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Digital Mind Mapping in EFL Learners‘ Speaking: Seeking The Improvement

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Abstract. This study explores the integration of digital mind mapping to enhance the speaking skills of ninth-grade learners at SMP Darul Hikmah Kutoarjo. The research adopts a CAR, which is a Classroom Action Research approach, which is conveyed over two stages. This research addresses concerns, particularly limited idea generation, less motivation in speaking, and lack of self-confidence among learners. Data analysis employed research findings, data visualization, and data reduction techniques. Results indicated a notable improvement in learners' speaking skills, with mean scores increasing from 63.5 in cycle 1 to 70.1 in cycle 2. The study observed a progressive percentage increase of approximately 9.29% in cycle 1 and 10.39% in cycle 2, highlighting significant enhancements in learners' speaking proficiency.

Keywords: Digital mind mapping, Speaking skill, Classroom Action Research

1. INTRODUCTION

Speaking is a crucial aspect of modern life, enabling humans to interact and communicate effectively. Speaking is the ability to use language appropriately for effective oral communication in social interactions [1]. In addition to spoken words, nonverbal cues, including body language, gestures, and facial expressions, are used in this kind of conversation. Speaking occurs in real-time, challenging learners to quickly plan, process, and produce language [2]. Consequently, spoken language differs significantly from written language, allowing more time to prepare, edit, and correct. Therefore, speaking is a complex skill that involves multiple components of language.

Unlike interactive speaking, where conversation typically occurs directly or indirectly between the speaker and the listener, non-interactive speaking involves no interaction between the speaker and the listener. It occurs when a speaker records a speech for a radio broadcast, performs in a play, recites a poem, or sings a song [3], [4]. In support of this, Brownpoints out that long-form oral production tasks, including speeches, oral presentations, and storytelling, offer limited opportunities for listener interaction, often restricted to nonverbal responses or absence [5] [6]. Moreover, to excel in non-interactive speaking, the speaker must train in fluency, pronunciation, and word choice. Many people find non-interactive speaking nerve-wracking, intimidating, and uncomfortable due to the lack of interaction with the audience, which can decrease confidence [7]. There are several factors that prevent EFL learners from actively participating in their daily speaking practice: underdeveloped speaking skills, uncontrolled speaking anxiety, and lack of confidence in sharing their viewpoints with peers [8]. The issues include a lack of interest in dialogue, insufficient language mastery, and an unengaging topic. In the conventional teaching-learning process, pupils require assistance in comprehending the language employed. There was no opportunity to relish or alleviate the monotony. In this case, they met challenges in exposing improvisation ideas orally [9]. Interactions among participants might occasionally affect the self-confidence of one or more individuals like speaking in phone [10]. Depending on the environment, self-confidence appears when the participant connect to current technologies, especially for student who learn language [11], [12].

High self-confidence can be a significant motivator for EFL learners, enabling them to consistently perform better in speaking tasks and effectively communicate their ideas to others [13]- [14]. To enhance speaking skills and boost the self-confidence of secondary school learners, digital mind mapping can be an effective tool for organizing and delivering ideas in English speeches[12]-[14]. A graphic organizer called mind mapping shows how information is stored in the brain graphically [18]. It serves as a method of note-taking that records one's ideas, opinions, and thoughts. In support of this, defines a mind map as a mental picture of an individual's ideas and thoughts that aids in detail organization and the ability to perceive a subject's larger context [19]. Additionally, explains that before speakers can articulate their message, they

must first conceptualize what they want to convey. Therefore, mind mapping can aid in communication and idea expression [16].

According to the previous research on writing, which discovered that students were interested in generating ideas, more than fifty percent of students suffer anxiety when they first begin speaking[14], [21], [22]. This was discovered by the researchers. The relationship between writing, the creative abilities of students, and the narratives of success that the children have presented [17], [23], [24]. The imagination of a person has the potential to contribute to the development of creative thinking. The incentive was the one that ultimately resulted in the death of the monster that was the disability [7], [10], [25]. The utilization of mind mapping to commit to memory the knowledge that needs to be stored in the smart brain, the combination of playing a game and taking notes, and so on and so forth are all examples of this [9], [26].

