EDUTECH : Jurnal Inovasi Pendidikan Berbantuan Teknologi
Vol. 6, No. 3, Juni-Agustus 2026
e-ISSN : 2797-0140 | p-ISSN : 2797-0590
Online Journal System : https://jurnalp4i.com/index.php/edutech

STUDENTS' PERCEPTION OF USING NAPKIN AI-ASSISTED MIND MAPPING IN READING COMPREHENSION LEARNING

Verawati Mynjana, Sidik Indra Nugraha
Universitas Singaperbangsa Karawang
e-mail: 221031060048@student.unsika.ac.id

Diterima: *28/05/2026*; Direvisi: *15/06/2026*; Diterbitkan: *30/06/2026*

ABSTRAK

Kemampuan membaca pemahaman merupakan salah satu keterampilan penting dalam pembelajaran bahasa Inggris yang masih menjadi tantangan bagi banyak siswa, sehingga diperlukan strategi pembelajaran yang inovatif dan didukung teknologi. Penelitian ini bertujuan untuk mengeksplorasi persepsi siswa terhadap penggunaan mind mapping berbantuan Napkin AI dalam pembelajaran pemahaman membaca. Penelitian ini menggunakan pendekatan kualitatif dengan teknik observasi dan wawancara yang dilakukan pada siswa kelas VIII SMP Islam At-Thohariyah. Partisipan penelitian terdiri atas enam siswa yang dipilih secara purposive berdasarkan variasi kemampuan membaca. Hasil penelitian menunjukkan bahwa sebagian besar siswa memiliki persepsi positif terhadap penggunaan Napkin AI dalam kegiatan membaca. Siswa merasakan berbagai manfaat, seperti kemudahan dalam mengidentifikasi ide pokok, peningkatan pemahaman isi teks, serta kemudahan mengingat informasi melalui visualisasi mind map. Selain itu, penggunaan teknologi ini juga meningkatkan keterlibatan dan motivasi siswa dalam proses pembelajaran. Namun demikian, beberapa tantangan masih ditemukan, antara lain keterbatasan dalam penggunaan teknologi, kebutuhan waktu untuk beradaptasi, serta kesulitan dalam menentukan kata kunci yang sesuai. Secara keseluruhan, penelitian ini menyimpulkan bahwa mind mapping berbantuan Napkin AI memiliki potensi yang kuat sebagai strategi yang efektif dalam mendukung pembelajaran membaca pemahaman, khususnya dalam membantu siswa mengorganisasi informasi secara lebih terstruktur dan visual.

Kata Kunci: *Napkin AI, Mind Mapping, Membaca Pemahaman, Persepsi Siswa.*

ABSTRACT

Reading comprehension is an essential skill in English language learning; however, many students still experience difficulties in understanding texts, highlighting the need for innovative technology-assisted learning strategies. This study aims to explore students' perceptions of using Napkin AI-assisted mind mapping in reading comprehension learning. This research employed a qualitative approach using observation and interviews conducted with eighth-grade students at SMP Islam At-Thohariyah. The participants consisted of six students selected purposively based on variations in reading ability. The findings revealed that most students had positive perceptions of using Napkin AI in reading activities. Students reported several benefits, including improved ability to identify main ideas, better comprehension of texts, and enhanced memory through visual mind mapping. In addition, the use of this technology increased students' engagement and motivation in learning. However, some challenges were also identified, such as limited technological familiarity, the need for adaptation, and difficulties in selecting appropriate keywords. Overall, the study concludes that Napkin AI-assisted mind mapping has strong potential as an effective strategy in supporting reading comprehension

https://doi.org/10.51878/edutech.v6i3.11654

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e-ISSN : 2797-0140 | p-ISSN : 2797-0590
Online Journal System : https://jurnalp4i.com/index.php/edutech

learning, particularly in helping students organize information in a more structured and visual manner.

