
MindMup Mapping Tool and the Writing Skills of Grade 10 Students

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ABSTRACT: Writing is one of the most important skills that learners must master among the five macro skills. It is essential for individuals' academic success, yet many Grade 10 students still found difficulties in constructing well-structured and coherent essays across different genres. Difficulties in areas such as content knowledge, organization and structure, writing mechanics, and the use of evidence hinder their ability to produce high-quality written work. This study investigated the impact of the MindMup mapping tool on the writing skills of 30 Grade 10 students, focusing on different types of essays such as informative, persuasive, and argumentative writing. Utilizing a pre-experimental research design, the study employed pretest and posttest assessments to measure the students' progress overall writing performance. In this study, purposive sampling was used to have 30 Grade 10 students participated in structured writing activities incorporating MindMup to enhance their idea generation, organization, and coherence. The results of the study revealed that there is a significant difference in the pretest and posttest scores of students' writing skills in terms of content knowledge, organization and structure, writing mechanics, and the use of evidence. The study suggests that integrating digital tool specifically MindMup into the teaching and learning process particularly in writing instruction can effectively support students in improving their idea generation, writing mechanics, providing well-structured evidence, and enhancing their ability to plan and develop coherent, well-organized essays. Thus, the null hypothesis is rejected.

KEYWORDS: Writing Skills, MindMup, Essay Writing, Digital Mapping Tools, Content Knowledge, Organization and Structure, Writing Mechanics, Use of Evidence

INTRODUCTION

Education is the hope of every individual, especially the youth, in today's evolving world. It is the most reliable tool for individuals to improve their lives and contribute meaningfully to the needs of society, serving as a cornerstone of development that equipped people with the skills needed to serve their communities. In today's fast-paced digital age, developing strong writing skills is more essential than ever. Writing, one of the five core macro skills, significantly contributes to students' learning progress, shaping their ability to express ideas clearly, think critically, and communicate effectively. These skills extend beyond the classroom, preparing students for future educational endeavors, the workplace, and everyday communication (Hikma et al., 2019).

Writing is the foundation of communication. It is the primary tool used by an individual to share information, ask questions, and express opinions with other people. Its flexibility allows words to take many forms, the main reason why developing writing competence is essential for all the students. By mastering writing skills, students learn to compose coherent arguments, support key points with evidence, and share information meaningfully and productively. These skills are essential for academic success and prepare students for future educational and professional endeavors.

However, if students do not have the ability and knowledge in written form, how can they effectively engage in more complex academic and real-world activities? This challenge impacts students' performances across various learning areas, especially those using English as a medium of instruction and their overall well-being. Grammar rules and other English concepts become ineffective if not applied correctly, emphasizing the need for students to grasp and utilize writing skills. Noam Chomsky's theory on language highlights that language is one of the most intricate structures, with its development rooted in cognitive structures, organization, and genetic predisposition. Learning a language is inherently complicated, especially when mastering various language skills.

Teaching writing in a second language presents unique and complex challenges. It requires not only a deep understanding of the subject matter but also alignment with curriculum standards and a genuine passion for fostering student growth. Effective writing instruction demands creativity, flexibility, and a steadfast commitment to enhancing students' academic performance. As students develop their writing abilities, teachers must strike a careful balance between providing structured guidance and offering opportunities for independent exploration, thereby nurturing critical thinking and self-expression. Although teaching writing can

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be demanding, it is immensely rewarding, as it equips students with the skills to communicate effectively and succeed both academically and professionally.

The main goal of the study is to examine the effect of MindMup mapping tool on students' writing skills. The study would like to specifically examine the potential support it can give to students in enhancing and developing students writing performance. The study seeks to provide emphasis on how it can improve writing competence particularly in areas such as content knowledge, organization, and structure, writing mechanics and use of evidence in an essay writing.

OBJECTIVES OF THE STUDY

The main purpose of this study was to determine the effect of MindMup Mapping Tool on Grade 10 students' writing skills.

