. **After using mind mapping, how do you feel about organizing information?**

   ☐Much easier than before

   ☐Somewhat easier

   ☐No difference

   ☐More difficult than before

2. **How did mind mapping help you with reading comprehension?***(Check all that apply)*

   ☐Understanding the main idea

   ☐Identifying key points

   ☐Seeing connections between ideas

   ☐Memorizing information

   ☐Summarizing the text effectively

3. **Compared to your previous reading strategies, do you think mind mapping is more effective?**

   ☐Yes, definitely

4. ☐Somewhat

   ☐Not really

5. **What challenges did you face while using mind maps?***(Check all that apply)*

   ☐Choosing the right keywords

   ☐Structuring the information

   ☐Connecting ideas

   ☐Making the mind map visually clear

   ☐Running out of space or making it too cluttered

6. **Did using a mind map change the way you engage with a text? If yes, how?***(Open-ended)*

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6. **Do you think mind mapping could be useful for other subjects beyond reading comprehension?***(Check all that apply)*

   ☐Yes, for summarizing lectures and notes

   ☐Yes, for brainstorming ideas in writing

   ☐Yes, for organizing research or projects

   ☐No, I don't think it's useful for other subjects

7. **How confident do you feel about using mind mapping independently in the future?**

   ☐Very confident

8. ☐Somewhat confident

   ☐Unsure

   ☐Not confident at all

9. **Would you recommend mind mapping as a reading strategy to other students? Why or why not?***(Open-ended)*

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9. **What improvements would you suggest for teaching mind mapping in the future?***(Open-ended)*

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10. **On a scale of 1 to 5, how likely are you to continue using mind maps in your studies?**

    ☐1 = Not at all likely

    ☐2

    ☐3

    ☐4

    ☐5 = Very likely