RICHTMANN
PUBLISHING

The Use of Mind Mapping Technique in Descriptive Writing among Primary School Students

Lan-Anh Thi Le[1]

Nga Phuong Le[2]

Lan-Anh Thi Ngo[3]

Quynh-Nga Thi Tran[4*]

[1]Faculty of Primary Education,
Hanoi Pedagogical University 2,
Vinh Phuc Province, Vietnam
[2]Faculty of Primary Education,
Hanoi National University of Education,
Hanoi, Vietnam
[3]Quang Minh B Primary School,
Hanoi, Vietnam
[4]Department of Primary Education,
University of Education, Hue University,
Thua Thien Hue Province, Vietnam

Abstract

Tony Buzan first developed mind mapping, which has since become a popular learning technique. It solves various educational tasks by combining information from various sources and displaying it as keywords in a bright, colorful manner. Mind maps have been said to be a good way to study when applied to written material. This research aimed to guide and integrate mind mapping into descriptive writing with primary students. Ninety-four fifth-grade students at a primary school were chosen to participate in the study. Two groups of students from a primary school were recruited for the experiment. The proposed method was to be taught in one class, while the traditional method was to be taught in the other. The results showed that the students in the experimental group who learned using the mind map technique did better in writing than in the control group. Mind mapping has numerous educational applications and can assist students in their writing process. Teachers can use mind mapping tools to expand their knowledge and lay the groundwork for their students' learning. Teachers should be encouraged to take training courses on mind mapping to learn and practice the skills they need to use mind mapping in their classrooms.

Keywords: mind mapping, primary students, descriptive writing, learning technique, Vietnamese

1. Introduction

Innovative and different teaching methods and strategies have received increased attention in recent years due to reforms in educational paradigms to respond to such diverse student needs. Educational

practitioners or educators have designed methods to improve creativity and academic outcomes. Mind mapping is one of the techniques used to achieve the stated goals. By examining students' mind maps, teachers can determine whether students understand the subject and whether they can construct an appropriate structure for the new information (Zhao, 2003). In addition, the mind map assists students in assimilating new information, thinking, and developing their conceptual schema in each subject, particularly in Vietnamese language classrooms. Because writing is the most difficult language skill, descriptive writing has received more attention in Vietnamese classrooms. It is also regarded as the most difficult language skill to learn compared to other skills.

2. Descriptive Writing

Writing is a collection of skills that must be developed and acquired through practice (Grabe & Kaplan, 2014). Writing is a method of expressing ideas using letters and words, requiring a mental process to express ideas (Uusen, 2009). Writing is frequently viewed as a simple representation of communication, but it is much more than that. Writing demonstrates the writers' or language users' knowledge, perspective, and communication ability. Writing is difficult for students because it does not come naturally and requires conscious effort and practice. Descriptive writing has been reviewed as one of the main language skills in primary school. Den (2013) compared writing a descriptive text to paint a picture with words. Descriptive writing entails writing a detailed description of something. Through the use of appropriate details, this process will provide the students with clear descriptions of people, places, objects, and events. Descriptive writing is one of the essential skills children will learn in school and carry with them throughout their lives. In the description, students use their imagination to visualize a scene or a person to understand a sensation or an emotion, with the main goal of describing a person, location, or thing in such vivid detail to accomplish the aforementioned objective (Meyers, 2002). A descriptive text attempts to explain or describe a person, animal, situation, event, location, or object. It describes the shape, characteristics, or nature in general. Many studies on effective methods of teaching descriptive writing have recently been conducted (Agibuay, 2016; Marashi & Yavarzadeh, 2014). The mind-mapping technique received the most attention among the various methods and techniques for teaching writing.

