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PROMPT ENGINEERING COMPETENCE AND AI-ASSISTED ACADEMIC WRITING QUALITY AMONG ESL LEARNERS

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Abstract

This study examined prompt-engineering competence and AI-assisted academic writing quality among 81 ESL learners at Cagayan State University–Aparri in SY 2025–2026 using a descriptive-correlational design. It assessed prompt skills—clarity, specificity and precision, contextual/guiding information, and sequencing/iteration—and evaluated AI-generated texts for content, organization/coherence, grammar and language accuracy, vocabulary, task relevance, and citation/structure. Data came from a validated instrument and performance-based assessment. Results showed learners were generally competent in prompt engineering and produced high-quality AI-assisted academic texts. Most profile variables did not significantly affect outcomes, though academic strand, monthly allowance, general weighted average, and type of AI tools used showed significant differences. All prompt-engineering components were highly and significantly correlated with all dimensions of AI-assisted writing quality. The study concludes prompt-engineering competence critically enhances AI-assisted academic writing and recommends a structured instructional guide to improve learners' prompt construction and output quality. Implementation should include practice exercises and assessment rubrics for sustained improvement.

Keywords: prompt engineering competence, AI-assisted writing, ESL learners, academic writing quality, criminology education

INTRODUCTION

Technical writing in higher education equips students to communicate information clearly, accurately, and systematically for academic, professional, and institutional purposes. Unlike creative writing, it emphasizes clarity, precision, objectivity, and formal structure. Programs such as education, criminal justice, and fisheries require reports, case narratives, incident documentation, and academic analyses that demand language proficiency, logical organization, and task-appropriate presentation. ESL learners face distinct challenges managing content accuracy, grammar, vocabulary, and rigid formats, prompting many to use AI text-generation tools for drafting, revising, and organizing formal documents.

The quality of AI-assisted output depends heavily on input quality, highlighting prompt engineering—the ability to craft clear, specific, and contextually appropriate instructions guiding AI

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systems. Effective prompt engineering involves articulating task requirements, providing background information, and sequencing instructions, aligning closely with technical writing competencies. Poorly constructed prompts yield outputs that lack coherence, relevance, and academic rigor; well-structured prompts produce more organized, accurate, and task-aligned texts. This is particularly relevant for ESL learners whose writing quality varies with their ability to express precise instructions in English.

International studies show prompt structure and specificity significantly influence AI-generated text quality: foundational work by Brown et al. (2020) demonstrated variability in language model outputs based on prompt clarity; Wei et al. (2022) and Kojima et al. (2022) found that guided reasoning, contextual cues, and stepwise instructions yield more coherent outputs. In the Philippines, national initiatives on AI research and digital ethics reflect growing awareness, yet empirical research on Filipino ESL learners' interaction with AI in technical writing is limited.

At Cagayan State University–Aparri, instructors observed students familiar with AI tools but struggling to meet technical writing standards—organizing information, maintaining task relevance, and ensuring grammatical and structural accuracy. This study uses an authentic technical task (a blotter report) to assess prompt engineering competence and AI-assisted text quality.

Conceptually, the study integrates Constructivist Learning Theory (Piaget, Vygotsky), Cognitive Load Theory (Sweller), Bloom's Revised Taxonomy (Anderson & Krathwohl, 2001), Sociocultural Theory, and the AI Literacy Framework (Long & Magerko, 2020). Prompt engineering is framed as cognitive-linguistic activity—clarity, specificity, contextualization, and refinement—that fosters metacognition, reduces extraneous cognitive load, and supports ethical, effective AI use to improve content, organization, grammar, vocabulary, and mechanics in AI-assisted academic texts.

Statement of the Problem

This study sought to examine the level of prompt engineering competence of ESL learners and its relationship to the quality of AI-assisted academic writing among students at Cagayan State University–Aparri during School Year 2025–2026. Moreover, it aimed to determine whether variations in learners' prompt engineering competence significantly influence the quality of AI-assisted academic texts and to identify which components of prompt engineering significantly predict writing quality.