Keywords: *Napkin AI, Mind Mapping, Reading Comprehension, Students' Perceptions*

INTRODUCTION

One of the essential skills in English language learning that must be mastered is reading comprehension. This skill is not only related to the ability to recognize words and sentence structures, but also involves complex cognitive processes such as identifying main ideas, drawing conclusions, and connecting information within the text to prior knowledge (Woolley, 2011; Kendeou et al., 2016). Therefore, reading comprehension becomes a crucial and fundamental aspect of successful English language learning.

In practice, many students still experience difficulties in understanding English texts (Putri & Hendriani, 2024). If this issue is not addressed promptly, students may encounter obstacles in comprehending other text-based learning materials and face challenges in developing critical and analytical thinking skills. These difficulties are often caused by limited vocabulary, a lack of effective reading strategies, and students' low ability to organize information from texts (Adauwiyah, 2023; Vaughn, Boardman, & Klingner, 2024). This indicates that mastering reading comprehension cannot be achieved merely through repeated reading; rather, it requires instructional strategies that help students understand and process information in a more systematic and meaningful way. Therefore, innovative learning strategies are needed that are not only effective but also adaptable to students' characteristics and needs in the modern era.

One strategy that can be applied in this context is the Mind Mapping Technique, introduced by Tony Buzan in the early 1970s. This technique enables students to map relationships between concepts, thereby facilitating a more comprehensive understanding of the text (Kachak, T. & Kachak, K., 2022). In the context of reading comprehension, mind mapping helps students identify main ideas, summarize key information, and improve memory through visual representation (Wafa'A & Alomery, 2022). The process involves determining the main idea, developing subtopics, using keywords, and incorporating symbols or colors to strengthen understanding (Kachak, T. & Kachak, K., 2022). The advantage of this strategy lies in its ability to activate deeper cognitive engagement, allowing students not only to read but also to process and construct meaning from the text.

Along with technological advancements in the digital era, the use of Artificial Intelligence (AI) in education has grown significantly (Barakina et al., 2021). AI offers convenience in organizing information, generating visualizations, and supporting more interactive learning experiences (Alam & Mohanty, 2023). According to Truong and Nguyen (2025), one platform that can be utilized is Napkin AI, which allows users to create mind maps quickly, systematically, and interactively. Students who utilize AI in creating mind maps have the potential to enhance the effectiveness of this strategy, as they are not solely reliant on conventional abilities but are also supported in developing ideas and structuring their understanding more efficiently (Zamia et al., 2025). This is important to examine further, considering that the integration of AI in education is part of the transformation in the digital era that demands innovation in teaching strategies. Moreover, the use of AI has the potential to bridge gaps in students' reading comprehension abilities by providing more accessible visual and structural support.

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Several recent studies have examined the integration of AI and mind mapping in learning. Research by Truong and Nguyen (2025) shows that the use of Napkin AI significantly improves students' learning outcomes and knowledge retention, emphasizing the importance of user perception and cognitive engagement in maximizing the effectiveness of AI-based learning (Truong & Nguyen, 2025). In addition, research by Riyani (2025) found that the use of AI-based reading tools such as ChatGPT significantly enhances EFL students' reading comprehension and learning engagement compared to conventional methods (Riyani, 2025). In terms of user perception, Langley (2025) revealed that teachers have positive views toward the use of AI technology in improving students' reading abilities, particularly in reading fluency and comprehension, although there are still limitations in knowledge and implementation of such technologies (Langley, 2025). Meanwhile, research by Al-Khatib et al. (2025) indicates that the use of AI applications combined with mind mapping can improve elementary students' comprehension and data analysis skills, as well as promote engagement and critical thinking, although its implementation requires adequate infrastructure and training.

Although these studies demonstrate that AI and mind mapping have significant potential in supporting the learning process, most of them still focus on the effectiveness of learning outcomes and have not deeply explored students' perceptions as the primary users, particularly in the context of using Napkin AI in reading comprehension learning. Therefore, there remains a research gap in understanding how students perceive, experience the benefits of, and encounter challenges in using this technology as part of reading instruction. This gap highlights the importance of conducting research that focuses on students' direct experiences so that AI-based technology implementation can be better aligned with students' needs, preferences, and real classroom conditions.