3. Mind Mapping

Mind mapping is a graphical technique for associating a new concept with previous ones during the learning stage and integrating and describing it using lines, colors, symbols, images, or keywords (Buzan & Buzan, 1996). A mind map is a diagram in which the main categories are represented by a central image and the subcategories are represented by branches of larger branches (Budd, 2004). Mind mapping is an active learning strategy and an innovative technique to facilitate student learning (Rosciano, 2015); a non-linear visual representation of a network of related and connected concepts (Davies, 2011; O'Connell, 2014); a graphical way to represent ideas and concepts (Pribadi & Susilana, 2021). Mind mapping is a way to express ideas using both words and pictures. It is also a way to think beyond traditional linear thinking and take notes. Mind mapping is a technique for visually presenting thought processes by connecting concepts and ideas as a central issue or problem. Kern and Bush (2006) say that mind maps help students use and organize their knowledge by capturing relevant ideas for a specific problem. Mind maps could help students retain information while also helping them think critically and solve problems (Noonan, 2013; Somers et al., 2014). Making mind maps involves both the right and left brains collaborating to organize, remember, and make sense of the information so that it belongs to the students. Mind mapping is based on the workings of the human brain, connecting one concept with another to create meaning (Ku et al., 2014).

Mind maps are non-linear visual representations of ideas and their relationships (Polat & Aydın, 2020). The principal themes of a subject are distributed as branches emanating from the subject's center in the form of an image or keyword. The formation of subordinate subjects involves

connecting them to higher branches. As a consequence, all branches comprise a network of nodes that are interconnected (Buzan & Buzan, 1996). The complicated relationships between concepts or themes are visually represented in such diagrams, making it understand and remember these relationships easily as well as analyze the components. In addition, mind maps can be seen as a tool for students to plan ideas and gather concepts concerning the main theme (Bukhari, 2016). Deshatty and Mokashi (2013) also mentioned the concept of a mind map, which illustrates the relationship between words, concepts, tasks, and other objects that are linked to and organized around a central keyword or concept.

Mind mapping illustrates the visual relationships between concepts as a tool for reflection that encourages students to experiment with color and draw images in mapping materials (Field & Wee, 2002). Structured images and diagrams are simpler to comprehend than words and can convey complex information, allowing students to focus on selecting the key points required to describe the lesson effectively (Davies, 2011; Leopold & Leutner, 2012). The first step in creating a mind map is to read from various sources. Students then identify the key concepts and their sub-concepts, also known as branches of the key concepts (Hariyadi et al., 2018). A good mind map can be created by involving students in the depth processing of relevant information, enhancing learning and comprehension of the content to enhance student knowledge (Astriani et al., 2020).

According to Buzan, mind mapping is guided by a few principles. First, in the center of the blank page, draw a map. Make a drawing or use a symbol to represent the central idea you're mapping. Draw curved lines emanating from this central point, with each line representing a category of notions related to the central concept. Continue subdividing the major concepts into related subconcepts, using a distinct color for each branch and branching out radially. Each branch and sub-branch should be designated with a single concept-clarifying keyword or illustration. A curved line connects some outer concepts to others on a different branch. As a result, a visually appealing diagram of the central idea and its related concepts is created (van der Wilt et al., 2019).

3.1 Benefits of Mind Mapping

Previous research on the effectiveness of mind mapping has been well-documented. Using a mind map assists students in describing the thinking process, demonstrating the concept in a graphic format (Picton, 2009), and seeing the relationship between ideas and connecting known and new information (Mercer, 2002). Some researchers have hypothesized that mind maps could be effective in encouraging a deeper level of learning (Farrand et al., 2002); structuring students' understanding of concepts effectively (Abi-El-Mona & Adb-El-Khalick, 2008); contributing to longer retention of the information (Trevino, 2005); seeing connections among the information (Keles, 2012), enhancing students' academic achievement, and fostering conceptual understanding (Brinkmann, 2003).

According to Rosciano (2015), mind mapping helps students investigate the concept and key associations in a colorful, logical, vibrant, and organized way. Colors and images in mind maps make it easier to comprehend things, promote brainstorming, enhance memory, and facilitate comprehension, likely to result in more meaningful learning (Adodo, 2013). In addition, mind mapping improves study skills and recall of information, facilitates making rapid connections between ideas, and enhances learning and understanding of abstract science concepts (Abi-El-Mona & Adb-El-Khalick, 2008). According to Bharambe (2012), students can use a mind map to arrange their ideas and thoughts in order to deliver information in a clear and appealing manner.

