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AN ACTION RESEARCH ON ENHANCING THE RESEARCH SKILLS OF GRADE 10 STUDENTS THROUGH A SEMINAR SERIES INTERVENTION

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ABSTRACT
The purpose of this descriptive quantitative study was to enhance the research writing skills of Grade 10 students through the integration of seminar series. The study participants were 50 Grade 10 students from Kapalong National High School. The study introduced an intervention series of seminar particular in quantitative format chapters 1 and 2 to enhance their research writing skills. The pre-test and post-test results showed a significant difference: the pre-test had a mean score of 25.9 (SD = 3.33), while the post-test showed a mean score of 42.3 (SD = 2.86). The statistical analysis revealed (49) = 24.0, p<. 0001 a significant enhancement in students' research writing skills particular in qualitative. These findings suggest that the intervention effectively improved students 'research writing skills. To provide a comprehensive understanding of the students' insights during and after the intervention, the researchers conducted interviews with selected individuals. From the responses gathered, four themes emerged regarding the insights of students: (1) Enhanced Understanding of Research after the Program (2) Making Research Writing Easier through Clear and Simple Steps (3) Enhanced Confidence in Writing Research after the Program (4) Improved Skills in Writing Different Parts of a Research Paper

KEYWORDS: *Quantitative Research, Grade 10 Students, Seminar Series, Philippines*

INTRODUCTION
Research is the cornerstone of progress and development across various fields, shaping our understanding of the world, solving complex problems, and driving innovation (Mendonca, 2019). Whether conducted in laboratories, clinical settings, or academic institutions, research forms the foundation upon which new ideas are built and old paradigms are challenged (Lin, 2019). Hence, the lack of basic knowledge of research is attributed to the difficulties in defining the research objectives, data, findings, and other relevant aspects of research. Moreover, students carried a big task in writing research, which made them often neglect the importance of research writing as when students get involved in the academic field, they are expected to be a researcher (Harris, 2020).

Congruently, Congruently, in Taiwan, research writing difficulties faced by students in one of the universities in Pontianak revealed several contributing factors, including a lack of writing capability, challenges in the consultation process, and psychological factors. The lack of writing capability often involved difficulties in organizing research components and presenting data analysis. Students also reported the absence of a comprehensive guidebook to support them through these challenges. The consultation process posed issues related to understanding lecturers' feedback and limited time for discussion. Additionally, psychological factors such as low self-esteem, anxiety, and lack of motivation hindered progress in research writing (Rizwan & Naas, 2022). Similarly, a study in India highlighted that undergraduate student struggled with research writing due to poor academic writing foundations and inadequate mentorship (Khan, 2020). In Indonesia, a study also found that students experienced anxiety and confusion during the research process, often due to unclear guidance and lack of confidence in their writing abilities. These findings affirm that both cognitive and affective barriers are common across various academic contexts in Asia (Pratama, 2020).

In the Philippines, specifically in Sorsogon State University. Students face significant challenges in mastering research writing skills, particularly in structuring ideas, formulating research questions, and synthesizing information. These struggles often result in a lack of interest in research assignments. Contributing factors include unfamiliarity with the research process, the complexity of academic writing, unengaging topics, and limited guidance (Jimenez, 2024). Moreover, in University of San Agustin, AB Communication students face various academic difficulties in thesis writing, including challenges in identifying research topics, conducting literature reviews, aligning research instruments, and finding willing respondents. They also struggle with time-consuming tasks like transcribing interviews and managing delays in video production due to uncooperative participants or scheduling

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conflicts. These hurdles often lead to repeated revisions and mounting pressure, making the research process more stressful and demanding (Campillan, 2019). Furthermore, in Paharang Integrated School in Batangas City, challenges in research writing, particularly in identifying literature gaps, formulating clear methodologies, and linking findings to broader frameworks. Despite satisfactory performance in some areas, varying competencies across academic strands and low confidence among certain students indicate a need for targeted support. These gaps highlight the necessity for structured interventions to strengthen students' research writing skills and boost their academic confidence (Cepillo, 2024).

At Kapalong National High School in Davao del Norte, Grade 10 students face significant difficulties in research writing in English, particularly in organizing ideas, critically analyzing information, selecting appropriate research problems, and presenting coherent, well-structured arguments. These challenges negatively impact their comprehension, focus, and ability to produce meaningful academic work, ultimately hindering their preparedness for higher education and future careers that demand strong research and communication skills. This action research addresses these deficiencies by targeting weak areas in writing competency, critical thinking, and the application of research skills to real-life issues. It aims to provide practical strategies and interventions to help students improve their ability to organize and express ideas effectively, synthesize information, and construct logical arguments. By fostering a deeper understanding of the research process and promoting analytical thinking, this study seeks to equip students with essential skills for academic success and lifelong learning, shaping them into well-rounded individuals ready to meet both academic and real-world challenges with confidence.