This research gap is also relevant in the context of English language learning at the junior high school level, where students are still in the developmental stage of basic text comprehension and require instructional strategies suited to their characteristics. In this context, the present study is conducted at a junior high school, namely SMP Islam At-Thohariyah, as a representation of an EFL learning environment that faces similar challenges in mastering reading comprehension. Furthermore, this context is expected to provide a more realistic picture of how AI-based strategies are received by students in actual classroom settings.

Based on the aforementioned research background, this study aims to explore students' perceptions of the use of Napkin AI-assisted mind mapping in reading comprehension learning. Specifically, this study seeks to answer questions regarding how students perceive the use of this technology, what benefits they experience, and what challenges they encounter during the learning process. Thus, this study is expected to provide a more comprehensive understanding of the implementation of AI-based strategies in reading instruction.

METHODS

This study employed a qualitative descriptive design to explore students' perceptions of using Napkin AI-assisted mind mapping in reading comprehension learning. The study was conducted at SMP Islam At-Thohariyah and involved six eighth-grade students selected through purposive sampling. The participants represented different levels of reading ability, consisting of two high-achieving students, two moderate-achieving students, and two low-achieving students. This variation was intended to provide a comprehensive understanding of students' perceptions across different reading proficiency levels.

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Data were collected through classroom observations and semi-structured interviews. During the learning process, students read a narrative text entitled *Malin Kundang* and created mind maps using Napkin AI based on the narrative structure, including orientation, complication, and resolution. Observations were conducted to examine students' participation, engagement, and difficulties encountered during the activity. Subsequently, semi-structured interviews were carried out to explore students' perceptions, perceived benefits, and challenges regarding the use of Napkin AI-assisted mind mapping in reading comprehension learning.

The research instruments consisted of an observation checklist, field notes, and an interview guide. The collected data were analyzed using thematic analysis following the interactive model of Miles, Huberman, and Saldaña (2014), which involved data reduction, data display, and conclusion drawing. To ensure the trustworthiness of the findings, method triangulation was applied by comparing observation and interview data. In addition, participant confidentiality was maintained throughout the research process, and all participants provided consent before data collection was conducted.

RESULT AND DISCUSSION

Result

The findings above indicate that the implementation of Napkin AI-assisted mind mapping not only supported students in organizing information more systematically, but also influenced their perceptions, perceived benefits, and learning challenges differently according to their reading ability levels. These variations suggest that the effectiveness of AI-assisted learning strategies is closely related to students' individual readiness and comprehension skills in reading activities. Classroom observations showed that students with higher reading proficiency were able to complete the mind-mapping tasks more independently, while students with lower proficiency frequently sought assistance from peers and teachers. Most students appeared engaged during the activity and actively interacted with the visual representations generated through Napkin AI.

Table 1. Interview Results on Students' Perceptions toward the Use of Napkin AI

Student	Ability Level	Students' Interview Responses	Perception
MR	High	"...it is easier to identify the main ideas, and the content of the story becomes clearer overall."	Positive
ANA	High	"...I still feel confused at times, so it feels just ordinary."	Neutral
RS	Medium	"...it is somewhat helpful, but not significantly different."	Neutral
TS	Medium	"...it helps me understand the storyline more quickly and in a more organized way."	Positive
RFM	Low	"...it is still difficult even when using Napkin AI."	Negative
DC	Low	"...I am confused about how to use it, so it feels no different from the usual method."	Negative

Based on Table 1, students' perceptions toward the use of Napkin AI in reading comprehension learning varied according to their ability levels. Students with high ability levels (MR and ANA) demonstrated different perceptions, in which one student showed a positive

https://doi.org/10.51878/edutech.v6i3.11654

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e-ISSN : 2797-0140 | p-ISSN : 2797-0590
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perception while the other demonstrated a neutral perception. Similarly, students with medium ability levels (RS and TS) also displayed two types of perceptions, namely neutral and positive.