More recent research has focused on understanding the benefits of the mind map technique in writing. A map serves as an outline for a brief essay on the topic, or a section of the map is used to compose a paragraph (Zaid, 1995). Mercer (2002) argued that mind mapping helps people focus on topics by having ideas while writing and writing in the correct sequential order. Mind mapping helps students clarify their thinking and lay the foundation for a deep understanding of their conceptual framework, literature review, and research focus (Kotcherlakota et al., 2013).

Prior research on mind mapping functions has revealed that it assists students with problem-

solving, accentuating points of view, taking notes, recalling information, as well as task planning and organization (Buran & Filyukov, 2015). Azizah (2013) described mind mapping is the easiest and most straightforward method for people to input, store, and release data from their brains. The mind mapping instrument is distinguished by five characteristics: (i) a singular concept as the main subject; (ii) the subdivision of the main subject into several branches; (iii) each branch is made up of lines with printed words or pictures that are connected; (iv) the less important information is put on twigs, and (v) the structure is connected at a node. This learning method enhances student productivity by assisting them in developing and identifying structural information ideas (Bhattacharya & Mohalik, 2020).

Mind mapping is also used to help people remember things. According to Tayib (2015), the mind map, which is based on visual memory, is presented as an illustration and diagram are simple to understand and clearly demonstrates relations between ideas. The mind map is the basic instructional technological method, which possesses all of the characteristics of a specific natural form that is divided from the center shape using words, photos , symbols, and lines. It presents how the brain works by connecting concepts and meanings to images (Arulselvi, 2017).

Students can cope with the conceptual and structural aspects of paragraph writing with the aid of mind mapping. In addition, it can aid students in organizing, preserving, and recalling the necessary knowledge and information for the writing task. Mind mapping typically entails noting a central concept and connecting it to several subsidiary concepts. These secondary concepts serve as the basis for novel concepts. Therefore, mind mapping can help students visualize the paragraph's structure. It can also help students relate language vocabulary and grammatical knowledge to demonstrate their ideas and direct them to generate more ideas (Al Kamli & Mohammad, 2019). In a study with elementary school teachers, teachers reported that Using mind maps in the classroom would promote student creativity, enhance learning and memorization, and act as a method to evaluate students' understanding of the subjects being taught (Keles, 2012).

Consequently, mind mapping guides students through the four stages of writing: prewriting, drafting, editing, and revising. Yunus and Chien (2016) found that most students showed positive results when using mind mapping, particularly mind mapping, to help organize ideas and generate more ideas when writing, listing, elaborating, and developing their ideals. Mind mapping is an effective technique for assisting students to plan and organize their writing by encouraging them to understand the writing topics thoroughly.

According to Farrand et al. (2002), mind maps are a useful method for studying written material. Taliaferro (1998) discovered that students enjoyed the mind-mapping exercise. Goodnough and Woods (2002) performed an interpretive case study on two fifth- and sixth-grade classrooms. This study had numerous consequences that mind mapping was described by students as enjoyable, interesting, and motivating.

Furthermore, students preferred to use mind mapping individually rather than in groups because it allowed them to express their ideas about meaning. Even though the constructivist method is based on the principle that the student is engaged and acquires prior knowledge and new knowledge, active student participation is necessary to achieve lesson objectives (Seyihoglu & Kartal, 2010). Mind mapping tools that activate prior experience and multiple senses by appealing to both hemispheres of the brain are an alternative method that can be used in the constructivist approach.