Additionally, through a thorough review of relevant literature on poor research writing, the researcher identified studies that address this topic like the study of Sitompul (2022) entitled "Challenges in Writing Academic Research: An Exploration of Master's Students' Experiences" Their focus is to investigate the difficulties of graduate English major students in writing academic research paper using quantitative research method. Moreover, the study of Abigail (2019) entitled "A Research into Writing Difficulties Faced by Senior High School Students in Ghana". In which they focus on students' way of writing and choosing problem to solve using qualitative approach. Moreover, study of Navales (2024) entitled "Challenges Encountered by Senior High School Students in Research Writing" focuses on student how to identify the problem in starting the research.

However, within the scope and specific context of this study, the researcher has not found any existing research on the descriptive quantitative method focusing on one-group pretest posttest approach perspective in addressing students poor research writing, academic competencies, critical thinking and establishing future readiness employing Seminar Series intervention. This means that there has no study that specifically focused on the one-group pretest posttest addressing the needs of grade 10 student's poor research writing and awareness in crafting research to establishing future readiness of the learners in their future endeavor. This therefore, established the research gap of the study.

Research Questions

The objective of this research was to determine the effectiveness of series of seminars in improving the research writing skills of Grade 10 students. The research questions/objectives that guided this study were as follows:

1. What is the level of research writing skills among Grade 10 students before the Seminar Series Intervention (SSI) has been implemented?
2. What is the level of research writing skills among Grade 10 students after the Seminar Series Intervention (SSI) has been implemented?
3. Is there a significant difference between pre-test and post-test employing the Seminar Series Intervention (SSI)?
4. What insights can you share to the school administrators with regards to action/intervention taken?

PROPOSED INTERVENTION

The Seminar Series Intervention (SSI) is a targeted program designed to help Grade 10 students improve their research writing skills. It focuses on five key areas: problem identification, information gathering, research methodology, data analysis, and effective communication. Through structured, interactive sessions, students are guided through each stage of the writing process, from idea development to final revisions. The program also promotes critical thinking and academic competence, helping students analyze information and present clear, well-supported arguments. Through breaking down complex tasks, the SSI builds confidence and prepares students for future academic and professional work.

Week	Content	Material/Mode of Instruction
Week 1	Pretest	
Week 2	• Problem Identification and Conceptualization • Defining Research Problems • Differentiating Qualitative from Quantitative Research	• Lecture Method • Guided Examples • Drills and Practice Writing (Research Title) • CRAAP Test (Currency, Relevance, Authority, Accuracy & Purpose)
Week 3	• Statistics and Quantitative Analysis Skills	• Lecture Method

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	• Differentiating Descriptive and Inferential Statistics • Interpreting Tables and Graphs • Applying Basic Data Analysis Techniques	• Hands-on Activities including analyzing sample data sets • Choosing suitable statistical method through drills
Week 4	• Research Methodology Skills • Distinguishing Qualitative and Quantitative Research Designs • Understanding Sampling Techniques	• Designing Mini Research Plans • Interactive Quiz • Identifying Strength and Weaknesses of Research Designs
Week 5	• Communication and Language Skills • Academic Writing	• Writing and organizing information Logically • Integrating References using APA format.
Week 6	Posttest	

The Seminar Series Intervention (SSI) aims to enhance the research writing skills of selected Grade 10 students at Kapalong National High School by addressing five key areas: problem identification and conceptualization, information and evidence seeking, research methodology, statistics and data analysis, and communication and language skills. Through structured, learner-centered sessions held every Friday from 3:30 PM to 4:30 PM, students will be guided in developing focused research questions, evaluating credible sources, applying both qualitative and quantitative methods, analyzing data, and effectively presenting their findings. Prior to the intervention, 50 students will be selected based on academic records in collaboration with the English department, and a pre-test will assess their initial competencies. Following the intervention, in-depth interviews with 10 students and 5 teachers will gather feedback on its effectiveness and implementation. The overall goal is to provide students with a solid foundation in research writing that supports their academic success and prepares them for future professional demands.

RESEARCH DESIGN

The study utilized a descriptive quantitative research design because the data were presented in numerical and descriptive form. Descriptive research was defined as a research method that described the characteristics of the population or phenomenon that was being studied. This design choice acknowledged the complexities of real-world settings and aimed to investigate the effectiveness of the Seminar Series Intervention (SSI) intervention in enhancing student research writing skills among 10th-grade students (Bhandari, 2020).

