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Wong Xing Jun, Khairul Azhar Jamaludin

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The Effectiveness of Mind Maps in Improving Malay Writing Skills as A Second Language

Wong Xing Jun, Khairul Azhar Jamaludin

Fakulti Pendidikan, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

Corresponding Author's Email: p111299@siswa.ukm.edu.my

Abstract

Mastering essay writing skills in Malay as a second language among national students is still challenging. This study aims to identify the effectiveness of mind-mapping activities in improving writing skills in essays among students, who treat the Malay language as their second language. The study uses a quasi-experimental model with a pre-test, and a post-test, in the experimental and controlled groups. There are 32 respondents in this study. Data was collected through the achievement of writing results before and after the intervention. The findings of the study show that the mind map approach is significantly positive in improving Malay essay writing skills among the respondents of the experimental group. However, the control group that used the conventional approach did not achieve a significant improvement. The findings of the study show that the mind map approach is significantly effective in helping students generate ideas, elaborate ideas, and write complete essays.

Keywords: Mind Map, Writing Skills, Second Language

Introduction

In this era of globalization, mastering only one language is not enough. Every student in our country at least needs to learn two languages or more than two (KPM, 2014). Malay is the national language of Malaysia. Every Malaysian must learn Malay from the beginning of the national school session to be able to communicate well and gain knowledge.

Malay is the second language among vernacular school students, that is non-Malay medium national-type schools. Regardless of whether in the process of learning a mother tongue, a second language or a foreign language, it is a process full of challenges. Critical thinking plays an important role in language learning. Language learning is divided into 4 aspects, there are listening, speaking, reading, and writing (Salem & Omran, 2020). Writing skills are one of the skills that need to be mastered based on the set learning standards.

The transformation of teaching methods is an effort called for by the Malaysian Ministry of Education since 2014. The *i-Think* (innovative thinking) program is a program that uses a mind map approach during the learning and facilitation process. It was introduced for the purpose of fostering thinking skills among students (KPM, 2012; PPPM, 2013). The use of the correct and effective approach is a factor in improving student achievement in writing (Che

Zanaraiah, 2011). Mind maps that are visual are important to increase students' interest in language learning (Zikri et al., 2019). Students will be easier to remember things and understand the information that the teacher wants to convey effectively with a mind map (Farihah, 2019).

Statement of problem

Malay is the second language among non-Malay medium national-type school students. According to Nurul et al (2020), linguistic differences between two languages result in difficulties for students learning a second language. The process of learning Malay as a second language is difficult, especially among students who usually do not speak Malay in their daily lives (Dayang et al., 2017). The opportunity to speak Malay after the school session is low for most non-Malay medium national-type school students. The environment of daily life that is less encouraging causes difficulties for the students in their efforts to master the Malay language. Motivational factors, attitude, and environment are the dominant social factors that influence students to learn Malay (Dayang, 2017; Nurul, 2020).

Mastery of writing skills helps a person to convey something more rationally (Abdullah et al., 2016). The students' inability to identify and understand the language structure of a language will cause the students fail to write correctly (Nasir, 2017). In addition, non-Malay medium national-type school students face the problem of lack of ideas, some of them can only write one or two statement sentences about the given topic and fail to elaborate in depth (Yusfaizah & Ishah, 2012). The problem of students' difficulty in producing good writing may be due to a lack of mastery of thinking process skills (Fikri & Zamri, 2019).

With that, the mind map approach can be applied according to the appropriateness of the writing title during learning and facilitation. Studies on the use of the mind map approach in language learning have proven that mind maps are positively effective. However, the use of mind maps in learning and facilitation Malay as a second language in terms of writing among the students should be emphasized again. Thus, the main purpose of this study is to identify the effectiveness of mind maps in writing Malay essays among students who learn Malay as a second language.

Research Objective

Measuring the effectiveness of the mind map approach in improving Malay essay writing skills as a second language among experimental group respondents.

Research Questions

Specifically, the research questions were developed as follows

1. How effective is the mind map approach in improving Malay essay writing skills as a second language among the respondents of the experimental group of vernacular schools?

Research Hypothesis

H₀1: There was no significant difference in the level of achievement of the respondents before the intervention between the control group and the experimental group.

H₀₂: There was no significant difference in the level of achievement of the respondents after learning to write Malay essays based on the mind map approach before and after the intervention in the experimental group.