The importance of the study is to explore the digital assistance that is called Artificial Intelligence (AI) in English spoken. There is a new issue of the research. The researchers were finding and comparing the traditional mind mapping to digital mind mapping. Traditional mind mapping is typically created on paper or board by hand, but with the advent of specialized applications, digital mind mapping has developed on computers or mobile [27]. The creation of digital mind maps has become quicker and more visually appealing [28]. Comparing digital mind maps to hand-drawn ones has consistently found that digital mind mappings are more efficient and attractive due to their use of images, colours, and drawings. Given these characteristics, mind mapping can help organize ideas and facilitate sentence recall during speeches.

Mind mapping is a creative technique that enables learners to engage in a unique learning style, fostering a new environment for data processing and enhancing memory recall of key topics [29]. Artificial intelligence for helping student to highlight the points [16]. Studies in digital mind mapping to enhance reading and writing were conducted by several researchers [17], [18]. Scafolding EFL-student to imply the punctuation in synchronous learning [33], [34]. However, few researchers [35]. Digital mind mapping to optimize EFL learners‘ speaking [36].

This research describes the digital mind mapping for optimizing EFL learners‘ english speaking production. The research questions are the following:

1. What are the EFL learners‘ speaking improvements after applying digital mind mapping in the classroom?
2. What are the EFL learners‘ perceptions towards mind mapping in a speaking classroom?

2. METHOD

This study aims to examine the enhancement of EFL learners' speaking skills and their perceptions following the implementation of digital mind mapping. The methodology adopted is CAR, Classroom Action Research, a systematic approach delineated by five essential stages: planning, acting, observing, and reflecting, as outlined [37]. Each stage is integral to the research process, ensuring a coherent and logical progression throughout the study. Classroom Action Research is structured into four components: implication, planning, action, observation, and reflection, as noted [38]. The researcher conducted two cycles in this investigation, each encompassing the four abovementioned components. This cyclical process allows for iterative refinement and deeper insights into the educational interventions being studied.

This study was conducted at a secondary school in the first-semester academic year 2024–2025, focusing on seventeen ninth-grade learners. Data collection methods included administering tests and utilizing learning observation forms. Digital mind mapping was integrated into speaking instruction. Observations were employed to assess learners' perceptions of learning that involved digital mind mapping. Through observation, the study aimed to uncover new insights, identify various factors influencing behavior changes, and determine the cultural or systemic impacts that might inspire the embracement of novel habits [39]. Tests were administered to evaluate the upgrading in learners' scores. A test measures an individual's ability, knowledge, and performance in a specific domain [40]. The researcher could track the learners' scores across each cycle by employing tests, thereby assessing their progress and performance enhancements.

The researcher used data analysis methods: reduction, display, and conclusion drawing [41]. When data collection was completed, the researcher engaged in data reduction. This process involves summarizing the data, selecting the essential elements, focusing on critical aspects, and identifying themes and patterns [42].To determine the learners' test scores, the researcher utilized these identified patterns:

$$\text{Mean} = (\Sigma x) / N$$

Where:

Mean : the average score

Σx : the sum of all scores
N : the total number of samples

To determine mean, add up all of the individual data points for each group, then divide the sum of all scores by the total number of samples of the group [43]. After data reduction, the researcher proceeded to data display for further analysis. At this stage, the data is presented descriptively. This study utilized a learning observation form to gain insights into the teaching-learning process in a speaking classroom using digital mind mapping [44], [45], [46]. The observations provided a detailed description of the issues and classroom dynamics. Finally, the conclusion stage involved synthesizing the research findings to determine the study's outcomes.

3. FINDINGS

The EFL learners' scores from the pre-cycle, cycle 1, and cycle 2 assessments of their speaking skills were subsequently categorized according to the learners' accomplishment classification. The table below illustrates this classification.

Table 1 The EFL learners' accomplishment classification

Score	Grade	Level
80 – 100	A	Fantastic
66 – 79	B	Good
56 – 65	C	Sufficient
40 – 55	D	Reasonably adequate
30 – 39	E	Low

The researcher discovered that integrating digital mind mapping into speaking classes led to improved test results among ninth-grade learners. Test scores were assessed during pre-cycle, cycle 1, and cycle 2, involving a total of 17 learners.