Specifically, the study sought answers to the following questions:

1.What are the pretest scores of students' writing skills in terms of:

- 1.1 Content Knowledge;
- 1.2 Writing Mechanics;
- 1.3 Organization and Structure; and
- 1.4 Use of Evidence?

2.What are the posttest scores of students' writing skills after using the MindMup mapping tool in terms of:

- 2.1 Content Knowledge;
- 2.2 Writing Mechanics;
- 2.3 Organization and Structure; and
- 2.4 Use of Evidence?

3.Is there a significant difference in the pretest and posttest scores of the students' writing skills before and after using the MindMup mapping tool?

METHODOLOGY

The study employed a pre-experimental design to determine the effect of the MindMup mapping tool on enhancing the writing skills of Grade 10 students at Adela S. Torres National High School. It focused on the significance of this tool in improving students' writing abilities, particularly in areas such as content knowledge, writing mechanics, organization, structure, and the use of evidence, as demonstrated through pretest and posttest assessments.

The study aimed to measure the effect of MindMup Mapping tool in the students' writing performance. The pretest was administered to students to assess their writing skills before using the MindMup Mapping tool. In contrast, the posttest was administered to evaluate any progress that occurred after using this tool.

This research design enabled the researcher to gather necessary data regarding the overall impact of the MindMup mapping tool on students' writing development in terms of content knowledge, writing mechanics, organization and structure, and use of evidence. It also determined whether there was a significant difference in the students' writing skills before and after utilizing this online tool in the teaching and learning process.

Respondents of the Study

The study was conducted at Adela S. Torres National High School (formerly known as Sampaloc National High School Extension) located at Brgy. Bayongon Sampaloc, Quezon. The respondents of this study were thirty (30) Grade 10 students who belong to only 1 section enrolled at Adela S. Torres National High School during the school year 2024-2025.

Grade 10 learners at Adela S. Torres National High School were divided into three (3) sections: Love, Faith, and Hope. For this study, the researcher focused exclusively on one (1) section, identified as the Faith group, which consisted of thirty (30) learners. For this study, purposive sampling a non-probability sampling method was employed. The students were selected based on specific characteristics that align with the study's objectives.

Research Instrument

In this study, the researcher utilized various instruments to gather the needed data to answer the research questions. These included the validated pretest and posttest assessment, rubric, and lesson exemplars. The researcher designed the pretest and posttest materials as an assessment tool to determine the students' writing skills before and after using MindMup mapping tool. Each assessment tools composed of one (1) single prompt. The results of these assessments were used to determine the significant differences in the writing skills of Grade 10 students before and after incorporating MindMup mapping tool into English instruction.

In addition, the researcher used rubric to assess the students' writing skills based on several key components: Content Knowledge, Writing Mechanics, Organization and Structure, and Use of Evidence.

A Lesson exemplar was also used in this study. The teacher's lesson exemplars consisted of different parts, which served as the researcher's guide for the daily lesson presentation, incorporating activities that utilized the MindMup mapping tool in the 3rd quarter period.

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Research Procedure

To accomplish this study, the researcher followed a systematic approach for the conduct of this study. The researcher began the study by presenting a research title to the adviser and panelists to seek approval and guidance. Following this, the researcher addressed all the comments and suggestions from the panel to ensure that this study would be possible.

Before implementing the study, the researcher also prepared all the necessary letters of request, signed by both the researcher and the research adviser, to seek permission to conduct the study and ensure adherence to ethical standards throughout the research process. These letters were addressed to the Schools Division Superintendent of Quezon, requesting approval to conduct the research at Adela S. Torres National High School. Additionally, the researcher sought permission from the school head to involve selected Grade 10 students in the study. This process included obtaining informed consent from students and ensuring confidentiality in data handling and reporting.

Then, the researcher prepared all the necessary materials to be used in this study such as questionnaire, record sheet, rubric, pretest and posttest materials, lesson exemplars, and other learning resources. These research instruments were checked by the research experts including Master Teachers in English to ensure that they were all aligned to the objectives of the study.