Specifically, this study sought answers to the following questions:

1. What is the profile of the respondents in terms of:
   - 1.1 Personal Profile
     - 1.1.1 Age
     - 1.1.2 Sex
     - 1.1.3 Religion
     - 1.1.4 Ethnicity
     - 1.1.5 Language used at home
     - 1.1.6 Senior High School strand
     - 1.1.7 Parents' occupation
     - 1.1.8 Availability of a tutor
     - 1.1.9 Monthly allowance
     - 1.1.10 Parents' monthly income
   - 1.2 Academic and Technological Profile
     - 1.2.1 General Weighted Average
     - 1.2.2 Gadgets personally owned
     - 1.2.3 Frequency of AI-assisted writing tool use
     - 1.2.4 Purpose of AI-assisted writing tool use
     - 1.2.5 Commonly used AI tools
2. What is the level of prompt engineering competency of ESL students in terms of:
   - 2.1. Clarity of prompts
   - 2.2. Specificity and precision of prompts
   - 2.3. Use of contextual and guiding information
   - 2.4. Sequencing, iteration, and refinement of prompts
3. What is the quality of AI-assisted academic texts produced by ESL learners as assessed in terms of:
   - 3.1. Content
   - 3.2. Organization and coherence
   - 3.3. Grammar and language accuracy
   - 3.4. Vocabulary
   - 3.5. Relevance to the task
   - 3.6. Citation and structure
4. Is there a significant difference in the level of prompt engineering competence of ESL learners and the quality of their AI-assisted academic texts when grouped according to:
   - 4.1. Personal Profile
   - 4.2. Academic and Technological Profile
5. Is there a significant correlation between ESL learners' prompt engineering competence and the quality of their AI-assisted academic texts?
6. What instructional guide can be developed to strengthen prompt engineering instruction among ESL learners?

METHODOLOGY

Research Design

The study used a descriptive–correlational with comparative design to examine ESL learners' prompt engineering competence and AI-assisted writing quality. Descriptive analysis profiled respondents and assessed prompt and text quality. Comparative tests explored differences across profile variables. Correlational analysis measured associations between prompt competence and AI-assisted academic writing outcomes and implications.

Locale of the Study

The study was conducted at Cagayan State University–Aparri Campus in Aparri, Cagayan. The campus offers diverse programs and promotes outcomes-based, technology-enhanced learning, making it suitable for examining ESL learners' academic writing, prompt engineering competence, and use of AI-assisted tools in a structured instructional setting.

Respondents and Sampling Techniques

The respondents were 81 third-year students from the College of Criminal Justice Education at Cagayan State University–Aparri Campus enrolled in Technical English 1 during AY 2025–2026. Selected through simple random sampling from 102 students, they completed an AI-assisted blotter writing task under standardized, voluntary, and confidential research conditions.

Research Instruments

The study used a researcher-developed questionnaire with two parts. Part I gathered respondents' personal, academic, and technological profiles (e.g., age, sex, language, GWA, gadget ownership, and AI tool use) to analyze differences in prompt engineering competence and writing quality. Part II was a standardized AI-assisted technical writing task where respondents created a prompt and generated a blotter report using a given data

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sheet. Outputs were evaluated based on prompt clarity, specificity, and structure, as well as writing quality in content, organization, grammar, and relevance. The instrument was content-validated by teacher-experts to ensure clarity, alignment, and appropriateness.

