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Evaluating the Impacts of Mind Mapping Strategy on Developing EFL Students' Critical Reading Skills

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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 training and a control group that followed traditional reading instruction. Both groups were administered a pre-test and a post-test to assess their reading comprehension performance. A pre-experiment questionnaire was designed for both groups to explore the participants' reading habits, awareness of the mind mapping strategy, and thier attitudes regarding the strategy. A post-experiment questionnaire targeted the experimental group to reflect on their perceptions concerning the mind map strategy and its effects on their 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 impacts 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 findings of the questionnaires revealed positive attituds on the part of the participants regarding the strategy training and its impacts. 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 skill, Critical Reading, Critical Thinking , Mind Mapping Strategy,

INTRODUCTION

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).

Critical reading is different from simple reading because it needs students to think carefully and reflect on what they read. They have to look at the writer's message, judge how strong the ideas are, and link them in a way that makes sense.

Unfortunately, many EFL students have trouble with this since they weren't taught how to think in this way. Consequently, they continue to read at a basic level (Al-Mahrooqi & Denman, 2018).

Hadj Said (2024) says that in many Algerian universities, reading is mostly about understanding the words and translating the text. This means that students do reading-related tasks without really understanding what the texts mean. So, this problem shows how important it is to have good strategies that can help these students interact with texts more, which eventually leads to improve their critical reading skills.

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Mind-mapping is one of the strategies that has worked well. It is a visual and interactive tool that helps you understand things better and think more deeply. It helps students put together information by using branches, keywords, and links. Students should be able to break down difficult texts and see how different ideas are related by doing this. In short, mind mapping helps students think about information in a way that is both active and meaningful (Sabbah, 2015). Visual strategies like mind mapping are receiving more attention for their ability to effectively engage learners, even though other strategies like SQ3R (Survey, Question, Read, Recite, Review) and annotating are frequently used to promote critical reading. Nevertheless, they are still underutilised in EFL reading sessions, particularly in Algerian universities where traditional methods are still used (El Sayed, 2022).

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.

Research Questions

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?

Research Hypotheses

Following the research questions, it is hypothesized 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.

LITERATURE REVIEW AND RELATED STUDIES

Definition of Critical Reading

Many people agree that critical reading is an essential academic skill that entails active engagement with texts through interpretation, analysis, and evaluation. Instead of taking things at face value, critical readers look for bias or presumptions, the author's intention, the argument's logic, and the evidence (Paul & Elder, 2014; Fairbairn & Winch, 2011). Norton (2013) highlights that critical reading necessitates that readers ask questions about how and why ideas are presented rather than just what is being said in order to form well-informed opinions. Similar to this, Bean, Chappell, and Gillam (2014) emphasise the rhetorical component of reading critically and encourage students to evaluate the ways in which authors position readers, raise strong feelings, and build

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arguments. Critical reading, according to Cottrell (2017), is a systematic process of recognising important claims and assessing how well they are supported by the evidence. Furthermore, in academic settings, it is important to distinguish important ideas from secondary details as well as evaluating the accuracy of information are stressed by Brown and Day (1983). All in all, each of these perspectives characterise critical reading as a higher-order cognitive process that combines understanding with assessment and self-reflection

Critical Reading Techniques

Many techniques can be used to promote critical reading such as:

Previewing the text which is a quick scan of the title, headings, and introduction to understand the main idea and organisation of the text (Langan, 2014).

Annotating is the process of asking questions, writing remarks, and taking notes to record ideas and responses (McWhorter, 2012).

Questioning the text by raising critical questions such as: What is the author's argument? Wallace and Wray (2016).

Making inferences by deducing conclusions about what has been read which are generally implied (Langan, 2014).

Summarizing and paraphrasing rewriting the text ideas in the reader's words to ensure understanding (McWhorter, 2012).

Evaluating evidence and reasoning which is assessing the accuracy, appropriateness, of the evidence used (Wallace & Wray, 2016).

Mind mapping and Related Studies

A mind map represents information in a visual way by organizing ideas around a central subject, showing correlations between main ideas and supporting details through branches. Mind mapping as a visual learning method, significantly enhances critical reading in EFL contexts. According Buzan (2010) mind maps help organise information in a logical order, connect concepts, generate ideas , and construct thoughts. Furtheremore, Mind mapping bridges the gap between language understanding and meaning-making in language learning. EFL students struggle to understand complex academic texts because of the huge amount of vocabulary and unfamiliar structures. By chuncking information into small portions, mind maps facilitate understanding and make the text easy to be critically evaluated (Al-Jarf, 2009).