The researcher conducted the study at Adela S. Torres National High School during the third quarter of 2024-2025 school year. The lessons were based on the Most Essential Competencies (MELCs) provided by the Department of Education and the Lesson Exemplar of the teacher. The MindMap Mapping tool was incorporated into weekly lesson to help students improve their overall writing skills.

Over a month in the third-quarter period, the grade 10 respondents were introduced to MindMap mapping tool with activities designed to integrate tool alongside writing lessons. Throughout each third-quarter lesson, students used the tool to organize their thoughts and ideas effectively, producing well-structured essays.

The researcher began the conduct of the study by administering a validated pretest to students to assess their baseline writing skills establishing a starting point for evaluating the impact of the MindMap mapping tool. The initial assessment offered insights into students' capabilities and served as a basis for measuring improvements over the study period. After the pretest administration, one lesson was conducted weekly.

In the first week, the researcher introduced the MindMap mapping tool to the Grade 10 students, provided detailed instructions and training on its effective use. Students utilized MindMap during lessons to create visual maps that helped them organize their thoughts and structure their written outputs logically, based on assigned topics. The researcher closely monitored and facilitated students' progress throughout the week, offering feedback and guidance as they developed their initial drafts.

In the second week, students continued using MindMap for their writing tasks. Each lesson involved creating a new mind map tailored to the week's topic. This iterative process enabled students to refine their ideas, strengthen their organization, and improve the coherence of their work. The researcher remained actively involved, provided constructive feedback, and addressed any challenges students encountered while using the tool.

In the third week, students expanded on their use of MindMap by incorporating more detailed information and enhancing the depth of their ideas. The focus was on connecting multiple concepts within their maps to build more comprehensive and well-structured outputs. The researcher guided students in analyzing the relationships between their ideas, offered targeted support, and ensured that the maps effectively contributed to their writing development.

In the fourth week, students further developed their writing using MindMap, with an emphasis on integrating more complex ideas and refining their analysis. They were encouraged to use the tool to deepen their understanding of the topics and improve the clarity and precision of their outputs. The researcher facilitated discussions, provided additional guidance, and observed students' engagement with the tool. Progress in students' organization, idea development, and overall writing skills was documented throughout the lessons.

In the final week, the researcher administered a posttest to evaluate improvements in the students' writing skills. This assessment measured any progress made since the pretest.

Finally, the researcher collected and analyzed data from the pretest and posttest assessments. Data analysis assessed the effectiveness of the MindMap mapping tool in enhancing the students' writing skills. Statistical methods were used to evaluate changes in writing abilities and students' perceptions of the interventions.

RESULTS AND DISCUSSION

Table 1: Pretest Scores on Writing Skills

Score Interval	Content Knowledge		Writing Mechanics		Organization and Structure		Use of Evidence		Verbal Interpretation
	f	%	f	%	f	%	f	%	
5	1	1.1	-	-	-	-	1	1.1	Excellent
4	35	38.9	10	11.1	12	13.3	19	21.1	Good
3	43	47.8	27	30.0	31	34.4	50	55.6	Satisfactory
2	11	12.2	43	47.8	40	44.4	20	22.2	Needs Improvement
1	-	-	10	11.1	7	7.8	-	-	Unsatisfactory
TOTAL	90	100	90	100	90	100	90	100	
Legend: 5 Excellent, 4 Good, 3 Satisfactory, 2 Needs Improvement, 1 Unsatisfactory									

Table 1 presents the pretest scores of the respondents in four key components of writing skills: Content Knowledge, Writing Mechanics, Organization and Structure, and Use of Evidence. The data was gathered from 30 students of grade 10, with their

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outputs evaluated using rubric by three teachers to ensure consistency and minimize bias in the assessment process. This resulted in a total frequency of 90 per category. The table provides both the frequency and percentage distribution of scores across five performance 42 levels: Excellent (5), Good (4), Satisfactory (3), Needs Improvement (2), and Unsatisfactory (1).