Table 2. The table Score of Pre-Cycle, Cycle 1, and Cycle 2

	Pre-Cycle	Cycle 1	Cycle 2
Mean	58.1	63.5	70.1
Highest Score	76	84	92
Lowest Score	44	48	52
Sum	988.00	1080.00	1192.00

According to the findings presented in Table 1, a statistically significant difference was observed in the scores between pre-cycle, cycle 1, and cycle 2. The mean scores were 58.1 during the pre-cycle phase, 63.5 in cycle 1, and 70.1 in cycle 2, indicating a steady increase across successive assessment periods. The highest scores recorded were 76 in pre-cycle, 84 in cycle 1, and 92 in cycle 2, reflecting consistent improvement over time. Conversely, the lowest scores were 44 in pre-cycle, 48 in cycle 1, and 52 in cycle 2, with the pre-cycle phase showing the lowest performance. The cumulative totals amounted to 988.00 in pre-cycle, 1080.00 in cycle 1, and 1192.00 in cycle 2, underscoring a progressive enhancement in overall test scores throughout the assessment cycles.

This study focused on detailing the practical application of digital mind mapping in teaching speaking skills across two distinct cycles, each spanning several sessions. For each cycle, the researcher meticulously developed comprehensive lesson plans, learning materials, and targeted exercises tailored to optimize learning outcomes. The acting stages of digital mind mapping in teaching speaking skills were carefully structured: learners were initially welcomed to their computer stations, where the teacher delivered a comprehensive PowerPoint presentation introducing digital mind mapping and its essential features. The researcher provided clear instructions to guide learners through the process. Next, learners were tasked with digitally creating mind maps on topics selected for their relevance to speaking skills. They were then given time to practice pronouncing each word from their mind maps aloud, focusing on clarity and fluency. Subsequently, learners practiced and presented their ideas based on the digital mind maps they had meticulously constructed. Each learner presented their best performance, receiving constructive feedback from the teacher to refine their speaking abilities. Finally, teachers and learners engaged in reflective

discussions to evaluate the effectiveness of the teaching and learning process, identifying strengths and areas for improvement.

This research was conducted in two cycles, with cycle 1 following a structured sequence. Initially, the planning stage involved deciding on activities for learners within the teaching-learning process and selecting topics suitable for digital mind mapping. The researcher also ensured that every learner had an account to access the digital mind-mapping tools. In the acting phase, the researcher prepared materials for teaching-learning. Before commencing the class, the researcher warmly greeted the learners and verified the list of participants, ensuring administrative tasks were complete. Once materials were distributed, the researcher guided learners in applying digital mind-mapping techniques. Each learner received individualized support in using their accounts and creating mind maps based on the chosen topics. Pronunciation practice was emphasized as learners articulated the words from their mind maps. Following the application of digital mind mapping, the researcher interviewed learners to gather their perceptions and feedback on using this innovative tool. The cycle concluded with a reflective session in which teachers and learners evaluated the teaching-learning process's effectiveness. As a closing, the researcher invited learners to express alhamdulillah, fostering a sense of shared accomplishment and gratitude. Finally, the teacher bids farewell to the learners, wrapping up the learning session on a positive note.

The third stage involved observation, in which the researcher gathered data while engaging in an action activity for learning. These observations were crucial for identifying effective teaching and learning strategies. They also guided future planning for subsequent cycles based on the insights gained. The final step was reflection, aimed at evaluating the learning process of the first cycle. Through reflection, researchers analyzed their observations to conclude and made informed decisions for subsequent cycles. Here were the results: (1) The learners needed clarification in writing their ideas because they thought too many words to remember. A few learners could directly write clue words to help them with their speaking (2). Some learners were overjoyed with the features of digital mind mapping, so they forgot to prepare the design for their speaking performance. (3) Some learners just sat silently without doing anything. After encountering the cases found in cycle 1, the researcher suggested several fixes to address the circumstances: (1) The researcher delivered the questions to guide the learners in finding any ideas. (2) The researcher provided an example of digital mind mapping creativity to help with speaking activity. (3) Based on the explanations above, the researcher utilized cycle 2 to address the issues in cycle 1.