According to Yunus and Chien (2016), students had positive views of using the mind-mapping technique to improve their writing skills. Mind mapping helps students plan their writing, enhances their comprehension of writing topics, and fosters their writing creativity. Other findings revealed that experimental students who used mind mapping made greater progress in writing (Al-Jarf, 2009; Al Naqbi, 2011; Lastari & Hadi, 2018). Nurlaila (2013) explored how to write a descriptive paragraph using the mind-mapping method. According to the findings, students' writing abilities improved significantly after mind mapping. Furthermore, most students responded positively to the mind-mapping strategy when writing descriptive texts.

Writing is one of the essential skills that students learn in primary school because it helps them

develop critical thinking and problem-solving abilities. The mind mapping technique is one of the effective ways to teach writing. However, little research still focuses on applying mind mapping to teaching writing skills, especially descriptive writing at a primary school. Therefore, it seems essential to study applying mind-mapping techniques for descriptive writing in the Vietnamese language among primary students. This study aimed to provide information and guide students through mind mapping to design their descriptive writing.

4. Methods

4.1 Participants

A total of 92 fifth-grade students (10–11 years old) from Phu Lo A Primary school, Soc Son District, Hanoi, Vietnam took part in this study. Those students are from two classes taught by two teachers in a public primary school. A class from two classes, randomly assigned as an experimental group, received mind mapping in learning descriptive writing and comprised 46 students. Another group, assigned as the control group, who received the traditional instruction, consisted of 48 students, as shown in Table 1.

Table 1. Demorgraphic variables

Group	Class	Number of students	Percentage
Experimental	5A1	46	47.8
Control	5A2	48	52.2

4.2 Procedure

The participants were examined for academic achievement to verify that the two groups are equivalent before doing the experiment. Academic information about the mind map technique was provided to the teacher to ensure that the information presented is correct and accurate in the mind map technique and to help teachers understand this method thoroughly.

The course content was explained to the experimental group, along with the use of mind maps, and the purposes for which they are used. In this study, students were asked to create mind maps on the topic of "Describing person and place." A lecture plan for the two selected texts was developed. The lesson plans followed the Vietnamese teacher guide for the fifth grade, and mind maps were used to teach these lessons. The lesson plans included (i) warm-up activities, (ii) discovery learning activities, (iii) practices, and (iv) review. The teacher would demonstrate some rules for mind map usage:

1. Identify the major and sub-topics and the concepts and ideas associated with the lesson.
2. Drawing a shape in the center of the page and writing the main topic or subject of the text inside it.
3. Using different colors to draw lines based on the number of sub-topics.
4. Images and symbols that aided in the formation of relationships and links between ideas were included.

Two teachers taught the control and experimental groups the texts for two periods each. The experimental group was taught using the mind map technique, while the control group was taught using the traditional method.

5. Results

Comparing academic achievement between experimental and control groups revealed differences. Following the completion of the survey, we obtained the following data: (1) Weak: 0 - 4 points; (2)

Average: 5-6 points; (3) Good: 7-8 points; (4) Very good: 9 - 10 points.

Table 2. The outcomes of the experiments

No.	Academic achievement	Group	Percentage			
			Very Good	Good	Average	Weak
1	Practice describing individuals (Describe appearance)	Experimental	26.1	39.2	30.4	4.3
		Control	25.0	37.5	33.2	6.3
2	Reviewing scene descriptions	Experimental	24.0	43.5	30.1	2.2
		Control	22.9	41.7	31.2	4.2

According to Table 2, the majority of student results are classified as average or good. In the experimental class, there were more students with decent and good scores and fewer students with average and weak scores than in the control group. The current findings alsp revealed that using mind maps resulted in greater understanding among the experimental group than in the control group, who used the traditional method. In the experiential group, students received higher points (very good and good level) than the control group.

By producing detailed outlines, it is possible to initially confirm the effectiveness of mind maps in assisting students to write better essays. Through direct polling of teachers and students, we found that: In the experimental class, students participate in learning activities enthusiastically and actively, actively building lessons. The students are very interested and want more hours like this. At the same time, teachers also agree and encourage the application of mind maps to outline the descriptive essay because the design is quite simple, convenient and brings good effects.