In terms of Content Knowledge, 47.8% of the respondents demonstrated Satisfactory performance, indicating that while they were able to present ideas and arguments, these may have lacked depth or sufficient elaboration. Meanwhile, 38.9% of responses were rated Good, signifying well-developed content with some minor weaknesses. Only 1.1% of the responses achieved an Excellent rating, highlighting a small number of students who were able to construct well-reasoned, highly coherent ideas and reasoning. On the other hand, 12.2% of responses fell under Needs Improvement, suggesting difficulties in presenting relevant content, while no responses were classified as Unsatisfactory.

As for Writing Mechanics, 47.8% of the responses were rated Needs Improvement, suggesting that almost half of the students struggled with grammar, punctuation, spelling, and sentence structure. This indicates that students need immediate and intensive support specifically in enhancing their knowledge on the use of correct subject verb-agreement, proper word usage, capitalization and spelling. This was followed by 30.0% who scored Satisfactory, indicating a fair understanding of writing conventions, though errors were still present. 11.1% of responses were rated Good, reflecting a stronger command of mechanics, while another 11.1% were classified as Unsatisfactory, meaning these responses contained frequent and serious writing errors. Notably, no responses received an Excellent rating, showing that none of the students demonstrated mastery in writing mechanics.

Regarding Organization and Structure, 34.4% of responses were rated Satisfactory, indicating that a significant number of students could structure their ideas logically but still exhibited some issues with coherence and paragraph development. However, 44.4% fell under Needs Improvement, showing difficulty in maintaining a clear essay structure, logical sequencing, and proper transitions. Meanwhile, 13.3% were rated Good, demonstrating a more organized presentation of ideas, while 7.8% were categorized as Unsatisfactory, meaning the essays lacked clear organization, making comprehension difficult. Notably, no responses achieved an Excellent rating, reinforcing the need for further instruction in structuring essays effectively.

The results revealed that among the four categories, the Use of Evidence category saw the highest percentage of Satisfactory scores (55.6%), indicating that most students could incorporate supporting evidence but often lacked strong justification or sufficient elaboration. Additionally, 21.1% of responses were rated Good, showing that some students effectively integrated evidence but needed stronger explanations. Meanwhile, 22.2% of responses fell under Needs Improvement, meaning that while students attempted to use evidence, their arguments lacked clarity or proper citations. Only 1.1% of responses reached an Excellent rating, demonstrating strong argumentation skills with well-integrated evidence, while no responses were categorized as Unsatisfactory.

Based on students' performance in the pretest, it is evident that Use of Evidence had the highest percentage of satisfactory scores, suggesting that students could incorporate supporting details and examples but often struggled with proper justification and elaboration. In contrast, Writing Mechanics and Organization & Structure were the most challenging areas, with a significant number of students scoring in the Needs Improvement and Unsatisfactory categories. This indicates that many students struggle to organize their ideas effectively within the different parts of an essay, such as the introduction, body, and conclusion, while also having difficulties applying correct writing conventions.

These findings suggest the need for targeted instructional strategies that enhance students' ability to organize ideas effectively, incorporate relevant evidence to support their topics and ideas, improve grammatical accuracy, and develop well-structured essays. The integration of the MindMup mapping tool aligns with this need, as it provides students with a visual framework to plan their essays, ensuring logical sequencing of ideas and clearer expression of their points. For instance, since organization and structure were major challenges, MindMup can help students visually organize their ideas on the topic before writing. Additionally, MindMup's structured approach may help students improve Writing Mechanics by fostering clearer organization, which can reduce errors caused by disorganized thought processes. Research by Laila et al. (2023) highlights that mind mapping strategies can significantly improve students' writing organization and clarity by helping them structure their ideas more effectively during the writing process. Likewise, Graham (2019) emphasize that explicit instruction in writing structure and mechanics enhances students' overall writing proficiency.

Furthermore, research by Iniesta and Serrano (2020) emphasizes that effective writing instruction should incorporate active and engaging strategies that promote student participation in the classroom, enhancing comprehension and long-term retention of writing skills. Similarly, Alqasham and Al-Ahdal (2022) highlights the value of mind mapping tools in making the writing process more interactive and structured, noting that digital tools such as MindMup allow students to visually organize their thoughts before drafting essays, leading to improved writing coherence and idea development.