The researcher performed research in cycle two after completing research in cycle 1. Cycle 2 consisted of multiple sequences: the first is planning, which begins with (1) Changing the lesson plan from cycle one to cycle two, (2) formulating an example of digital mind mapping creativity in cycle two; the researcher designed digital mind mapping with different topics used in cycles one and two, (3) planning the implementation of digital mind mapping in teaching speaking skills. The researcher gave the example of using digital mind mapping, while learners could observe through the slide displayed; 4) preparing the performance assessment for learners. Every learner performed their speaking with the help of digital mind mapping they made before. After completing the performance, the researcher gave the learners feedback and motivation. Finally, the researcher and learners reflected on the activity process.

The researcher performed research in cycle 2 after completing research in cycle 1. Cycle 2 consists of multiple steps. The first is planning, which begins with (1) Updated the lesson plan from cycle 1 for use in cycle 2. (2) In the second cycle, the researcher developed a digital mind map example showcasing creativity using a different theme than the ones utilized in the first and second cycles. (3) Arranged how the digital mind mapping will be used to develop speaking skills. While learners watched through the exhibited slide, the researcher demonstrated how to apply digital mind mapping directly and practically. (4) Assembled the learner performance evaluation. Each learner used digital mind mapping to assist with their speaking performance.

The researcher employed the same field notes and observation list from the first cycle during the observation stage. The aim was to find out how learners were doing in cycle 2. The researcher got many learners to create digital mind mapping actively. Moreover, they took time to do oral exercises and consult the teacher about their work. They were more joyful in involving the learning process. During the reflection stage, the researcher evaluated the learning process and concluded that there was an improvement in observing the learning process, learners' engagement in activities, and their speaking skills.

4. DISCUSSION

This research explores the use of digital mind mapping to improve speaking abilities. Learners frequently encounter obstacles like a shortage of ideas, low motivation, and a lack of self-confidence when learning to speak. The researcher incorporated technology-based learning materials, including digital mind

mapping, to address these issues. This research employs a classroom action research methodology, with each cycle comprising four stages: planning, action, observation, and reflection.

The study was conducted over two cycles, preceded by a pre-cycle phase. Before each cycle, the researcher held a meeting. During the pre-cycle, activities were designed to assist students in mastering fundamental concepts and becoming ready for tests. Learners were tasked with delivering speeches in front of their peers. Before the cycle, the average score was 58.1. Cycle 1's mean score was 63.5, while Cycle 2's was 70.1. Additionally, the total score increased from 988.00 before the cycle to 1080.00 in cycle 1 and 1192.00 in cycle 2. These figures indicate an improvement in the average and total test scores across the pre-cycle, cycle 1, and cycle 2.

5. CONCLUSION

As previously noted, this study addressed the issues learners faced, including a lack of ideas, low motivation, and low self-confidence in speaking English. To tackle these challenges, the researcher employed digital mind mapping to improve the learners' speaking skills. Steps to teach speaking using digital mind mapping include; introducing the features of digital mind mapping; guiding the learners to express the idea of speaking by writing words or displaying pictures; give time to take exercises for pronouncing words; and providing time for the learners to consult the materials. The researcher also monitors the learners' activities by filling out the observation sheet. Finally, the learners perform their speaking in front of the class, and the teacher comments on the learners' presentations. The final session will involve reflection between the teacher and learners to assess and analyze the learning process, experiences, and outcomes to gain insights and a deeper understanding. This process helps identify strengths and areas for improvement, guiding future actions and decisions to enhance learning and performance.

Data on how digital mind mapping affected students' speaking abilities in pre-cycle, cycles 1 and 2 were analyzed, and an increasing tendency was found. The average score improved significantly, by roughly 9.29% and 10.39%, respectively, from 58.1 before the cycle to 63.5 in cycle 1 and further to 70.1 in cycle 2. The application of digital mind mapping significantly increased learner interest and motivation in the learning process, even though each cycle demonstrated growing gains. Furthermore, students felt more comfortable presenting their work. Based on these findings, the researcher concluded that digital mind mapping significantly enhanced SMP Darul Hikmah Kutoarjo students' speaking abilities during the 2024–2025 academic year.

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