6. Discussion

The current study adds to previous research on using mind mapping in descriptive writing at the primary school level. According to our findings, students in the experimental group who learned using the mind map technique performed better in writing than in the control group. The experimental students who used the mind-mapping technique improved their writing skills more.

The findings also showed that students who experienced mind-mapping techniques had higher academic achievement than those who received traditional writing instruction. The result is consistent with previous studies showing that students' writing achievement is significantly positively correlated with mind mapping (Al-Jarf, 2009; Al Naqbi, 2011; Lastari & Hadi, 2018; Nurlaila, 2013). This result supports that a mind map is an efficient learning tool for improving students' comprehension and information retrieval skills in the classroom. Students are more motivated to learn when they use colors, images, and relationships in the learning process. Mind mapping is an effective tool for creative thinking that collects ideas through a visual diagram. It is a one-of-a-kind combination of imagery, color, and visual-spatial arrangement that has been shown to significantly improve recall compared to traditional note-taking methods and rote learning. Mind mapping is especially beneficial for children who struggle to learn and understand subjects in school. Children's brains are activated when they look at brightly colored pictures with different shapes and figures, so they tend to focus on pictures or any visual elements.

Additionally, students' responses to surveys' open-ended questions about their perceptions of their skills to be obtaining during group work on the mind mapping essays that planning, arranging, and decision -making skills were most regularly acquired, with critical-thinking skills coming in third. According to the current study, the more the students' complete mind map assignments, the higher their grades for mind map improve. This suggests that mind mapping can help students learn more effectively. According to Khudhair (2016), the improvement in writing performance can be attributed to mind maps' capacity to facilitate knowledge acquisition and retrieval via visual signals such as colors, lines, and images. The mind map can also aid students in dividing writing tasks and

explicitly addressing their subprocesses and writing skills. Al Kamli and Mohammad (2019) says that the mind map can help students organize and think about different parts of their writing. Mind maps help students organize their paragraphs, generate, record, connect, and develop detailed ideas. Many scholars have stated that writing is a generative skill. Effective writing usually involves generative cognitive processes that enable learners to construct meaning by building relationships between the written text and what they know, think, believe, and experience. Mapping has the potential to encourage generative learning (Fiorella & Mayer, 2016).

Despite its contributions, this study has several limitations that should be noted. First, the present study is a relatively small sample of students in the participant sample. As a result, the greater number of students should be expanded for future study. Additionally, the cross-sectional design has clear disadvantages compared to the longitudinal design. A long-term study that measures the same participant group throughout time at various points should be conducted in the future. Another limitation is that the study was conducted in two classes in northern Vietnam.

Writing is a complicated metacognitive activity requiring knowledge, basic skills, strategies, and the ability to coordinate several processes. It also necessitates mastery of not only grammatical but also conceptual and judgmental elements. As a result, teachers should encourage students to use not only their linguistic abilities but also their imaginative powers to produce good written work. As a result, an outlining strategy based on mind mapping is proposed for use in teaching writing. Outlines aid students' writing, particularly in the content and organization of their essays. Outlines are one method for preparing before beginning to write because they help to organize and arrange the main ideas and supporting details in writing. Outline would guide them to focus on the subject, and outline would guide them automatically in finishing writing from the first paragraph to the last paragraph. Students become more motivated to complete a writing assignment as their ideas emerge in an organized form.