In this context, descriptive quantitative design was applied to evaluate the Seminar Series Intervention's impact on 10th-grade students' research writing skills. By analyzing numerical data from 50 participants, the study captured real classroom dynamics and measured learning improvements in a localized educational setting.

Local Research Context

The study participants were Grade 10 Titanium students at Kapalong National High School at Maniki, Kapalong, Davao del Norte. Fifty participants (50) participated with the said intervention before, during, and after. Additionally, there were ten (10) participants in the in-depth interview consist of students.

In addition, the section Grade 10 students was selected as the participants of the said intervention because of how they showcase their performance in answering the basic questions during the orientation proper as well as their scores during the pre-test conduct as well as determined during the English class of one of the researchers of this study. Some issues were unfamiliarity of the basic terms and others completely do not have any idea about it. Therefore, there was a need for the conduct of action research.

Population and Sampling of the Research

Purposive sampling, also known as judgmental sampling, is a type of non-probability sampling method where units are selected based on specific characteristics required for the sample. In other words, researchers deliberately choose units that possess certain attributes relevant to the research objectives. This approach relies on the researcher's judgment in identifying and selecting individuals, cases, or events that can offer the most pertinent information to achieve the study's goals (Nikolopoulou, 2022).

In the context of this study, the research respondents were 10^{TH} grade students currently enrolled in the academic year 2024-2025 at Kapalong National High School. This grade level was Selected because the researchers' observed participants of the said intervention who mostly lacked awareness in writing research. It was determined during the English class of one of the researchers of this study. Some issues were unfamiliarity with the technical terms. Others really did not have any idea about it. Therefore, there was a need for the conduct of action research.

Research Instrument

The study adopted the survey questionnaire on research writing skills developed by Meeran et al. (2012). This survey questionnaire aimed to assess student research writing skills in terms of problem-solving skills, information seeking skills, research methodology skills, statistics and quantitative analysis

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skills, and communication and language skills. Before utilization, the questions underwent rigorous validation by a panel of experts.

The primary measurement tool utilized was the multiple-choice questions to measure the level of student research writing skills. Using this scale, respondents were instructed to incircle the correct answer. Data analysis was conducted based on the frequency of responses to derive the expected scores.

To facilitate the expression and interpretation of the gathered data, the researcher created a table illustrating the range of description with their respective meanings and interpretations. These categories are outlined as follows:

Range of Mean	Descriptive Level	Interpretation
41-50	Very High	Students demonstrate excellent understanding of quantitative research, clearly grasping the research problem, variables, hypotheses, and methodologies in detail.
31-40	High	Students show a good understanding of quantitative research, including the research problem, key concepts, and methodology, with awareness of its limitations.
21-30	Moderate	Students have a basic understanding of quantitative research concepts but may struggle to apply them effectively.
11-20	Low	Students show limited understanding of quantitative research and often omit key elements; they require support to improve.
10 below	Very Low	Students show minimal understanding and frequently misinterpret quantitative research concepts and methods.

DATA COLLECTION

The researchers followed the subsequent procedures when collecting the data to obtain the required information for the investigation.

Researchers conducted group planning sessions to create two learning-appropriate, research-based questionnaires (pre-test and post-test). These instruments were meticulously designed to cover key mathematical concepts, specifically integer addition and subtraction—to evaluate students' computational fluency. The questionnaires functioned as quantitative tools, enabling measurement of students' proficiency levels through both pre- and post-intervention assessment**.**

Questionnaire Validation. The researchers sought validation of the questionnaire from experts or a panel well-versed in questionnaire development to ensure its validity and reliability.

Seeking Permission to Conduct the Study. The researchers asked the school principal to distribute the questionnaires (pre-test) to the identified students. They also sought permission to implement the intervention in the identified class group.

Pre-test Assessment Administration: Prior to implementing the intervention, the researchers administered a pretest to the experimental group to gauge students' baseline performance levels in writing research.

Intervention Implementation in Experimental Group: The researchers addressed these challenges by implementing the Seminar Series Intervention, as this practical guide presented a comprehensive approach to measure the research writing skills of the students in establishing positive attitude towards writing research, establish critical thinking, equipped academic competencies, and future preparedness.

Post-test Assessment Administration: After two months of implementation in the experimental group, a post-test was administered to assess students' progress in writing research, particularly

Data Tabulation and Evaluation: The data collected from the pre-test and post-test were tabulated and encoded in Microsoft Excel by the researchers. A statistician was confidentially authorized to perform computations, generate tables, and analyze the results. The findings were used to assess the effectiveness of the intervention in improving computational fluency and to guide enhancements in teaching strategies.