Data Gathering Procedures

The data gathering procedures for this study were carried out systematically to ensure accuracy, ethical compliance, and smooth implementation. Data collection took place at Cagayan State University–Aparri Campus during the Second Semester of Academic Year 2025–2026. The following were the different processes undertaken:

1. Securing approvals and ethical clearance
2. Validation of the research instrument and rubrics
3. Orientation and recruitment of participants
4. Administration of the research questionnaire and writing task
5. Collection, coding, and scoring of outputs
6. Data checking and statistical treatment
7. Contingency measures

Data Analysis Plan

Data from questionnaires, prompts, and AI-assisted texts were analyzed using descriptive and inferential statistics through Statistical Package for the Social Sciences (SPSS). Frequencies and percentages described respondents' profiles, while weighted mean and standard deviation assessed prompt engineering competence and writing quality. Inferential tests examined differences, relationships, and predictive effects. An independent samples t-test and one-way ANOVA were used to determine group differences, while the Pearson Product–Moment Correlation Coefficient tested relationships between variables. All tests were conducted at a 0.05 significance level, with results presented in tabular and narrative forms for clear interpretation.

Ethical Considerations

The study adhered to ethical standards, securing approval from Cagayan State University–Aparri Campus and its Ethics Review Committee. Participation was voluntary, with informed consent ensuring the right to withdraw without penalty. Safeguards prevented coercion, as the researcher was also the instructor, and activities were separate from graded tasks. Confidentiality was maintained through anonymized data and secure storage. The study posed no risks and followed principles of respect, beneficence, and justice under the Data Privacy Act of 2012, ensuring responsible handling of participants' information and ethical research conduct.

RESULTS AND DISCUSSION

This chapter presents and explains the results of the study based on the Statement of the Problem. The data are shown in tables and discussed by identifying important findings, such as the highest and lowest results, and what they mean. Each finding is clearly interpreted to show its relevance to the study. Supporting literature is also used to strengthen discussion.

Respondents Profile

Table 1a. Personal Profile

A. Age (Years)	**Frequency (n=81)**	**Percentage**
26 – 27	1	1.23
24 – 25	2	2.47
22 – 23	5	6.18
20 – 21	73	90.12
Mean=20.89	**SD=1.02**	
B. Sex		
Male	42	51.85
Female	39	48.15
C. Religion		
Roman Catholic	61	75.31
Protestant	20	24.69
D. Ethnicity		**Rank**
Ilocano	67	1
Ybanag	19	2
Tagalog	1	3
Ivatan	1	3
E. Language used at home		
Ilocano	65	2
Ibanag	69	1
Filipino	13	3
English	2	4
F. Strand		**Percentage**
HUMSS	58	71.6
STEM	6	7.41
ABM	4	4.94
GAS	9	11.11
TVL	4	4.94
G. Parents' occupation		
Father		
White Collar Job	4	4.94
Blue Collar Job	56	69.14
Self-Employed	5	6.17
Unemployed	16	19.75
Mother		
White Collar Job	4	4.94
Blue Collar Job	34	41.98
Self-Employed	17	20.99
Unemployed	26	32.09
H. Availability of Tutor		
Yes	6	7.41
No	75	92.59
I. Monthly allowance		

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(in Peso)		
Above 6,501	3	3.7
4,501 – 6,500	18	22.22
2,501 – 4,500	26	32.1
Below 2,500	34	41.98
Mean=3,337.04	**SD=1700.62**	
J. Parents approximate monthly income		
Above 15,000	18	22.22
10,001 – 15,000	20	24.69
5,001 – 10,000	33	40.74
Below 5,001	10	12.35
Mean=13,000	**SD=8474.45**	

Table 1a shows that most respondents are aged 20–21 (90.12%; M = 20.89, SD = 1.02), with a nearly equal sex distribution (51.85% male, 48.15% female). The majority are Roman Catholic (75.31%). Ilocano is the dominant ethnicity, while Ibanag and Ilocano are the most used home languages. Most respondents graduated from the HUMSS strand (71.6%). Fathers are largely engaged in blue-collar jobs, while mothers are mostly blue-collar or unemployed. Most respondents have no tutor (92.59%). Monthly allowance is generally below ₱4,500, and parents' income commonly ranges from ₱5,001–₱10,000, indicating modest socioeconomic backgrounds.