Teachers can use mind mapping to map teaching resources to prepare and evaluate lectures. Mind mapping is a creative method of guiding and directing students in learning key concepts and creating a learning environment that facilitates information processing, according to a number of studies. Therefore, teachers should use mind maps to help students understand lessons and exercises better and solve tasks faster so that the information stays in their minds for a long time. Teachers must be able to instruct mind map creation and integrate mind maps into teachings. Teachers should use mind mapping as a teaching method during the prewriting stage to get students excited and use their previous knowledge to help them develop ideas. Mind maps can be used by teachers and educators in a variety of ways. Teachers could use mind maps to introduce concepts from assigned readings that would be reviewed in class, or they could use mind maps to recapitulate what had already been covered. Curriculum designers and textbook writers may include teaching strategies or steps, like mind mapping, to help students become more creative writers. Mind mapping and writing outline creation should be included in all writing lessons to help students understand these skills. When students can use these techniques effectively, teachers can guide them in the proper order, which helps students develop their imagination and creativity. The teacher would talk with the students about what they thought were the most important topics. This would allow students to participate in the discussion by writing down their ideas. Each topic would be discussed individually, and a mind map would be created. This allows students to see a topic and how everything within that topic connects. As the students participate in creating this map, their interest is maintained because they are involved in developing the topic. Mind mapping can assist instructors in identifying a logical plan or teaching route while enhancing subject matter recall when used for lesson planning. This can enhance teaching confidence and make programs run more smoothly.

7. Conclusion

The present study has shown using mind maps as a pre-writing technique and its relationship with the writing achievement of primary students. In many areas of education, the mind mapping strategy

is used as an instructional strategy and effective student-centered activity. The advantages of mind mapping in learning writing are widely recognized. Mind mapping is the most efficient tool in learning that helps students improve their writing skills. It is beneficial for visual learners because they are illustrative tools that help with reinforcing knowledge and connecting various fields, providing in-depth knowledge of concepts and subjects. It helps students organize ideas, plan their writing, adapt to a deeper level of understanding of writing topics, and promote writing creativity. Mind mapping could assist students in improving their descriptive writing skills by enriching vocabulary, enhancing creativity, arranging sentences, organizing ideas, managing thought, directing learning, and making connections. The use of mind mapping tools in writing provides students with an active role, transforming the instructor into a facilitator and coordinator who assists students. As a result, the mind mapping technique appears to be ideally adapted for assisting students with writing planning, as it encourages students to strive for and adopt a deeper understanding of the writing topics. Mind maps created by students can assist teachers in determining whether their students understand the topic and can organize and construct a suitable structure for that knowledge. Although the current study suggests that the mind-mapping technique benefits primary students, more research is needed.

References

Abi-El-Mona, I., & Adb-El-Khalick, F. (2008). The influence of mind mapping on eighth graders' science achievement. *School Science mathematics, 108*(7), 298-312. https://doi.org/10.1111/j.1949-8594.2008.tb17843.x

Adodo, S. (2013). Effect of mind-mapping as a self-regulated learning strategy on students' achievement in basic science and technology. *Mediterranean Journal of Social Sciences, 4*(6), 163-163. https://doi.org/10.36941/mjss

Agibuay, R. M. (2016). Descriptive writing using the process-genre approach. Third Asia Pacific Conference on Advanced Research (APCAR, Melbourne, July,

Al-Jarf, R. J. A. a. S. (2009). *Enhancing freshman students' writing skills with a mind-mapping software* Paper presented at 5th International Scientific Conference, eLearning and Software for Education, Bucharest, April 2009.,

Al Kamli, & Mohammad, H. (2019). *The effect of using mind maps to enhance EFL learners' writing achievement and students' attitudes towards writing at Taif University*

Al Naqbi, S. (2011). The use of mind mapping to develop writing skills in UAE schools. *Education, Business Society: Contemporary Middle Eastern Issues*. https://doi.org/10.1108/17537981111143855

Arulselvi, E. (2017). Mind Maps in Classroom Teaching and Learning. *Excellence in Education Journal, 6*(2), 50-65.

Astriani, D., Susilo, H., Suwono, H., Lukiati, B., & Purnomo, A. (2020). Mind mapping in learning models: A tool to improve student metacognitive skills. *International Journal of Emerging Technologies in Learning, 15*(6), 4-17.

Azizah, S. (2013). Efektivitas Penggunaan Strategi Mind Mapping Mata Kuliah Writing. *NUANSA: Jurnal Penelitian Ilmu Sosial dan Keagamaan Islam, 10*(2).