Statistical Tool

The computation of data and testing of hypotheses involved the utilization of various statistical tools. These tools were employed to ensure accurate analysis and interpretation of the data.

Paired T-test. In this research, this was used to determine whether the two populations' means were different when the variances were known and the sample size was large. It also helped to determine significant differences in the control group and experimental group's computational fluency based on the results of the pre-test and post-test.

Mean. This referred to the average and was calculated by dividing the sum of scores of the students in the pretest and post-test. This was used to determine the level of performance of the students before and after the intervention.

Standard Deviation. This was used to measure the amount of variability or dispersion in students' test scores. A low standard deviation indicated that the scores were closely clustered around the mean, while a high standard deviation suggested a wider range of performance.

Cohen's d. This was used in the study to measure significance difference between pre-test and post-test scores. It provided

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insight into how meaningful the observed changes were, beyond mere statistical significance.

RESULTS AND DISCUSSIONS

This section presents the findings of the study based on the data collected through quantitative and qualitative methods. It also provides an analysis and interpretation of the results in relation to the research objectives.

Research Objective No.1: What is the Level of the Student's Research Writing Skill Among Grade 11 Students Before the Series of Seminar Intervention has Been Implemented?

To find the answer for the first research objective, the researchers used and adopted a questionnaire to suit the context of the study. The set of the questionnaires dealt with the student research writing skills with the indicators on Problem Identification and Conceptualization, Information and Evidence Seeking Skills, Research Methodology Skills, Statistics, Quantitative Analysis, And Evidence Evaluation Skills, Communication and Language As shown in Table 1 were the mean for the indicators in student's writing skills in research before the implementation of Seminar Series Intervention (SSI).

Table 1 presents the results of the pretest administered to 50 students in the experimental group, in assessing their research writing skills prior to the intervention. The overall mean score recorded was 25.9, suggesting a moderate level of performance across the group with a standard deviation of 3.33. The scores ranged from a minimum of 19 to a maximum of 32, reflecting varying levels of proficiency among the students. Notably, the most frequently occurring scores were 25 and 26, each attained by 14 students.

The findings indicate that students demonstrated a moderate level of research writing skills prior to the intervention indicating poor knowledge about research writing, Before the intervention, students showed moderate research-writing proficiency, supporting Garong's (2020) insight that learners typically enter instruction with varied foundational writing skills. There was noticeable variability in ability, aligning with Nation's (2020) finding that students come into academic tasks with different language competencies. A substantial portion of students exhibited similar performance patterns, with shared writing strengths and weaknesses, a pattern described by Bitchener & Ferris (2021) as indicative of collective instructional gaps. Overall, these findings establish a clear baseline, confirming the need for the Seminar Series Intervention to enhance writing skills and guide targeted instructional support.

Table 1
Level Of Research Writing Skills among Grade 10 Titanium students before the implementation of Seminar Series Intervention (SSI).

Pre-Test Scores	Frequency	Percentage
33	1	2.00%
32	2	4.00%
31	1	2.00%
30	5	10.00%
29	3	6.00%
28	3	6.00%
27	4	8.00%
26	7	14.00%
25	7	14.00%
24	4	8.00%
23	4	8.00%
22	5	10.00%
21	2	4.00%
20	1	2.00%
19	1	2.00%
Total	**50**	**100.00%**
Overall Mean		**25.9**
Description		**MODERATE**
Standard Deviation		**3.33**

To find the answer for the first research objective, the researchers used and adopted a questionnaire to suit the context of the study. The set of the questionnaires dealt with the student research writing skills with the indicators on problem solving skills, information seeking skills, research methodology skills and, statistics, and quantitative analysis skills, and communication and language skills. As shown in Table 1 were the mean for the indicators in student's writing skills in research before the implementation of Seminar Series Intervention (SSI).

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Table 2 presents the post-test results of 50 Grade 10 students in the experimental group, evaluating their research writing skills following the intervention. The overall mean score was 42.3, indicating a high level of performance and suggesting a marked improvement from the pretest results with a standard deviation of 2.86. Scores ranged from a low of 37 to a high of 48, demonstrating increase after the intervention. The score of 42 emerged as the most frequently achieved result, recorded by 10 students, further emphasizing the overall strength of performance within the group. These post-test outcomes reflect the effectiveness of the Seminar series Intervention employed in enhancing students' research writing skills.

Table 2
Level Of Research Writing Skills among Grade 10 Titanium students after the implementation of Seminar Series Intervention (SSI).