Numerous empirical studies highlight the effectiveness of mind mapping (both traditional and digital) in developing EFL students' critical reading abilities. Khoder (2024) investigated how the Mind Mapping Strategy (MMS) affected the critical reading abilities of grade 10 EFL students in Lebanon. According to the study, students' scanning, skimming, and inference-making skills significantly improved after using MMS. Another study conducted by Bandara and Prahalathan (2023) to evaluate the impact of mind mapping on the reading comprehension of ESL students. They found that the experimental group's post-test results showed a noticeable improvement when compared to the control group. ESL Students showed positive openions regarding mind mapping as a tool for enhancing vocabulary awareness and reading comprehension. In 2022, Hazaymeh and Alomery investigated how university EFL students in the United Arab Emirates used visual mind mapping as a reading strategy. They claimed that students who used mind mapping showed statistically significant improvements in reading comprehension and critical thinking. Baghagho (2020) found that digital mind mapping has been shown to be a useful tool for improving EFL students' reading comprehension and fostering the growth of critical reading abilities. Moreover, Siriphanich and Laohawiriyanon (2010) conducted a study exploring the effect of mind mapping on EFL students' reading comprehension. According to the study's findings, mind mapping greatly enhanced students' comprehension abilities and was positively appreciated.

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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 Chadli Bendjedid University during the academic year of 2024/2025.

Population and Sampling

The sample of this study consisted of 30 second-year LMD students in the English department at Chadli Ben Djedid University during the academic year 2024/2025 . The sampling selection process was not random (purposive selection), and that because they have an intermediate level of English. they still face challenges in developing critical thinking skills as well as applying effective reading strategies and most important, they studied the text studies module which is the core of the experiment. All the participants voluntarily paticipated in the study as the researcher ensured participant consent.

This study targeted a sample of 30 second year students of English at Chadli Bendjedid University. They were divided into two groups: an experimental group comprised of (15) students received the mind mapping treatment, and a control group consisted of (15) students learn in the traditional way. All participants were involved in the data collection process, which included two questionnaires, two reading comprehension tests, and an experiment (for the experimental group only) focused on mind mapping as a critical reading strategy. Both groups completed each stage in the same order: a first questionnaire, a pre-test, the experiment sessions (only the experimental group), a post-test, and finally a reflection questionnaire for the experimental group. Therefore, mind mapping strategy was introduced to enhance their critical thinking and critical reading skills.

Research Design

This research used an experimental design, focusing on evaluating the impact of mind mapping on students' critical thinking and critical reading skills. An experimental approach was chosen as the study explores learners' performance(pre and post tests) and perceptions based on their responses (pre and post questionnaires). A mixed-methods approach was employed to analyse the data collected through the two questionnaires and the statistical analysis (SPSS) for the two tests.

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-experiment questionnaire was delivered to gather students' reflections on the use of mind mapping in reading.

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 Chadli Bendjedid University understand and apply mind mapping when they engage with different reading tasks. The questionnaire included 13 questions divided into three sections.

Section One is about the learners' Reading Habits. It attempted to gather information about the students' reading habits. It included 4 questions related to the frequency of reading as well as what they struggle with the most during reading. Section Two was about the learners' awareness of mind mapping. The section aimed 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 the individual performance. Moreover, Section Three was devoted to learners' perception of mind mapping in reading

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comprehension. This final section of this questionnaire attempted 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.

Pre-test

During the first session, the first test was administered to students from both groups. 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 entitled "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.

The Experiment

After the pre-test, the treatment -mind mapping strategy- was introduced to the students. The rirst session devoted to the 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. The second and the third sessions were desgined to encourage participation and ensure understanding; several students were invited to the board to create mind maps based on familiar topics after they had seen variety of mind map examples . This practical activities aimed to prepare the students for applying the technique in the post- test.

Post-test

At the end of the third 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 mind maps based on its content. This task aimed to assess whether students could visually organise ideas, identify relationships, as well as structure information more effectively by using the strategy.

Post-experiment Questionnaire

A post-experiment questionnaire was distributed after the post-test. It consists of 10 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 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.

Analysis of the Pre-experiment Questionnaire

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

According to the results, (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?

The question results 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.

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

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Results 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?

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.

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

According to the question results, (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?

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?

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. These findings indicate that the majority of participants view mind mapping as a generally effective tool for supporting their understanding of texts.

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 their 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?

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results 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, none 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 material.

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

According to the participants answers, 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 towards 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)

results demonstrate 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)

According to the sample responses, (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.

Analysis of the Pre-Test Results

Before implementing the experiment, a pre-test was administered to both groups 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. Students also found it hard to show which ideas are more important than others, a key skill for making effective diagrams. The students'

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answers were scored out of 6 points based on their understanding and completeness.The following table presents the pre-test results of the both groups.