Bharambe, I. (2012). Effectiveness of Mind Mapping in educational psychology. *Journal of Biological Chemistry*(2), 10-18.

Bhattacharya, D., & Mohalik, R. (2020). Digital mind mapping software: A new horizon in the modern teaching-learning strategy. *Journal of Advances in Education Philosophy, 4*(10), 400-406. https://doi.org/10.36348/jaep .2020.v04i10.001

Brinkmann, A. (2003). Graphical knowledge display–mind mapping and concept mapping as efficient tools in mathematics education. *Mathematics Education Review, 16*(4), 35-48.

Budd, J. W. (2004). Mind maps as classroom exercises. *The journal of economic education, 35*(1), 35-46.

Bukhari, S. S. F. (2016). Mind mapping technique to enhance EFL writing skill. *International journal of linguistics communication, 4*(1), 58-77. https://doi.org/10.15640/ijlc.v4n1a7

Buran, A., & Filyukov, A. (2015). Mind mapping technique in language learning. *Procedia-Social Behavioral Sciences, 206*, 215-218. https://doi.org/10.1016/j.sbspro.2015.10.010

Buzan, T., & Buzan, B. J. N. Y. P. (1996). Mind Map Book: How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential, 1996.

Davies, M. (2011). Concept mapping, mind mapping and argument mapping: what are the differences and do they matter? *Higher education, 62*(3), 279-301. https://doi.org/10.1007/s10734-010-9387-6

Den, D. (2013). The four types of writing. In: New York, USA: Pearson.

Deshatty, D. D., & Mokashi, V. (2013). Mind maps as a learning tool in anatomy. *International Journal of Anatomy Research, 1*(2), 100-103.

Farrand, P., Hussain, F., & Hennessy, E. (2002). The efficacy of themind map'study technique. *Medical education, 36*(5), 426-431. https://doi.org/10.1046/j.1365-2923.2002.01205.x

Field, D., & Wee, B. (2002). Preparation for palliative care: teaching about death, dying and bereavement in UK medical schools 2000–2001. *Medical education, 36*(6), 561-567. https://doi.org/10.1046/j.1365-2923.2002.01232.x

Fiorella, L., & Mayer, R. E. (2016). Eight ways to promote generative learning. *Educational Psychology Review, 28*(4), 717-741. https://doi.org/10.1007/s10648-015-9348-9

Goodnough, K., & Woods, R. (2002). *Student and Teacher Perceptions of Mind Mapping: A Middle School Case Study* Paper presented at the Annual Meeting of the American Educational

Research Association, New Orleans, Los Angeles.,

Grabe, W., & Kaplan, R. B. (2014). *Theory and practice of writing: An applied linguistic perspective*. Routledge.

Hariyadi, S., Corebima, A. D., & Zubaidah, S. (2018). Contribution of mind mapping, summarizing, and questioning in the RQA learning model to genetic learning outcomes. *Journal of Turkish Science Education, 15*(1), 80-88.

Keles, Ö. (2012). Elementary teachers' views on mind mapping. *International Journal of Education, 4*(1), 93.

Kern, C. S., & Bush, K. L. (2006). Mind-mapped care plans: Integrating an innovative educational tool as an alternative to traditional care plans. *Journal of Nursing Education, 45*(4), 112.

Khudhair, N. (2016). The impact of applying mind mapping technique as a prewriting tool on EFL college students in essay writing. *Journal of college of education for women, 27*(1), 426-436.

Kotcherlakota, S., Zimmerman, L., & Berger, A. M. (2013). Developing scholarly thinking using mind maps in graduate nursing education. *Nurse educator, 27*(6), 252-255. https://doi.org/10.1097/01.NNE.0000435264.15495.51

Ku, D. T., Shih, J.-l., & Hung, S.-H. (2014). The integration of concept mapping in a dynamic assessment model for teaching and learning accounting. *Journal of Educational Technology Society, 17*(1), 141-153.