Post Test Scores	Frequency	Percentage
48	1	2.00%
47	1	2.00%
46	1	2.00%
45	8	16.00%
44	7	14.00%
43	8	16.00%
42	10	20.00%
41	3	6.00%
40	2	4.00%
39	4	8.00%
38	1	2.00%
37	3	6.00%
Total	**50**	**100.00%**
Overall Mean		**42.3**
Description		**HIGH**
Standard Deviation		**2. 86**

The findings indicate a notable improvement in students' research writing skills following the intervention with a target objective on learning problem identification and conceptualization, information seeking skills, statistical/quantitative analysis skills, research methodology skills, communication and language skills, supporting the study that emphasize the effectiveness of structured academic writing support in enhancing learners' ability to engage in research-based writing Teng (2022). Moreover, Hans (2020) asserts that explicit instruction paired with sustained guidance significantly supports students in mastering core aspects of research writing—such as developing coherent arguments, using proper citation formats, and maintaining overall textual coherence. Additionally, (Manchón & Polio, 2022) stated that, emphasize that explicit strategy instruction, grounded in metacognitive and communicative competence frameworks, significantly enhances L2 writing development in academic contexts. Their research highlights the importance of teaching students not just *what* to write, but *how* to plan, monitor, and revise their writing and crucial for mastering argumentation, citation, and coherence. These findings affirm the value of the Seminar Series Intervention in equipping students with essential research writing competencies.

Research Objective No.2: What is the Level of the Student's Research Writing Skill Among Grade 11 Students After the Series of Seminar Intervention has Been Implemented?
Table 3 provides a summary of the students' research writing skills with regard to problem solving skills, information seeking skills, research methodology skills and, statistics, and quantitative analysis skills, and communication and language skills. Below is the analysis and summary of each indicator.

The table below, Table 3, showcased the level of students' research writing skills before and after the implementation of the Seminar Series Intervention with its different indicators. In the pre-test, the overall mean of all indicators was 51.72, indicating a low level of research writing skills. The indicator with the highest mean was information and evidence seeking skills, at 56.4, followed by problem identification and conceptualization at 52.6, followed by statistics, quantitative analysis, and evidence evaluation skills, communication and language at 51.6, and finally statistics, quantitative analysis, and evidence evaluation skills at 46.4. All indicators based on the mean showed that students' research writing skills in the five aspects was low.

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Table 3
Summary on the level of research writing skills among grade 10 students before and after the implementation of Seminar Series Intervention (SSI).

Indicator	Pre-Test	
	Average Percentage Score	**Description**
Problem Identification and Conceptualization	52.6	Low
Information Seeking Skills	56.4	Low
Statistical/Quantitative Analysis Skills	46.4	Very Low
Research Methodology Skills	51.6	Low
Communication and Language Skills	51.6	Low
Overall Mean	**51.72**	Low

Garcia and Santos (2021) observed that many students struggle to select research topics due to difficulty identifying gaps in existing studies. Likewise, Fernandez (2024) noted that learners often fail to connect their background knowledge with new research information, which impedes effective topic selection. An additional challenge emerges from insufficient online information literacy: according to Nguyen et al. (2020), students' limited ability to evaluate online sources undermines the credibility of their academic work. This issue is compounded by the overreliance on digital tools without formal information literacy training. Also, Patel & Green (2023) highlight this gap in students' academic development. Moreover, Simpson et al. (2021) report that inadequate methodological instruction challenges students in designing research instruments, planning data collection, and composing methodology sections. Martin (2024) attributes this confusion to vague teaching processes, limited educational resources, and time constraints. In addition, Lopez & Adams (2024) and Singh et al. (2024) found that students often overestimate their statistical abilities, leading to anxiety and misinterpretation of data due to insufficient practical training. Furthermore, Mendez & Ochoa (2020) identified that oral-presentation anxiety and low confidence hinder effective academic communication, while Munroe & Chabalala (2024) linked students' weak exposure to communication skills to poor group engagement

On the other hand, after the intervention, the researcher provided the same set of questionnaires to check the progress. The post-test overall mean was 84.56, indicating high student improvement in research writing. The indicator with the highest mean was statistics, quantitative analysis, and evidence evaluation skills, at 88, indicating high skills in research writing, followed by Problem Identification and Conceptualization with a mean of 84.6, also indicating high skills in writing research, and then Information and Evidence Seeking Skills with mean of 4.22, indicating high skills in writing research and Research Methodology Skills at 83.6 and then, Communication and Language Skills at 80.4 indicating high skills in research writing.