Table 1b. Academic and Technological Profile

K. General Weighted Average		
Above 89	34	41.98
88 – 89	44	54.32
86 – 87	2	2.47
Below 86	1	1.23
Mean=89.24	**SD=1.02**	
L. Gadgets personally owned		**Rank**
Basic Mobile Phone	12	2
Smartphone	72	1
Tablet or iPad	5	4
Laptop/Desktop computer	10	3
M. Frequency of AI-assisted writing tool use		**Percentage**
Once or twice in a semester	5	6.17
Once or twice in a month	4	4.94
Once a week	11	13.58
Two or three times a week	54	66.67
Almost everyday	7	8.64
N. Purpose of AI-assisted writing tool use		**Rank**
To generate ideas or topics	69	1
To draft academic or technical texts	26	6
To improve grammar and language accuracy	49	3
To enhance vocabulary and expressions	32	4
To reorganize or restructure written works	31	5
To summarize or paraphrase readings	50	2
O. Commonly Used AI Tools		
ChatGPT	78	1
Gemini	26	3
Meta AI	36	2
Quill Bot	16	4
Grammarly	2	8
Copilot	2	8
Perplexity	1	10
Blackbox	4	7
DeepSeek	1	10
Gauth	1	10
Dola	15	5
Gizmo	1	10
Cici	10	6
Agnes	1	10
Knowaunity	1	10

The table shows that respondents demonstrate strong academic performance, with most obtaining a GWA of 88–89 (54.32%) and a mean of 89.24, indicating consistent achievement. Smartphones rank as the most commonly owned gadget, reflecting high accessibility to digital tools. Most respondents use AI-assisted writing tools two to three times weekly (66.67%), primarily for generating ideas, summarizing, and improving grammar. Among AI tools, ChatGPT is the most widely used, followed by Meta AI and Gemini. Other tools are less frequently utilized. Overall, findings indicate active engagement with AI technologies to support academic writing tasks and learning processes.

Level of Prompt Engineering Competence of ESL Learners

Table 2a. Level of Prompt Engineering Competence of ESL Learners in terms of Clarity of Prompts

Clarity of Prompts (30%)	Frequency (n=81)	Percentage
26 – 27 (Excellent)	29	35.80
24 – 25 (Very Satisfactory)	35	43.21

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22 – 23 (Very Satisfactory)	17	20.99
Mean=24.71	**SD=1.32**	

Table 2a shows that ESL learners demonstrate high competence in prompt clarity (M = 24.71), indicating generally clear and understandable instructions to AI. However, some prompts still lack precision and structure. Consistent with Ken Hyland (2019) and Zamfirescu-Pereira et al. (2023), refining clarity improves AI response accuracy.

Plate 1. Comparative Prompt Analysis in terms of Clarity of Prompts

Prompt Type	**Verbatim Prompts**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Prompt (Prompt Entry No. 1)	*Based on the details I will provide, produce a Blotter Entry in accordance with the standard format used by the Philippine National Police (PNP). The Incident/Event portion must be written in formal, objective, and third-person narrative form, similar to an official PNP blotter report. Avoid opinions and ensure the information is accurate, clear, and properly organized. Details of the incident are provided below* *Type of Incident: Public Nuisance / Unjust Vexation* *Who:* *Complainant: Maria L. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent: Juan D. Reyes, 41 years old, resident of Barangay Centro 1, Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centro 1, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise*	The prompt exhibits high clarity through explicit task framing, complete contextual information, and organized presentation. It clearly states the task ("Make me a police blotter…") and specifies constraints on format, tone, and style (formal, objective, third-person narrative aligned with PNP blotter conventions). Information is chunked into labeled components (Who, What, When, Where, Why, How), which reduces cognitive load and ambiguity. The presence of all essential incident variables allows the AI to map inputs directly to output structure without inference gaps. Minor typographical inconsistencies (which includes spacing or spelling) do not materially affect interpretability because semantic intent remains intact. The prompt supports one-shot completion with minimal need for clarification, indicating effective initial prompt design	Based on the clarity dimension of the scoring rubric, the prompt demonstrates a high level of clarity as it fulfills key indicators such as explicitness of instruction, completeness of information, logical organization, and minimal ambiguity. The task is clearly defined at the outset, specifying not only what is required but also how the output should be structured and presented. The inclusion of complete details, particularly through the systematic use of categories such as Who, What, When, Where, Why, and How, enhances interpretability and reduces the need for inference. Furthermore, the prompt exhibits strong logical sequencing, allowing the AI system to process the information efficiently and generate an appropriate response in a single attempt. Despite minor typographical inconsistencies, the overall intent remains clear and comprehensible. These characteristics collectively justify its classification as highly clear, as the prompt effectively communicates its purpose without requiring further clarification or revision.