Lastari, N. K. H., & Hadi, P. R. T. A. K. (2018). The use of mind mapping to improve writing skill of the eighth grade students of junior high school. *Journal of Applied Studies in Language, 2*(2), 144-150.

Leopold, C., & Leutner, D. (2012). Science text comprehension: Drawing, main idea selection, and summarizing as learning strategies. *Learning Instruction, 22*(1), 16-26. https://doi.org/10.1016/j.learninstruc.2011.05.005

Marashi, H., & Yavarzadeh, E. (2014). Using critical discourse analysis instruction in argumentative and descriptive writing classes. *Issues in Language Teaching, 3*(2), 209-236.

Mercer, N. (2002). Multicultural Education Programs. In: University of Southern California.

Meyers, A. (2002). *Composing with confidence: Writing effective paragraphs and essays*. Longman Publishing Group.

Noonan, M. (2013). Mind maps: Enhancing midwifery education. *Nurse education today, 33*(8), 847-852. https://doi.org/10.1016/j.nedt.2012.02.003

Nurlaila, A. P. (2013). The use of mind mapping technique in writing descriptive text. *Journal of English and Education, 1*(2), 9-15.

O'Connell, R. M. (2014). Mind mapping for critical thinking. In *Cases on teaching critical thinking through visual representation strategies* (pp. 354-386). IGI Global.

Picton, C. (2009). Mind maps: reflecting on nature. *Emergency Nurse, 17*(2), 3-4.

Polat, Ö., & Aydın, E. (2020). The effect of mind mapping on young children's critical thinking skills. *Thinking Skills Creativity, 38*, 100743. https://doi.org/10.1016/j.tsc.2020.100743

Pribadi, B. A., & Susilana, R. (2021). The Use of Mind Mapping Approach to Facilitate Students' Distance Learning in Writing Modular Based on Printed Learning Materials. *European Journal of Educational Research, 10*(2), 907-916.

Rosciano, A. (2015). The effectiveness of mind mapping as an active learning strategy among associate degree nursing students. *Teaching Learning in Nursing, 10*(2), 93-99. https://doi.org/10.1016/j.teln.2015.01.003

Seyihoglu, A., & Kartal, A. (2010). The Views of the Teachers about the Mind Mapping Technique in the Elementary Life Science and Social Studies Lessons Based on the Constructivist Method. *Educational Sciences: Theory Practice, 10*(3), 1637-1656.

Somers, M. J., Passerini, K., Parhankangas, A., & Casal, J. (2014). Using mind maps to study how business school students and faculty organize and apply general business knowledge. *The International Journal of Management Education, 12*(1), 1-13. https://doi.org/10.1016/j.ijme.2013.11.001

Taliaferro, M. E. (1998). *Mindmapping effects on sixth grade students' recall ability* Mercer University, Atlanta].

Tayib, A.-M. (2015). The effect of using graphic organizers on writing (A case study of preparatory college students at Umm-Al-Qura University). *International Journal of English Language Linguistics Research*, *3*(1), 15-36.

Trevino, C. (2005). *Mind mapping and outlining: comparing two types of graphic organizers for learning seventh-grade life science*

Uusen, A. (2009). Changing TeachersAttitude Towards Writing, Teaching Of Writing And Assessment Of Writing. *Problems of Education in the 21st Century*, *10*, 100.

van der Wilt, F., Boerma, I., van Oers, B., & van der Veen, C. (2019). The effect of three interactive reading approaches on language ability: an exploratory study in early childhood education. *European Early Childhood Education Research Journal*, *27*(4), 566-580. https://doi.org/10.1080/1350293X.2019.1634242

Yunus, M. M., & Chien, C. H. (2016). The use of mind mapping strategy in Malaysian university English test (MUET) Writing. *Creative Education*, *7*(04), 619.

Zaid, M. A. (1995). Semantic mapping in communicative language teaching. English Teaching Forum,

Zhao, Y. (2003). The use of a constructivist teaching model in environmental science at Beijing Normal University. *The China Papers*, *2*(78-84).