Smith & Zhao (2023) argue that the ability to conceptualize problems in academic writing is a critical 21st-century skill, empowering students to apply critical thinking to real-world issues. Kimura (2022) similarly emphasizes that students must be able to conceptualize issues effectively to thrive in today's knowledge-driven society, highlighting the necessity for research that advances innovation and problem-solving. Moreover, Fernandez & Chow (2024) found that strong information literacy, evidenced by accurate citation practices, use of current and relevant sources, proper APA formatting, and sound data interpretation, significantly enhances research efficacy. In a related study, Lopez & Singh (2025) noted that students who adeptly navigate academic search engines and consistently access peer-reviewed journals produce more credible and relevant research writing, fostering higher-order research skills. Further, Nguyen (2022) reported that postgraduate students who excel in research methodologies produce superior theses, thanks to more structured data collection, robust analysis, and enhanced academic integrity. Patel (2022) also underscores that a solid understanding of research methods enables researchers to select appropriate approaches and confidently navigate their studies. In the realm of quantitative research, Johnson (2023) highlights that proficiency in statistics is essential for designing rigorous studies and interpreting data accurately. Supporting this, El-Qadi et al. (2023) found that reinforcing knowledge of descriptive statistics, like standard deviation, substantially improves students' data interpretation in lab reports. Additionally, Miller & Thomson (2021) emphasize that collaborative learning environments and effective communication are vital for enhancing academic writing and student engagement. Lastly, Wang et al. (2021) show that strong writing self-efficacy is foundational to advanced language skills and confident academic expression.

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Table 4
Summary on the level of research writing skills among grade 10 Titanium students after the implementation of Seminar Series Intervention (SSI).

Indicator	Post Test	
	Average Percentage Score	Description
Problem Identification and Conceptualization	86.4	High
Information Seeking Skills	84.4	High
Statistical/Quantitative Analysis Skills	88	High
Research Methodology Skills	83.6	High
Communication and Language Skills	80.4	High
Overall Mean	**84.56**	High

The comparison of students' skills in writing research levels before and after the implementation revealed a stark difference. Prior to the intervention, the overall mean stood at 51.72, reflecting a concerning low level of student awareness and skills in research writing. However, following the intervention, the post-test results showed a remarkable improvement, with the overall mean soaring to 84.56, indicating a substantial increase in student skills in writing research. Statistical analysis further validated these results, revealing a significant t-value result of 24.0, which underscores the effectiveness of the intervention in significantly enhancing student awareness and skills in research writing.

The significant improvement in students' post-test scores illustrates the effectiveness of the intervention in developing essential research writing skills. Notable progress was observed in problem identification and conceptualization, where students demonstrated a stronger ability to define and refine research problems. Their information and evidence seeking skills improved as they became more capable of locating, evaluating, and using credible sources. In terms of research methodology skills, students gained a clearer understanding of how to design and conduct research systematically. Enhancements were also evident in statistics, quantitative analysis, and evidence evaluation skills, as students showed greater competence in interpreting data and supporting their findings with evidence. Lastly, their communication and language skills developed significantly, allowing them to present research ideas and arguments in a more organized, coherent, and academically appropriate manner and indicating that the intervention successfully addressed the core areas of research writing.

The study's results indicate that the Seminar Series Intervention (SSI) effectively enhanced students' research writing skills by providing focused instruction in key areas such as identifying research problems, applying appropriate methodologies, and analyzing data. This structured, student-centered approach helped learners gain confidence and clarity in organizing and presenting their research in written form. Supporting studies by Macke and Tapp (2021) emphasize that collaborative learning environments and strong communication skills are crucial for improving students' academic writing and engagement. Together, these findings show that SSI not only develops essential research writing abilities but also fosters a supportive environment that encourages students' overall academic growth.

Research Question No. 3: Is There Significant Difference Between Pre-Test and Post Test Employing the Research Seminar?

Presented in Table 5 are the results of the significant difference between the pretest and post-test scores, indicating the performance levels of 50 students in the experimental group in measuring the research writing skills of the students, $t(49) = 24.0$, $p < .001$. Since the probability value ($p < .001$) is less than the level of significance ($\alpha = 0.05$), the null hypothesis is rejected. This means that there is a significant difference between the pretest and post-test scores.

In terms of the mean scores, the pretest showed a mean of 25.86, with a standard deviation (SD) of 3.33, while the post-test showed a mean of 42.28, with a standard deviation of 2.86 and a Cohen's d result of 3.39. This indicates a notable increase in performance from the pretest to the post-test among the experimental group.

Table 5. Significant Difference between Pre-test and Post-test

Type of Test	N	df	Mean	SD	t-value	Cohens d	P-value	Decision $\alpha = 0.05$
Pre-Test	50	49.0	25.86	3.33	24.0	3.39	< .001	**Significant**
Post-Test	50		42.28	2.86				

The findings reveal a statistically significant difference between the pretest and post-test scores, indicating measurable improvement in students' research writing skills. The substantial increase in mean scores suggests that students developed stronger competencies in areas such as problem formulation, methodology, and data interpretation. The reduced

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standard deviation in the post-test further implies more consistent performance across the group. In conclusion, the results confirm the effectiveness of the Seminar Series Intervention in enhancing both the quality and consistency of students' research writing.