Table 1:Pre-test Results of the Experimental and Control Groups

	mean	**Standard Deviation SD**	**Significance (P-Value)**
Experimental group	3.73	1.58	0.96
Control group	3.70	1.68	

Table 1indicated that the experimental group showed an average performance (mean = 3.73 with an SD≈ 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. Similarly, the control group also demonstrated a comparable average performance (Mean = 3.70, and an SD ≈ 1.68), with P-value (0.96) which is more than (0.05). Therefore, there was no statistical significant difference between both groups' performance. Hence, both groups were at a similar skill level at the starting point.

Analysis of the Post-Test Results

Following the three sessions of the experiment 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 2:Post-test Results of the Experimental and Control Groups

	mean	**Standard Deviation SD**	**Significance (P-Value)**
Experimental group	5.27	0.68	0.0051
Control group	4.00	1.46	

After receiving a treatment, the experimental group showed a clear improvement in the post-test(Mean = 5.27 with an SD = 0.68). The higher mean and lower standard deviation indicate not only better performance but also greater consistency among students. In contrast, 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 a slight improvement in their performance, and did not improve as much as the experimental group. Therefore, mind mapping strategy has effective role in enhancing the students' critical reading skills.

Analysis of the Post-experiment Questionnaire

This section is devoted to the analysis of the pre-experiment questionnaire which is administred to the experimental group to reflect on the mind mapping strategy treatment.

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

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 reported that it was "more difficult than before" or that there was "no difference". This suggests a generally positive perceptions of min mapping as a tool for enhancing the organisation of information.

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

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Table 3: 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 helped with identifying key points in a text, while (23.3%) believed that 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 viewed 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 4: Effectiveness of Mind Mapping

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

Based on the students answers, (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 indicated 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 5: 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

The majority of the students (43.5%) 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 ‘it improved my ability to focus on main ideas’ and ‘it enhanced my understanding of the relationships between different points in a text’, others said ‘it is very helpful and engaging’ while some said

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'it simplifies the content and transfers it from a text to visual content' . 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 materials.

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

Table6: 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%**
population	**16**	**14**	**18**	**0**

These results demonstrated that students perceived 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 suggested that students viewed 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 7: Confidence About Using Mind Mapping Independently

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

According to the results, (53.3%) of the 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 suggested that the treatment 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. Therefore, they said 'mind mapping makes reading as an easy task, it would facilitate others with difficult tasks' . Additionally, several participants noted that mind mapping could assist peers who experience difficulties with comprehension or memory retention; they said 'mind mapping is very helpful, it helps classmates to understand and memorize information'. Overall, these responses suggest that students did not only find 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 'it would be better to provide more examples, clear explanation, and more time for practice'. Others suggested 'mind mapping will be more attractive when incorporating colours or digital tools to

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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 8: 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 suggested that the majority of students perceived mind mapping as a valuable tool, and they are open to incorporate it into their ongoing learning processes.

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 the main and supporting ideas. These findings validated the first hypothesis (H1), which suggested 'Mind mapping will have a positive impact on students' ability to analyze and understand texts critically'.

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 were open to using new strategies 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, as well as the first research question 'How effective is mind mapping as a strategy for developing critical reading among EFL learners? Has been answered.

The second hypothesis (H2) suggested 'Students who are exposed to mind mapping will show noticeable improvement in their reading performance'. The hypothesis was confirmed when comparing the experimental group pre-test and post-test scores. After using mind maps, the group performed much better in the post-test. The participants showed improvement 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 showed a slight improvement in performance, due to the lack of the strategy training. This comparison shows that mind mapping had a 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.

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Moreover, the questionnaire results also support the post-test results. Participants said that they usually highlight important points or make simple lists when reading. Whereas, very few participants used more structured ways to organize what they read. In addition, most students mentioned that they suffered to connect ideas or group them clearly when taking notes. However, mind mapping seemed to help them overcome these issues. By providing a visual way to connect ideas, mind maps helped students organize their thoughts and understand the text in a more complete way. These findings were supported by differences in the tests results between the two groups which confirmed that this strategy made a real difference in how well students performed. Therefore, the second research question 'How effective is mind mapping as a strategy for developing critical reading among EFL learners? Has been answered.

The third hypothesis (H3) proposed 'Learners will have a generally positive attitude towards using mind mapping during reading tasks' was validated. According to the questionnaire findings, (83.33%) of students were being familiare to mind mapping, and (80%) of them showed high interest in training mind mapping for reading. This showed that students are willing to try mind mapping in their academic work due to its usefulness. Students further clarified 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. Therefore, mind mapping did not only improve academic performance, but also raised motivation and self-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, but it is also engaging and encouraging for learners. The students' attitudes tawords mind mapping answered the research third question that stated 'How do students perceive the use of mind mapping in their reading activities?

CONCLUSION

This study 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 strategy 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, 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.

All in all, 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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