Literature Review

Constructivist Theory

The constructivist approach plays an important role in the learning process (Subadrah et al., 2005; Dayana & Nurfatin, 2012; Arihasnida et al., 2020; Wong & Nurfaradilla, 2020). The constructivist theory learning approach can make students be active during learning and facilitation (Dayana et al., 2012). In addition, it can also help students build meaning in the process of gaining knowledge and relate to old experiences and existing knowledge. With old experience and existing knowledge, students can apply their intellectual findings into new situations. Needham's Five-Phase Constructivism Model (1987) has an effective impact when learning and facilitation is conducted, especially for students who are still at a low level of academic achievement. Accordingly, Needham's Five-Phase Constructivism model is applied in this study because the 5 phases fit the target situation of the study. That is the level of orientation, the level of idea generation, restructuring of ideas, application, and reflection (Jasin et al., 2012). In past studies, it was found that Needham's Five Phase Constructivism theory (1987) is also suitable to be adapted in studies related to language subjects (Subadrah et al., 2005; Dayana & Nurfatin, 2012; Arihasnida et al., 2020; Wong & Nurfaradilla, 2020). Table 2.1 lists the characteristics of Needham's Five Phase Constructivism Model, 1987.

Table 2.1

Design features in Needham's Five Phase Constructivism Model, 1987

Phase	components	Design features
1	Orientation	-Attraction students' attention and interest. -Motivating students so that they continue to be interested in ongoing learning.
2	Generation of idea	-Identifying students' alternative framework problems. -Using inquiry methods to explore and investigate through experimental methods.
3	Restructuring of idea	-Modifying students' alternative frameworks to scientific ideas. -Create definitions, explain concepts, ask questions about further explanations and ask for justifications and explanations from students.
4	Application of idea	- Identify newly modified ideas that can be applied in new situations.
5	Reflection	-Assess student understanding and assess whether prior idea have changed.

Source: Noor Dayana (2012)

Writing Skills

Essay writing skills are the highest level of language skills in the Malay language subject (Noor & Yahya, 2016). Writing in Malay uses a lot of understanding, ideas, and ways of processing

content. Students need to learn to create an essay outline based on the given essay title. Students need to think at a higher level to understand, master the language, and plan writing. In addition, students also need to master grammar so that they can construct correct sentences. Teachers need to focus on the structure of sentences built by students because an essay is made up of a combination of sentences (Rahman et al., 2012).

In Aman and Zamri's (2021) study, non-native speaker students faced difficulties in writing essays after their observations. The researcher stated that teachers need to help students to expand their level of vocabulary mastery. This is because the mastery of vocabulary will influence the level of a person's writing. For students who are not native speakers, teachers need to explain a word using their mother tongue, plan activities to increase students' vocabulary mastery needs to be emphasized and always encourage students to read readings in Malay.

In addition, non-native speaker students are less able to generate ideas when writing essays. Teachers can diversify activities during learning and facilitation by using tools to encourage students to think while writing essays. The use of a graphic approach can help students generate more ideas to produce good essay writing (Aziziee & Wan, 2018; Fikri & Zamri, 2019). Essay writing activities for non-native speakers students planned by the teacher must be able to attract students' interest and attention because fun learning and facilitation activities can motivate students to think while producing essay writing (Aman & Zamri, 2021).

In addition, students also face the problem of writing content that is not accurate with the assignments given (Anthony and Yahya, 2017). The students are still not good at analyzing the requirements of the essay questions given because their thinking skills are still low (Zikri et al., 2019). It also causes the description of the content of the essay to be less accurate, less clear, and less compact. In addition, low-level thinking skills cause students to rely heavily on explanations and writing frameworks given by the teacher. With that, the students do not have the opportunity to think more deeply so that they can present their own ideas. Teachers need to cultivate thinking skills so that students can practice analyzing things, thinking creatively and critically (KPM, 2012).

Mind Map

Mind maps have a positive effect on language subject learning. It was found that the use of mind map is suitable for learning foreign language writing skills (Bita & Vahideh, 2020). According to Wafa' and Moath (2021), the use of mind maps is very effective in improving critical thinking skills in learning language subjects and the ability to write. Mind maps encourage students to practice, generate and stimulate ideas and thoughts. Graphics displayed in the mind map approach allow students to carry out meaningful learning and focus on their main ideas (Fikri & Zamri, 2019; Harry et al., 2020). When planning a mind map, it helps to control the students' feelings of anxiety and stress (Ali & Amin, 2019).