Overall, the pretest results highlight the importance of structured writing interventions, particularly those that focus on enhancing content knowledge, improving writing mechanics, strengthening organization, and promoting the effective use of evidence. The implementation of the MindMup mapping tool in subsequent lessons aims to address these gaps, providing students with a systematic approach to brainstorming, organizing, and refining their written compositions. The impact of this tool will be further assessed in the posttest to determine its effectiveness in improving students' writing skills.

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Table 2: Posttest Scores on Writing Skills

Score Interval	Content Knowledge		Writing Mechanics		Organization and Structure		Use of Evidence		Verbal Interpretation
	f	%	f	%	f	%	f	%	
5	21	23.3	5	5.6	9	10.0	9	10.0	Excellent
4	60	66.7	51	56.7	46	51.1	49	54.4	Good
3	9	10.0	32	35.6	35	38.9	32	35.6	Satisfactory
2	-	-	2	2.2	-	-	-	-	Needs Improvement
1	-	-	-	-	-	-	-	-	Unsatisfactory
TOTAL	90	100	90	100	90	100	90	100	

Legend: 5 Excellent, 4 Good, 3 Satisfactory, 2 Needs Improvement, 1 Unsatisfactory

Table 2 presents the posttest scores of the respondents in four key components of writing skills such as Content Knowledge, Writing Mechanics, Organization and Structure, and Use of Evidence. The scores presented in the table reflect the students' performance after the implementation of MindMap mapping tool as an intervention in the teaching and learning process. Similar to the pretest, 30 students participated in the assessment and their responses were evaluated by three teachers to ensure consistency and reliability. Each component had a total frequency of 90, representing all student assessments across the four writing components.

The results show that there is a significant improvement in writing skills, particularly in Content Knowledge. The majority of students (66.7%) attained a Good rating, indicating that the students demonstrated well-structured ideas with improved depth and reasoning. It clearly indicates that students have already improved and are now able to express their thoughts and ideas more clearly. In line with this, incorporating new insights to broaden their understanding of the subject matter has become easier for the students than before. This is a substantial increase compared to the pretest, where only 38.9% of students achieved a Good rating. Additionally, 23.3% of students achieved an Excellent rating, indicating the ability to present highly coherent, well-structured ideas with greater depth and reasoning. This represents a dramatic improvement from the pretest, where only 1.1% of students reached this level. Meanwhile, 10.0% of responses were rated as Satisfactory, a decrease from the pretest's 47.8%, indicating that more students progressed to higher levels of proficiency. Notably, no responses were categorized under Needs Improvement or Unsatisfactory, showing that all students achieved at least a satisfactory level of content development.

The posttest results reveal a marked improvement in Writing Mechanics, an area that had the highest percentage of Needs Improvement ratings in the pretest. More than half of the students (56.7%) achieved a Good rating, compared to just 11.1% in the pretest. Additionally, 5.6% of responses were rated as Excellent, a significant improvement from the pretest, where no students reached this level. The percentage of students in the Satisfactory category also increased to 35.6%, suggesting that many students demonstrated better command of grammar, punctuation, and sentence structure, though some minor errors persisted. Only 2.2% of responses remained in the Needs Improvement category, a sharp decline from 47.8% in the pretest. Notably, there were no responses in the Unsatisfactory category, marking a complete elimination of severe writing errors.

Additionally, the data shows considerable improvement in Organization and Structure. More than half of the students (51.1%) achieved a Good rating, a significant increase from the pretest's 13.3%. Additionally, 10.0% of responses were rated as Excellent, whereas none had reached this level in the pretest. The Satisfactory category accounted for 38.9% of responses, indicating that while many students still struggled with maintaining logical flow and coherence, their structuring of ideas improved compared to the pretest. No students were categorized under Needs Improvement or Unsatisfactory, signifying a clear advancement in essay organization.