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	levels. *How:* *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter.* *more legal and simplier*		
Lowest-Scoring Prompt (Prompt Entry No. 76- Iterative Prompt Sequence)	*Initial Prompt: "Make me a police blotter based in this case!* *Who:* *Complainant: Maria L.Santos, 38 years old, resident of Barangay Centro 1, Aparri,Cagayan Xes Respondent: Juan D. Reyes,41 years old, resident of Barangay Centro 1, Aparri,Cagayan inistnoo* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels to reduce noise levels.* *How:* *The Complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter"* *Follow-up Prompts:* *Give the incident/event in that case* *Give the disposition also in fourth column*	The prompt demonstrates low clarity, characterized by an underspecified initial instruction and subsequent fragmented follow-ups. The first instruction lacks context (no format, scope, or required elements), forcing the AI to infer the task. Later prompts attempt to correct output ("…in fourth column," "per column," "paragraph form"), revealing post-hoc clarification rather than upfront specification. This iterative sequence indicates uncertain task formulation, shifting requirements, and absence of a stable instruction set. The result is multiple cycles of adjustment, increased interaction cost, and inconsistent intermediate outputs. Overall, the prompt sequence reflects trial-and-error prompting rather than deliberate, clear design.	Anchored on the clarity dimension of the rubric, the prompt reflects a low level of clarity due to its failure to meet essential indicators such as explicitness, completeness, and logical organization. The initial instruction lacks sufficient detail and does not clearly define the expected output, resulting in ambiguity that hinders immediate understanding. The subsequent prompts, which attempt to refine or correct the output, indicate that the original instruction was inadequate and required multiple revisions to clarify the intended task. This fragmented and iterative structure demonstrates a lack of coherent organization and an absence of clearly sequenced instructions. Additionally, the shifting nature of the directives increases ambiguity rather than resolving it, forcing the AI system to repeatedly reinterpret the user's intent. These deficiencies highlight the prompt's inability to communicate effectively at the outset, thereby justifying its classification as low in clarity, as it leads to inefficiency and inconsistent output generation.

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	But it should be per column *Make it in paragraph form of the incident/event* *Not like that it should be in a table! the first column is the entry no. 039"* *(Multiple revisions across several attempts as reflected in the screenshots)*		

Prompt clarity significantly influenced the quality of AI-assisted outputs. The highest-scoring prompt (27.40) showed explicit instructions, complete context, and structured details, producing a coherent and accurate blotter entry in one output. In contrast, the lowest score (21.60) reflected vague and fragmented instructions, resulting in incomplete outputs and multiple revisions. These findings indicate that clearer prompts enhance efficiency and output quality, while unclear prompts increase iterative effort and inconsistency. This aligns with Zamfirescu-Pereira et al. (2023), who noted that unclear prompts lead to trial-and-error responses, and Hyland (2019), who emphasized clarity and organization in producing accurate written communication.