In addition, mind maps are proven to be effective in stimulating students in learning vocabulary (Naderifar, 2018; Banan et al., 2020). Sufficient vocabulary helps a person in producing quality writing (Fikri & Zamri, 2019). With the mind map approach, students need to organize words and interrelate meanings in addition to improving students' cognitive skills.

This technique helps students who are learning a foreign language to remember the words that have been learned and interrelate knowledge (Naderifar, 2018).

In addition, Noor and Yahya (2016) argue that mind maps are one of the tools for students to generate their own opinions during learning and facilitation. With the stimulation from the mind map, the students will be more inclined to think and express their views and not just rely on the teacher to give the content of the essay or simply memorize the essay. With the mind map approach in learning to write in Malay, students' memory and imagination can be stimulated. Next, students can use the drawn mind map to organize the content, jotting down the relevant ideas before writing. They will be more oriented according to the unique design and function of the mind maps. The display of mind maps also makes it fun for students to relate their existing experience or knowledge with the writing that will be produced. Rohaida and Zamri (2015) stated that through writing, mind maps are not just to express facts and concepts, but also to give students a visual.

It can be concluded that the teacher is a facilitator to carry out research, especially experimental structured research. Teachers implement the learning and facilitation processes with a mind map approach or teach students to produce a mind map based on a set learning topic.

Methodology

Research Design

A quasi-experimental design was used in this study because the selection of respondents was not random (Noraini, 2013). The respondents involved in the study were divided into two groups, namely the control group and the experimental group. The group division allows the researcher to see the effectiveness of the mind map by comparing the students' achievements between these two groups at the end of the study. All respondents of the experimental group were required to answer the online questionnaire distributed by the researcher before the intervention start. The purpose of doing so is to identify the daily language used by respondents. With that, the researcher can find out whether the respondents involved are native or non-native Malay speakers.

A pre-post writing test was taken by both groups of respondents. A pre-writing test is required because the researcher wants to see the overall level of achievement of the respondents in addition to being able to identify the weaknesses of the respondents in the experimental group. In addition, a set of post-writing test questions is needed to measure the effectiveness of the intervention that has been implemented in the experimental group.

After the pre-writing test was conducted, the experimental group started the intervention of the mind map approach in the second language writing class while the control group started with the conventional approach. After the end of the intervention tempo in the experimental group, both groups were evaluated with a post-test. The achievement of this post-writing test is used to measure the effectiveness of the mind map approach in writing Malay as a second language. Figure picture 3.1 is a summary of the overall design of the study.

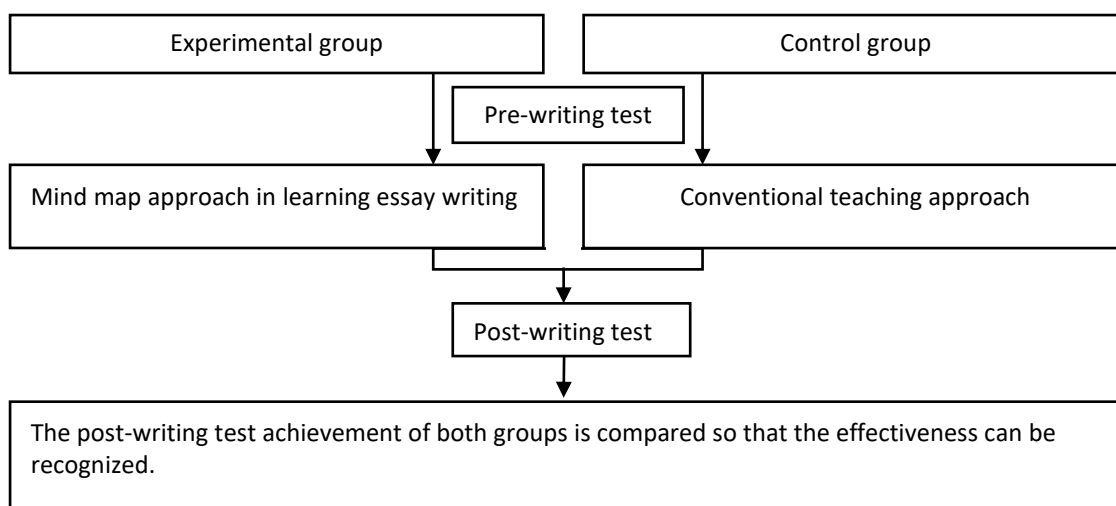


Figure picture 3.1 Study design

Population and Study Sample

The chosen research location is one of the non-Malay medium national-type school. This school was selected because the majority of students who study at the school are Chinese. It meets the requirements of the study which focuses on students who make Malay as a second language and their daily spoken language is not Malay. The sample of this study consisted of 32 respondents from two classes. The control group respondents consisted of 16 people and 16 respondents in the experimental group.