Moreover, Núñez et al., (2020) found that students who participated in a structured writing intervention using SRSD strategies showed significant improvement in writing quality from pretest to post-test, confirming the value of guided writing programs. Similarly, Suraworachet, et al., (2022) reported that students who received combined human and analytics-based feedback showed marked gains in reflective writing, emphasizing the effectiveness of scaffolded instruction. In the local context Candilas et al., (2024) observed that Grade 10 students improved significantly in writing after engaging in concept mapping and freewriting, supporting the results of this study on the Seminar Series Intervention. In conclusion, these related studies affirm the effectiveness of structured writing interventions in improving students' writing performance. The significant gains observed in both international and local contexts support the findings of this study, confirming that the Seminar Series Intervention effectively enhanced students' research writing skills through guided, targeted instruction.

Research Question No. 4: What are the insights of students about the use of Seminar Series Intervention (SSI) in improving research writing skills?

To answer this research question, in-depth interviews and focus group discussion were conducted with the informants and participants. Probing questions were asked to elicit their responses regarding their observation and experiences with the impact of Seminar Series Intervention (SSI) strategy in improving research writing skills among grade 10 students. The major themes and sample statements for research question number 2 are presented in Table 6. Participants shared their responses about their own experience and observation of the intervention. From the answers of the participants, four major themes emerged: (1) enhanced understanding of research after the program; (2) making research writing through clear and simple steps; and (3) enhanced confidence in writing research after the program; and (4) improved skills in writing different parts of a research paper.

Table 6. Themes and Supporting Statements on the Insights of Students in the Use of Seminar Series Intervention in Improving Research Writing Skills

Emerging Themes	Supporting Statements
Enhanced Understanding of Research after the Program	• "The seminar series really helped me because it explained each part of the research paper slowly and clearly." (IDI-01) • The SSI made me understand research more clearly because we learned the parts step-by-step. I didn't feel overwhelmed like before." (IDI-02) • "The seminar helped me understand that research is not scary. It made each part easier to understand." (IDI-04)
Making Research Writing Easier through Clear and Simple Steps	• "The teacher used examples, gave time to write, and corrected our mistakes kindly. That helped me improve little by little." (IDI-01) • "The teacher showed examples, we practiced, and then corrected our own papers." (IDI-04) • "It was effective because we practiced writing and we were guided every step of the way." (IDI-08) • "The seminar showed me that I can do research if I take it step-by-step." (IDI-10)
Enhanced Confidence in Writing Research after the Program	• "I noticed that I became more confident in writing and presenting my research ideas." (IDI-02) • It worked well because I understood how to write each part of the research properly. I didn't feel lost anymore (IDI-09) • "The seminar showed me that I can do research if I take it step-by-step. That gave me confidence." (IDI-10)
Improved Skills in Writing Different Parts of a Research Paper	• "I learned how to make a better title, write a clear statement of the problem, and…. cite sources correctly." (IDI-01) • "I now write more clearly and I organize my thoughts better. I can also use APA style properly." (IDI-07) • "I feel more confident now. Even… if..I think I know how to write a good abstract and present data correctly." (IDI-08) • "I improved in writing my review of related …. I also learned to avoid plagiarism and give proper uhm…credit to authors." (IDI-09) • "I can now write my introduction, methodology, and results better. I can also say that I improved in summarizing data." (IDI-10)

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In the study, it was found that the intervention was effective in terms of improving the research skills of Grade 10 students. Many students expressed that the Seminar Series Intervention (SSI) clarified their understanding of what research entails. Prior to the intervention, several participants mentioned feeling confused about research concepts and procedures. After attending the seminar sessions, students reported that they gained a clearer grasp of the purpose, structure, and process involved in conducting research. This aligns with the findings of Komba and Kira (2023), who noted that structured guidance significantly improves students' comprehension of research processes. Recent studies also confirm that instructional support enhances students' ability to engage with academic tasks (Yanez, 2021). Through scaffolding complex ideas into manageable parts, students are better able to internalize and apply research concepts. The SSI provided such scaffolding, contributing to a deeper and more confident understanding among students.