On the other hand, students with low ability levels (RFM and DC) tended to demonstrate negative perceptions toward the use of Napkin AI. The interview excerpts in the table indicate that students with positive perceptions felt that it was easier to understand the main ideas and storyline, whereas students with neutral perceptions considered Napkin AI sufficiently helpful but not significantly different from conventional learning methods. Meanwhile, students with negative perceptions stated that they still experienced difficulties and felt that the use of Napkin AI was no different from traditional learning approaches.

Table 2. Interview Results on the Benefits of Using Napkin AI to Support Reading Comprehension

Student	Ability Level	Excerpt	Benefit
MR	High	"...I can immediately identify the main point of the story, and the storyline becomes clear."	Very helpful
ANA	High	"...it is easier to remember the content of the text because I only need to look at the key points."	Very helpful
RS	Medium	"...it is quite helpful, but I still need to reread the text."	Quite helpful
TS	Medium	"...it helps, but sometimes I am still confused about determining the main idea."	Quite helpful
RFM	Low	"...it helps a little, but I still find it difficult and confusing."	Less helpful
DC	Low	"...it is not very helpful, and I am still confused."	Not helpful

Based on Table 2, the benefits of using Napkin AI in reading comprehension learning also varied according to students' ability levels. Students with high ability levels (MR and ANA) categorized the use of Napkin AI as "very helpful," as reflected in their statements that they could more easily identify the main ideas, understand the storyline, and remember the text content through the points presented in the mind map.

Meanwhile, students with medium ability levels (RS and TS) categorized Napkin AI as "quite helpful." The interview excerpts revealed that Napkin AI assisted them in understanding the text; however, they still needed to reread the text and occasionally experienced difficulties in determining the main ideas. On the other hand, students with low ability levels (RFM and DC) categorized the use of Napkin AI as "less helpful" and "not helpful." This was reflected in their statements indicating that they still experienced difficulties and confusion in comprehending the text despite using Napkin AI.

Table 3. Interview Results on the Challenges of Using Napkin AI to Support Reading Comprehension

Student	Ability Level	Excerpt	Challenge
MR	High	"...I was confused at first, but after trying it, I understood how to use it."	Initial adaptation
ANA	High	"...I was not familiar with the features and needed time to adjust."	Adjustment to usage

https://doi.org/10.51878/edutech.v6i3.11654

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RS	Medium	"...I was confused about identifying the main ideas and needed help from my classmates."	Difficulty understanding the text
TS	Medium	"...I did not know which information was important, so I asked the teacher."	Difficulty organizing information
RFM	Low	"...I was confused from the beginning and often needed assistance."	Overall difficulty
DC	Low	"...I experienced difficulties in all stages and frequently asked my friends for help."	Dependence on assistance

Based on Table 3, the challenges faced by students in using Napkin AI varied according to their ability levels. Students with high ability levels (MR and ANA) experienced challenges during the initial stage of using the application, which were categorized as "initial adaptation" and "adjustment to usage." These challenges included confusion regarding the application features and the need for time to adapt to the platform.

Meanwhile, students with medium ability levels (RS and TS) experienced challenges related to text comprehension and information processing, namely "difficulty understanding the text" and "difficulty organizing information." This was reflected in the interview excerpts, which indicated confusion in determining the main ideas and selecting important information. On the other hand, students with low ability levels (RFM and DC) faced more complex challenges, categorized as "overall difficulty" and "dependence on assistance." These students experienced difficulties in various aspects of using Napkin AI and frequently required help from others during the learning process.

Discussion

The findings of this study revealed that the implementation of Napkin AI-assisted mind mapping in reading comprehension learning was conducted through systematic stages, namely pre-reading, while-reading, and post-reading activities. This structure reflects a reading instruction approach that positions students as active meaning constructors rather than passive recipients of information. Within the framework of schema theory, the activation of prior knowledge during the pre-reading stage plays an important role in helping students connect new information with their previous experiences, thereby making comprehension more meaningful (Ajideh, 2003; Jiang & Zhang, 2025).