Research Instrument

A total of 3 instruments were used in this study, namely a daily lesson plan based on the intervention module of the *i-Think* mind map approach, an online questionnaire and a set of pre-post writing test questions.

Data Analysis Procedures

In this study, data analysis involves quantitative data. Statistical Package for the Social Sciences (SPSS) software version 26 was used to analyze the findings of the study. In a quasi-experimental study, the researcher uses a t-test to analyze because both groups in the study are from the same population. The sample size of the two groups also met the t-test conditions, it containing 10 subjects and above (Chua, 2014). Independent-Samples T-Test was used to identify whether there was a significant difference between the experimental group and the control group in the pre-writing test.

The post-writing test involves a comparison within the experimental group. Therefore, a paired t-test (paired-samples T-Test) was used to identify whether there was a significant difference after the intervention in the experimental group. Paired t-tests were chosen because they are suitable for comparing pre- and post-intervention achievement levels in the same group.

Findings

Demographic findings in the study questionnaire

The respondents in this study are Year 5 students who study Malay as a second language in a non-Malay medium national-type school. A total of 16 respondents were involved in the essay writing intervention in Malay as a second language (experimental group). There are 14 (87.5%) respondents who are Chinese and 2 (12.5%) respondents who are Indian. The following table 4.1.1 shows the race of the respondents in the experimental group.

Table 4.1.1

Demographic profile of experimental group respondents

	Races					Total
	Malay	Native	Chinese	Indian	Lain-lain	
Percentage	-	-	87.5%	12.5%	-	100%
Number	-	-	14	2	-	16

The following table 4.1.2 shows the daily spoken language of the respondents in the experimental group. Based on the table displayed, it was found that English and Chinese or dialects are the daily spoken languages of the respondents of the experimental group. A total of 2 people (12.5%) respondents speak English in their daily lives while the use of Chinese or a dialect as a daily spoken language totals a total of 14 people, which is 87.5%. The results of this finding show that Malay is the second language among the respondents of this experimental group. They meet the respondent criteria set in this study, which aims to carry out interventions for respondents who make Malay as a second language.

Jadual 4.1.2

Daily spoken language of experimental group respondents

	Daily spoken language					Total
	Malay	English	Mandarine/ dialect	Tamil	Others	
Percentage	-	12.5%	87.5%	-	-	100%
Number	-	2	14	-	-	16

Pre-writing Test

A pre-writing test was conducted to identify the current level of achievement of respondents in writing Malay as a second language essay with a conventional approach in the experimental group and the control group.

H₀₁: There was no significant difference in the level of achievement of the respondents before the intervention between the control group and the experimental group.

Table 4.2.1

The mean difference in pre-writing test achievement between the control and experimental groups

Group	Number	Mean	Standard deviation	t-value	df	p-value
Experimental group	16	8.93	1.907	.076	30	.940
Control group	16	8.87	2.825			

* Significant level 0.05

An independent sample t-test was used to compare the level of achievement in writing Malay as a second language among the respondents between the experimental group and the control group before the intervention was carried out. The data show that there is no significant difference in the level of writing achievement between the experimental group (mean = 8.93, standard deviation = 1.907) and the control group (mean = 8.87, standard deviation = 2.825); $t(30) = .076, p > .05$. Thus, the null hypothesis is accepted.

This means that the level of achievement in writing Malay as a second language in the experimental group and the control group before the intervention was carried out was the same. Although the mean value for the experimental group is high (mean=8.93) compared to the control group (mean=8.87), it does not show that any group is significantly more capable of using Malay as a second language in essay writing.

Post-writing test

The post-writing test was conducted to answer the question in this study, which is to identify the effectiveness of the mind map approach in improving the skill of writing Malay essays as a second language among the respondents of the experimental group.

H₀₂: There was no significant difference in the level of achievement of the respondents after

learning to write Malay essays based on the mind map approach before and after the intervention in the experimental group.