Table 2b. Level of Prompt Engineering Competence in terms of Specificity and Precision of Prompts

Specificity and precision of prompts (25%)	**Frequency**	**Percentage**
23 – 25 (Excellent)	1	1.23
20 – 22 (Very Satisfactory)	50	61.73
17 – 19 (Satisfactory)	30	37.04
Mean=19.96	**SD=1.25**	

Table 2b shows that ESL learners demonstrate generally competent specificity and precision in prompt engineering (M = 19.96). Most respondents fall within the 20–22 score range (61.73%), followed by 17–19 (37.04%), and only 1.23% reached 23–25. Findings indicate moderate precision but inconsistent specification of constraints and output requirements. Further support is needed to improve explicitness and reduce ambiguity in prompt design. This aligns with Reynolds & McDonell (2021), who emphasized that specificity improves AI response accuracy. Liu et al. (2023) similarly noted that structured, detailed prompts enhance consistency and reduce ambiguity. Thus, training in precise prompt writing is essential now.

Plate 2. Comparative Prompt Analysis in terms of Specificity and precision of prompts

Prompt Type	**Verbatim Prompts**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Prompt (Prompt Entry No. 6)	*Writing Task Data Sheet (Blotter Report Scenario)* *Type of Incident: Public Nuisance/Unjust Vexation* *Who:* *Complainant: Maria L.. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent. Juan D. Reyes, 41 years old, resident of Barangay Centro 1. Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels.*	The prompt demonstrates a relatively high level of specificity and precision through the inclusion of detailed task instructions, defined output requirements, and contextual constraints. It clearly outlines the expected format, language, and structure of the AI-generated response. The use of explicit directives such as alignment with the NAPOLCOM/PNP blotter format and the requirement for formal, objective language reduces interpretive ambiguity. Additionally, the inclusion of ethical considerations further clarifies the scope and limitations of the task. While the content structure is similar to other prompts, the overall articulation of requirements appears more coherent and functionally precise, allowing the AI to generate a more aligned and contextually appropriate output.	Anchored on the specificity and precision dimension of the rubric, the prompt demonstrates a high level of performance as it clearly defines the task parameters, expected output format, and constraints. The instructions are sufficiently detailed to guide the AI in producing a response that aligns with institutional standards and academic expectations. The presence of explicit requirements minimizes vagueness and ensures that the AI system can interpret the task with minimal need for inference. These characteristics justify its classification as high in specificity and precision, as the prompt effectively communicates not only what is required but also how it should be executed.

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	How: *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter.* *Output Requirements* *The AI-assisted blotter report must:* *Be written aligned with the NAPOLCOM/PNP Blotter report format* *Follow the standard guidelines in writing a blotter report* *Use formal and objective language* *Present facts clearly and logically* *Avoid personal opinions or assumptions* *Ethical Considerations:* *All names and incidents used in this task are purely fictional and are created solely for academic research purposes. No real persons or actual cases are involved. Participation in this task is voluntary, and all responses will be treated with confidentiality and used exclusively for research purposes.* *Construct a police blotter in a paragraph form that contains in output requirements.*		
Lowest-Scoring Prompt (Prompt Entry No. 51-Iterative Prompt Sequence)	*Writing Task Data Sheet (Blotter Report Scenario)* *Type of Incident: Public Nuisance/Unjust Vexation* *Who:* *Complainant: Maria L.. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent. Juan D. Reyes, 41 years old, resident of Barangay Centro 1. Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels.* *How:* *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter.* *Output Requirements* *The AI-assisted blotter report must:*	Although the prompt contains similar structural elements and information, it demonstrates lower specificity and precision in terms of how the instructions are articulated and operationalized. The directives, while present, lack the same level of functional clarity in guiding the AI toward a precise output. There is a tendency for generalized instruction rather than tightly defined output constraints, which may lead to variability in interpretation. The prompt does not sufficiently emphasize exact formatting expectations or enforce strict adherence to structure, resulting in less controlled AI output. This indicates that the issue is not the absence of information but the lack of precise and targeted instruction.	Based on the specificity and precision rubric, the prompt reflects a lower level of performance due to its limited ability to constrain and direct the AI output with exactness. While relevant details are present, the instructions are not articulated with sufficient precision to eliminate multiple possible interpretations. The absence of tightly defined output parameters and enforceable constraints increases the likelihood of variation in AI-generated responses. This demonstrates that specificity is not solely dependent on the amount of information provided but on how clearly and precisely the instructions define the expected output. These limitations justify its classification as low in specificity and precision.