Moreover, the posttest results reveal significant growth in the Use of Evidence. More than half of the students (54.4%) attained a Good rating, compared to just 21.1% in the pretest. Additionally, 10.0% of responses were rated as Excellent, demonstrating the ability to integrate strong, well-justified evidence with clear analysis. The Satisfactory category accounted for 35.6% of responses, indicating that while some students continued to struggle with effectively justifying their claims, their use of supporting details improved overall. Notably, no responses fell under Needs Improvement or Unsatisfactory, a significant improvement from the pretest, where 22.2% of responses were rated as Needs Improvement.

The posttest results indicate a substantial improvement in all four components of writing skills compared to the pretest. The most significant gains were observed in Writing Mechanics and Organization & Structure, which had the highest percentage of Needs Improvement scores in the pretest. The reduction in Needs Improvement and Unsatisfactory ratings across all components suggests that students benefited significantly from the intervention.

Use of Evidence and Content Knowledge showed notable progress, with more students reaching the Good and Excellent categories. This suggests that students developed stronger reasoning skills and improved their ability to integrate and analyze supporting details in their essays. The increase in Excellent ratings across all components further highlights the effectiveness of MindMap mapping tool in enhancing students' writing skills.

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During the implementation of MindMap as an intervention, students produced better writing outputs by actively engaging in planning and organizing their ideas. This improvement aligns with the findings of Febriani and Ramadhani (2023), which demonstrated that the mind mapping technique effectively enhances students' writing skills by helping them organize systematic ideas, making their writing more coherent and understandable.

In formative assessments, students who used MindMap to map out their ideas before drafting essays demonstrated stronger organization and logical flow in their writing. This improvement was particularly notable in Writing Mechanics and Organization & Structure, where many students had initially received 'Needs Improvement' ratings. With continuous practice and guided exercises using MindMap, they refined their sentence structures, punctuation, and paragraph development, leading to more polished compositions. In line with this is a study by Vijayavalsalan (2016), which found that mind mapping can increase learners' understanding levels in writing classes, thereby enhancing their ability to organize and structure their essays effectively.

Regarding Content Knowledge and Use of Evidence, students initially faced challenges in integrating relevant information to support their ideas. However, as they used MindMap to visually connect their main points with supporting details, they developed stronger reasoning skills and improved their ability to incorporate and analyze evidence effectively. This outcome supports the research of Chalak and Rastgoo, (2021), who found that using mind mapping software like Mindomo improved the logical development of EFL learners' writing by helping them organize their thoughts and evidence more coherently.

The substantial reduction in 'Unsatisfactory' and 'Needs Improvement' ratings across all writing components highlights the effectiveness of MindMap as a tool for enhancing students' writing skills. By providing a structured, visual approach and organizing ideas, MindMap helped students not only improve their essay structures but also refine their grammar, coherence, and ability to develop well-supported arguments. According to the study by Nazri et al. (2017), it was found that using mind mapping tools as pre-writing strategies significantly improved ESL students' writing scores by enhancing their ability to organize and present their ideas clearly.

Table 3: Test of Difference on Writing Skills

Writing Skills	Pretest		Posttest		t	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Content Knowledge	3.29	.648	4.13	.500	-6.82	29	.000
Writing Mechanics	2.41	.618	3.66	.543	-10.60	29	.000
Organization and Structure	2.53	.544	3.71	.621	-8.88	29	.000
Use of Evidence	3.01	.621	3.74	.530	-5.72	29	.000

Table 3 presents the statistical comparison of the respondents' pretest and posttest scores in different components of writing skills before and after utilizing MindMap mapping tool. The table reveals that there is a significant improvement in all components of writing skills, as evidenced by the mean score increase from the pretest to the posttest and the significance value of 0.000, which is less than 0.05. The results indicate that the observed differences are statistically significant and unlikely to be due to chance.

For Content Knowledge, respondents' mean score increased from 3.2890 in the pretest to 4.1327 in the posttest. This substantial increase suggests that students developed a stronger ability to generate, expand, and refine ideas while ensuring topic relevance. The improvement reflects enhanced skills in constructing well-developed discussions, supporting claims, and maintaining focus throughout their writing.