Table 4.3.1

The mean difference in pre- and post-test achievement between the control and experimental groups

Group	Test	No.	Mean	Standard deviation	t-value	df	p-value
Experimental group	Pre-test scores	16	8.93	1.907	-10.044	1	.000
	Post-test scores	16	14.4	1.457		5	
Control group	Pre-test scores	16	8.87	2.825	-.837	1	.417
	Post-test scores	16	9.53	2.973		5	

* Significant level 0.05

Analysis of the experimental group of the post-writing test

Based on table 4.3.1, it was found that the mean post-test score of the experimental group (14.47) was higher than the pre-test score (8.93). The data obtained showed a significant difference, namely the achievement of respondents before the intervention (mean = 8.93, standard deviation = 1.907) and the achievement after the intervention (mean = 14.47, standard deviation = 1.457) with a value of $t(15) = -10.044$, $p < .05$. The p -value is in the null hypothesis rejection area, then the null hypothesis is rejected.

This means that there is a significant difference in the level of achievement of the respondents after learning to write Malay essays based on the mind map approach before and after the intervention in the experimental group. Overall, the use of mind maps has a positive effect on increasing the level of achievement of respondents in writing essays in Malay as a second language. It is suitable for use in helping the writing of Malay as a second language among non-Malay medium national-type school students.

Analysis of the control group of the post-writing test

Based on table 4.3.1, it was found that the mean post-test score (9.53) was higher than the pre-test score (8.87). However, after analysis, the data showed that there was no significant difference between pre-post writing test achievement in the control group. The data shows the achievement of pre-test respondents (mean = 8.87, standard deviation = 2.825) and post-test achievement (mean = 9.53, standard deviation = 2.973) with a t value (15) = $-.837$, $p > .05$.

This means that there is no significant difference in the level of achievement of the respondents after learning to write Malay essays based on the conventional approach in the control group. It can be concluded that the conventional approach is less helpful in increasing the level of achievement of the respondents in writing essays in Malay as a second language.

Conclusion

This study is based on the implementation of an intervention with a mind map approach in a national type school that involves 21st-century learning and facilitation. Needham's Five Phase Constructivism Model became the basis and was adopted in this study to ensure that the intervention process was carried out smoothly. The implementation of Needham's Five-Phase Constructivism model which was carefully planned has been adapted to the learning module developed to meet the purpose of the study. The study aims to study the effectiveness of mind maps in improving factual essay writing skills in Malay as a second language among national school students. This study is important because it helps identify whether the mind map approach is effective for students who learn Malay as a second language.

Overall, the mind map approach based on Needham's Five-Phase Constructivism Model (1987) model helps in the student's thinking process by increasing critical and reflective thinking while producing second-language writing. Pupils can produce ideas in a directed manner with the mind map approach in addition to being able to relate the ideas to the knowledge learned. In addition, reflection sessions allow students to recall what they have learned and encourage them to make improvements to their original ideas. Discussion activities that involve learning in groups allow students to learn from each other by sharing opinions and getting more ideas for the topics studied. This statement is in line with the study

of (Subadrah and Malar, 2005; Dayana, 2012; Zurainu and Abdull, 2012; Arihasnida et al., 2020; Wong and Nurfaradilla, 2020).

Table 5.1

Interventions with mind map approach using Needham's Five-Phase Constructivism Model

Phase	Component		Interventions
1	Orientation		<ul style="list-style-type: none"> - Understand the use of mind maps - Selection of mind maps based on the given title
2	Generation of idea		<ul style="list-style-type: none"> - Write the main idea - Write the supporting details
3	Restructuring of idea		<ul style="list-style-type: none"> - Present ideas - Describe ideas - Questioning and answering sessions with classmates and teacher
4	Application of idea		<ul style="list-style-type: none"> - Identify the new modified ideas that can be applied in writing
5	Reflection		<ul style="list-style-type: none"> - Assess understanding - Make improvements for the next writing exercise

Based on the data obtained, respondents in the experimental group achieved better results in Malay writing compared to respondents in the control group who used a conventional teaching approach. In addition, the experimental group achieved a significant improvement while the control group did not. This is proven that the mind map approach has helped students learn and improve their essay writing skills. This statement is supported by the research findings of Bitu and Vahideh (2020) which state that the use of mind maps is suitable for use in writing classes because it helps students in organizing writing effectively and mind maps guide students to frame, organize and connect ideas.

In addition, the findings are also consistent with the findings of Zikri et al (2019), i.e. mind maps are effective in improving the achievement of essay writing and can improve the students' level of thinking. This is because mind maps are able to increase students' understanding, interest, appreciation, and memory in learning. The use of mind maps successfully attracts students' interest when learning Malay because it helps facilitate understanding of the topics given by the teacher (Nur, 2019).