Furthermore, students highlighted that the SSI's step-by-step approach made the research writing process less intimidating. Participants appreciated how each session tackled a specific part of the research paper, the introduction, methodology, results, in a logical and progressive manner. This method reduced cognitive overload and helped students see how each part connects to the whole. According to Sweller (2020) learners have a limited working memory capacity. When instructional materials are too complex or presented all at once, it leads to cognitive overload, which hinders learning. This is the reason why there is a need for the teacher to parctice scaffolding which entails presenting information incrementally that helps manage intrinsic and extraneous load, allowing learners to process and retain new information more effectively. Recent pedagogical reviews support this, emphasizing the role of incremental learning in reducing anxiety and improving retention (Ramos, 2022). The SSI functioned as a structured guide that gradually built students' competence. This theme reinforces the importance of breaking complex tasks into simpler steps, particularly in skills-based learning.

Moreover, the intervention not only increased students' knowledge but also their confidence. Several students shared that they no longer felt hesitant or fearful when assigned research tasks. They became more willing to write and share their drafts, attributing this change to the supportive and engaging format of the SSI. According to Escandallo et al. (2024), self-esteem significantly influences students' ability to perform academic tasks, as it enables them to overcome challenges especially in research writing and present their work more confidently and effectively . Recent research echoes this, indicating that self-efficacy rises significantly in structured and affirming learning environments (Fernandez, 2023). This confidence is crucial in fostering a positive attitude toward academic writing, which can influence long-term engagement with research.

Lastly, students indicated specific improvements in writing various sections of a research paper. From formulating a research question to writing a conclusion, participants noted progress in organizing ideas, using academic language, and citing sources properly. These skill developments were attributed to the practical exercises, examples, and peer feedback integrated into the SSI. This observation is supported by Graham and Perin (2021), who emphasized that targeted writing instruction significantly enhances students' writing proficiency. Similarly, recent studies show that explicit instruction in academic writing leads to measurable improvements in student outputs (Mariano, 2020).

CONCLUDING REMARKS

The results of the study revealed that Grade 10 students at Kapalong National High School encountered significant challenges in developing their research writing skills. This was evident from the pre-test results, which showed an average score of only 25.86%. These findings indicate a low level of proficiency, particularly in areas such as problem identification and conceptualization, information gathering, research methodology, statistical analysis, quantitative reasoning, evaluation of evidence, and effective communication. Such outcomes highlight the urgent need for a targeted intervention to help students improve their research writing skills, especially in the field of quantitative research, through a structured series of seminars.

After the implementation of the seminar series focused on quantitative research, a substantial improvement was observed in students' research writing performance. The post-test scores increased significantly, with an average of 42.28%, demonstrating notable progress in the students' ability to write a research paper. This improvement reflects enhanced skills in identifying research problems, sourcing and analyzing information, applying methodologies, interpreting data, and articulating findings using appropriate language. The increase in scores suggests that the seminars played a vital role in strengthening the foundational research skills necessary for academic writing.

Moreover, the difference between the pre-test and post-test scores was not only considerable but also statistically significant. The average scores nearly doubled following the intervention, with a large effect size (Cohen's d = 3.39), reinforcing the effectiveness of the seminar approach. This statistical evidence supports the conclusion that the intervention had a powerful impact on students who initially lacked research proficiency.

Furthermore, qualitative feedback revealed that students previously found quantitative research overwhelming due to limited exposure and weak background knowledge. However, after attending the seminars, they reported a clearer understanding of research concepts, increased confidence, reduced anxiety, and improved collaboration. The structured, student-centered approach helped foster a more positive attitude toward research, ultimately enhancing both their skills and their engagement in the research process.

RECOMMENDATIONS

First, based on the goal of assessing the research writing skills of Grade 10 Titanium students before and after the intervention, it is recommended that future research include a more diverse

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and larger sample. Expanding the participant pool will help ensure that the findings are more representative and applicable across various educational contexts. A wider scope can also reveal patterns and challenges that may not be evident in smaller groups, ultimately enriching the overall analysis of student progress in research writing.

Second, with the objective of determining the significant difference between the pre-test and post-test results, future studies are encouraged to incorporate a longitudinal approach. Tracking students' development over a longer period would provide deeper insights into the sustainability of the intervention's effects. Additionally, using control and experimental groups could strengthen the analysis of causality and allow for a clearer evaluation of the Seminar Series Intervention's true impact on students' writing performance.

Third, to build on the aim of evaluating the intervention's effectiveness based on student and teacher feedback, it is advised that future studies integrate a comparative perspective. Exploring how the Seminar Series measures against other teaching strategies such as project-based learning or digital writing platforms can offer valuable guidance for instructional improvement. Teachers should also be supported with training opportunities that incorporate modern tools like AI-assisted writing aids to help personalize instruction and further enhance student engagement and writing outcomes.

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