In Writing Mechanics, students showed remarkable progress. Their scores increased from 2.4107 to 3.6563, indicating that they developed better grammar, punctuation, capitalization, and sentence construction skills. The structured approach provided by the mapping tool helped students refine their writing mechanics, leading to more polished and precise written outputs.

Moreover, the Organization and Structure component exhibited significant advancement, with the mean score increasing from 2.5340 to 3.7113, highlighting improved logical sequencing and coherence in students' written work. Students demonstrated greater awareness of paragraph organization, transitions, and overall text structure, which contributed to clearer and more cohesive compositions.

Regarding the Use of Evidence, respondents' mean score increased from 3.0107 to 3.7447. This growth indicates that students became more proficient in selecting and integrating relevant, credible, and well-analyzed supporting details to strengthen their claims and explanations. Their ability to critically evaluate sources and incorporate evidence in a meaningful way suggests an improvement in research and analytical skills.

The t-values for all components are negative, indicating that posttest scores were significantly higher than pretest scores, confirming that the MindMap led to substantial improvements. The degrees of freedom (df = 29) suggest that the analysis was conducted on 30 respondents, which provides a reliable measure of statistical significance.

The results confirm that the integration of the MindMap mapping tool significantly enhances students' writing proficiency. The substantial differences in pretest and posttest scores across all writing components reinforce the effectiveness of this tool in fostering idea development, logical structuring, and evidence-based reasoning. Incorporating MindMap into writing instruction

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offers students a structured and interactive method for organizing their thoughts, ultimately leading to more coherent, well-supported, and analytically sound writing.

Similarly, Chiang et al. (2016) found that visual argument mapping tools enhance students' ability to structure essays, improving logical sequencing and cohesion. Wahid and Sudirman (2023) further demonstrated that structured mapping tools reduce grammatical errors and enhance overall writing clarity, reinforcing the benefits observed in this study.

However, despite the improvement observed, certain areas still require further development. While students demonstrated notable progress in Writing Mechanics, the increase in mean scores from 2.4107 in the pretest to 3.6563 in the posttest suggests that many students still struggle with grammar, punctuation, and sentence structure. This indicates a need for continued reinforcement of writing conventions and linguistic accuracy to help students achieve more polished and precise compositions.

Likewise, Organization and Structure showed significant improvement, increasing from 2.5340 to 3.7113; however, the scores indicate that some students continue to struggle with maintaining logical sequencing and coherence throughout their essays. Issues such as abrupt topic shifts, weak paragraph transitions, and structural inconsistencies may still need to be addressed through further instructional support and practice.

CONCLUSIONS

Based on the findings of the study, the following conclusion is drawn:

1. There is a significant improvement in the essay writing skills of Grade 10 students at Adela S. Torres National High School after using MindMap mapping tool. Therefore, the null hypothesis stating that "there is no significant difference between the pretest and posttest scores in the essay writing skills of the respondents using MindMap mapping tool" is not sustained.

RECOMMENDATIONS

Based on the results and conclusion of the study, the following recommendations are hereby formulated:

1. Since the study demonstrated the effectiveness of MindMap mapping tool, it is recommended that this tool should be integrated into English instruction particularly in the teaching of essay writing. The school may also conduct Learning Action Cell (LAC) sessions and teacher training workshops about digital literacy, mapping strategies, and the implementation of the tool.
2. Teachers may design different exercises using MindMap mapping tool to help students organize their ideas, improve logical sequencing, and strengthen coherence in essay writing. They should also employ clear instructional strategies for the effective implementation of the tool.
3. MindMap mapping tool should be integrated to other subject areas such as Araling Panlipunan, MAPEH, Science, TLE, ESP, to help students improve their ability to construct an effective essay.
4. Future researchers are encouraged to study the long-term effects of using the MindMap mapping tool on students' writing skills. They may examine how it works on different genres and its effectiveness across varying proficiency levels.

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