During the while-reading stage, students were not only asked to read the text as a whole, but were also guided to identify and understand the narrative text structure more deeply, including orientation (introduction of characters, time, and setting), complication (the emergence of conflict or problems), and resolution (the resolution of conflict). The teacher guided students by instructing them to highlight important parts of the text, such as sentences indicating the setting, main events, and plot developments leading to the conflict. In addition, students were asked to note keywords or main ideas from each section as an initial step in organizing the information they read.

This process indicates that the reading activity was no longer passive or limited to understanding words and sentences, but had developed into a deeper understanding of how the text was logically and systematically organized. By recognizing the organizational patterns of the text, students began to understand the relationships among different parts of the story and

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the progression of events from beginning to end (Vaughn, Boardman, & Klingner, 2024). This helped students construct a more comprehensive understanding because they focused not only on the content but also on the way information was presented within the text.

Furthermore, the use of Napkin AI in creating mind maps strengthened the information-processing process through more structured and systematic visual representation. In this activity, students were not merely copying information from the text; instead, they were required to select important information, simplify the content, and connect ideas into branches of concepts. This process demonstrates higher-order cognitive activities, such as identifying, classifying, and organizing information based on the relationships of meaning contained within the text.

In this context, mind mapping functioned as a cognitive support tool that facilitated students in managing complex information into a simpler and more understandable form (Hwang, Shi, & Chu, 2011; Shi et al., 2023). By placing the main topic at the center and developing subtopics into branches, students were able to see the relationships among different parts of the text more clearly. In addition, the use of keywords in mind maps helped students focus on the core information without being overwhelmed by excessive details.

The support of AI-based technology through Napkin AI further strengthened this process by providing features that facilitated students in organizing and developing ideas more quickly. Students no longer needed to start entirely from scratch manually because the system could help generate an initial framework that they could later modify according to their own understanding. This enabled students to focus more on the thinking and comprehension process rather than the technical aspects of creating mind maps.

Thus, the use of Napkin AI functioned not only as a visualization tool but also as a facilitator in the process of knowledge construction. Students were able to build more directed understanding because they actively connected one piece of information to another. As a result, their thinking process became more systematic, logical, and structured, which ultimately contributed to the improvement of reading comprehension skills.

From the perspective of students' perceptions, the findings showed that students' responses toward the use of Napkin AI-assisted mind mapping were not uniform, but varied according to their reading ability levels. Students with high reading ability tended to demonstrate positive perceptions because they were able to utilize the features of Napkin AI to organize information more clearly and systematically. They felt that the use of mind maps helped them see relationships among ideas, understand the storyline, and identify key information without repeatedly rereading the text.

Meanwhile, students with medium reading ability tended to show neutral perceptions. They acknowledged that Napkin AI provided support in understanding the text, especially in parts such as story introduction and conflict development. However, these benefits were not fully experienced because they still faced difficulties in determining the main ideas and connecting information appropriately. Consequently, the use of this technology did not yet provide a highly significant difference compared to conventional learning methods.

On the other hand, students with low reading ability demonstrated more negative responses toward the use of Napkin AI. They experienced difficulties not only in understanding the text content but also in operating the application and constructing mind maps appropriately. This condition caused them to feel that the use of Napkin AI was not particularly helpful; in some cases, it even increased confusion because they had to deal with two demands simultaneously, namely understanding the text and operating the technology.

https://doi.org/10.51878/edutech.v6i3.11654

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These differences in perception indicate that acceptance of technology in learning is strongly influenced by students' fundamental abilities. Students with better reading skills tended to adapt more easily and utilize technology more effectively, whereas students with lower ability levels required additional support to experience similar benefits. Therefore, the variations in perception found in this study reflect the relationship between students' ability levels and the effectiveness of using Napkin AI in reading comprehension learning.