Writing main ideas and side ideas in a mind map helps students think more critically during the production of ideas. This statement is supported by a study by Fikri and Zamri (2018) which shows that mind maps can improve students' idea generation skills in essay writing. Students write down ideas in the mind map space so that they can easily identify whether their ideas match the given title or not. In addition, by recording ideas in the mind map they can focus and develop the ideas by making further elaborations or giving examples based on the ideas recorded in the mind map. The ideas clearly recorded in the mind map allow the students to organize their ideas while developing the ideas while writing the essay. This statement is in line with the opinion of Rosciano (2015) who states that mind maps are a useful resource for developing and implementing activities to stimulate various levels of

students' thinking skills. Therefore, mind maps can be used as a tool to help students to explore, analyze, share ideas, and give a picture of thinking.

The use of mind maps also helps students when structuring sentences and elaborating ideas when producing Malay writing. The results of this study are in line with Hidayu's (2015) study which states that the mind map approach is positively effective in helping weak Chinese students to build cohesive and coherent sentences when producing an essay writing. They can plan the main and side contents by relating the existing knowledge and what is recorded in the mind map better.

Students are encouraged to conduct independent learning. They are allowed to find ideas through classmates, books, online, and so on. However, teachers who act as facilitators in this intervention process also play an important role. Because the students involved in this study are not native Malay speakers, the teacher needs to provide appropriate guidance when the students write ideas. Teachers need to give examples of properly structured sentences as a reference and help students translate their ideas into Malay. This is because sometimes students direct translate their ideas from their mother tongue to Malay, which will inevitably lead to mistakes in terms of word usage and mistakes in terms of sentence structure. In addition to giving guidance, the students are encouraged to memorize the vocabulary so that they can remember the meaning of the word in addition to being able to expand the vocabulary in writing the next essay.

With that, mind maps are easy to use and very suitable for collaborative learning. Group learning plays an important role during the self-learning process too. Students are encouraged to discuss with each other while producing their respective mind maps. This is because students will get more ideas through group discussions. They can collect the ideas of group mates, creative and critical ideas are easily generated through group discussions. Discussion activities that involve learning in groups allow students to learn from each other by sharing opinions and getting more ideas for the topics studied. This statement is in line with the study of (Subadrah and Malar, 2005; Dayana, 2012; Zurainu and Abdull, 2012; Arihasnida et al., 2020; Wong and Nurfaradilla, 2020).

Table 5.2

Advantages of learning writing in second language with mind map approach based on Needham's Five Phase Constructivism Model, 1987.

No.	Advantages of learning writing in second language with mind map approach
1	Facilitate understanding of the given title
2	Assist in planning the main and supporting details by relating existing knowledge.
3	Generate ideas relevant to the topic, develop and elaborate the ideas more thoughtfully.
4	Can focus and develop ideas by making further elaborations or giving examples based on ideas recorded.
5	Easier to structure sentences and describe ideas.
6	Formulate, organize and connect ideas.
7	Improve idea generation skills.
8	Helps in thinking more critically during the production of ideas.
9	Helps to explore, analyze, share ideas and reflect thoughts.
10	Increase understanding, interest, appreciation and memory in learning.
11	Organize writing effectively.
12	Attract interest.
13	Suitable for collaborative learning.
14	Easy to identify whether the correctness of the idea with the given title.
15	Improve essay writing achievement.

In conclusion, the research findings clearly prove that the mind map approach is effective and helpful in the mastery of writing skills in Malay as a second language. Pupils can generate ideas relevant to the topic, develop and elaborate the main and secondary ideas more thoughtfully with the mind map approach. The mind map approach has a positive effect on language learning for non-native speakers.

The important of this study is it has beneficial to students learning a second language or a foreign language and teachers who act as facilitators. Among the implications of the findings of this study are:

- i) Improve mastery of Malay writing skills as a second language.
- ii) Increasing students' confidence when producing Malay as a second language.
- iii) Improvement of 21st Century Learning practice which is centered on students learning and teachers as facilitators.
- iv) Cultivating Higher-order thinking skills (HOTS) in school.

This study is limited by measuring the effectiveness of the mind map approach in improving Malay essay writing skills as a second language among Chinese students in non-Malay medium national-type school. Only 2 types of mind maps are used in this study, namely circle maps and multi-flow maps. The findings of this study provide a framework for other researchers in the future so that they can develop this topic by measuring the effectiveness of the eight types of mind maps introduced in the *i-Think* Program. The researcher also suggested increasing the number of studies on the mind map approach to other aspects of language learning in Malay in the future.

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