In terms of benefits, this study found that the use of Napkin AI-assisted mind mapping provided significant support in helping students understand texts more deeply, particularly in identifying main ideas, understanding storylines, and remembering important information. Through the process of creating mind maps, students not only read the text but also selected and summarized information into keywords representing the content of the reading passage. This activity encouraged students to think analytically because they had to determine which information was the most important and relevant to include in the concept map.

In addition, the use of mind mapping helped students understand the storyline more systematically because the branching structure enabled information to be organized according to the sequence and relationships among events. Students could clearly observe how the beginning of the story developed into conflict and eventually reached resolution, making their understanding of narrative structure more apparent. This was especially helpful in narrative texts, where plot development and relationships among events are central to understanding the content.

Presenting information in visual form also provided cognitive advantages because students could directly observe relationships among concepts without rereading the entire text (Kalyuga, 2012; Castro-Alonso et al., 2021). Through the use of colors, branches, and idea groupings, information became easier to process and remember (Diachenko et al., 2022). Students could quickly retrieve important information simply by looking at the mind map, thereby increasing efficiency in the learning process (Rajaram, 2023).

Therefore, the combination of verbal information from the text and visual representation in mind maps strengthened students' comprehension processes (Kachak, T., & Kachak, K., 2022; Wafa'A & Alomery, 2022). This process enabled deeper information processing because students did not merely receive information but also reorganized it into a simpler and more structured form (Fisher & Frey, 2021). As a result, students' comprehension of the text became clearer, more directed, and retained longer in memory.

However, these benefits were not experienced equally by all students. Students with medium and low ability levels still experienced difficulties in determining important information from the text. This condition indicates that the use of technology does not automatically improve comprehension without sufficient foundational skills.

In addition to the benefits, this study also identified various challenges faced by students when using Napkin AI. Some students experienced difficulties in understanding the application features, while others encountered obstacles in determining main ideas and organizing information. These challenges indicate that the use of technology may increase the complexity of the learning process if it is not supported by adequate guidance.

From the perspective of cognitive load theory, the use of technology involving multiple simultaneous activities may increase students' mental demands (Ibrahim et al., 2025). Students were required not only to comprehend the text but also to operate the application and organize information visually (Kang, 2004). For students with lower ability levels, this condition could create greater difficulties in understanding the learning material.

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These findings imply that the use of technology in learning should be accompanied by appropriate support strategies. Teachers need to provide clear instructions and continuous guidance so that students can use technology effectively. In addition, learning approaches should be adjusted to students' ability levels to ensure that the benefits of technology can be optimally experienced.

This study also has several limitations that should be considered when interpreting the findings. The limited number of participants means that the results cannot yet be generalized broadly. Furthermore, the focus on only one type of text also limits the variety of learning contexts that could be analyzed.

Overall, this discussion demonstrates that the use of Napkin AI-assisted mind mapping has strong potential in supporting reading comprehension learning. Students' perceptions, the benefits they experienced, and the challenges they encountered indicate that technology can become an effective learning tool when implemented with appropriate approaches. Therefore, the integration of technology into learning should consider students' readiness in order to produce optimal outcomes.

CONCLUSION

This study concludes that the use of Napkin AI-assisted mind mapping contributes positively to reading comprehension learning by helping students understand, organize, and retain information from texts more effectively. Most students demonstrated positive perceptions of the strategy, particularly in terms of identifying main ideas, understanding storylines, and improving engagement during reading activities. However, several challenges were identified, including difficulties in adapting to the technology, determining key information, and operating the application, especially among students with lower reading proficiency. These findings indicate that the effectiveness of AI-assisted learning tools is influenced by students' readiness and reading ability levels. Therefore, Napkin AI-assisted mind mapping can serve as a promising instructional strategy for reading comprehension, provided that teachers offer adequate guidance and support throughout the learning process. The findings also imply that the integration of AI-based tools in English language learning should be accompanied by appropriate scaffolding to ensure that students with diverse ability levels can benefit from the technology effectively.

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