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	Be written aligned with the NAPOLCOM/PNP Blotter report format *Follow the standard guidelines in writing a blotter report* *Use formal and objective language* *Present facts clearly and logically* *Avoid personal opinions or assumptions* *Ethical Considerations* *All names and incidents used in this task are purely fictional and are created solely for academic research purposes. No real persons or actual cases are involved. Participation in this task is voluntary, and all responses will be treated with confidentiality and used exclusively for research purposes.* *Construct a police blotter in a paragraph form that contains in output requirements.*		

Specificity and precision significantly influenced AI output consistency and alignment. The highest-scoring prompt (22.80) produced a controlled, standards-aligned response due to clear constraints and defined requirements. In contrast, the lowest score (16.60) led to variable and less consistent outputs despite similar contextual details. This shows that precision depends not only on detail but on explicit instruction boundaries. Reynolds and McDonell (2021) found that clear constraints improve accuracy, while Liu et al. (2023) noted that structured prompts enhance consistency and reduce ambiguity in AI-generated responses.

Table 2c. Level of Prompt Engineering Competence in terms of Use of contextual and guiding information

Use of contextual and guiding information (25%)	**Frequency**	**Percentage**
23 – 25 (Excellent)	2	2.47
20 – 22 (Very Satisfactory)	62	76.54
17 – 19 (Satisfactory)	17	20.99
Mean=20.42	**SD=1.15**	

Table 2c shows that ESL learners demonstrate a competent level in using contextual and guiding information in prompt engineering (M = 20.42). Most respondents fall within the 20–22 range (76.54%), followed by 17–19 (20.99%), and 23–25 (2.47%). Findings indicate that while learners can provide relevant background and task details, they vary in how effectively these are used to guide AI outputs toward intended responses. This suggests a need to strengthen strategic use of context to improve alignment and coherence. Brown et al. (2020) and Liu et al. (2023) both emphasized that contextualized prompts enhance accuracy and output quality in AI systems.

Plate 3. Comparative Prompt Analysis in terms of Use of contextual and guiding information

Prompt Type	**Verbatim Prompts**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Prompt (Prompt Entry No. 6)	*Writing Task Data Sheet (Blotter Report Scenario)* *Type of Incident: Public Nuisance/Unjust Vexation* *Who:* *Complainant: Maria L.. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent. Juan D. Reyes, 41 years old, resident of Barangay Centro 1. Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at*	The prompt demonstrates a strong use of contextual and guiding information by providing a comprehensive set of background details and clearly defined instructional parameters. It includes relevant situational data such as the nature of the incident, identities of involved individuals, time and place, and supporting narrative context. In addition, the prompt incorporates explicit guiding elements through clearly articulated output requirements, including format alignment with PNP standards, expected tone, and structural expectations. The inclusion of	Anchored on the dimension of contextual and guiding information, the prompt demonstrates a high level of performance as it effectively combines relevant background details with explicit guiding instructions. The contextual information is sufficient and appropriate, enabling the AI to understand the situation without requiring additional inference. Moreover, the guiding instructions clearly define how the output should be structured and presented, thereby reducing ambiguity and ensuring alignment with expected standards. The integration of contextual and

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	Barangay Centrol, Aparri, Cagayan *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels.* *How:* *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter.* *Output Requirements* *The AI-assisted blotter report must:* *Be written aligned with the NAPOLCOM/PNP Blotter report format* *Follow the standard guidelines in writing a blotter report* *Use formal and objective language* *Present facts clearly and logically* *Avoid personal opinions or assumptions* *Ethical Considerations:* *All names and incidents used in this task are purely fictional and are created solely for academic research purposes. No real persons or actual cases are involved. Participation in this task is voluntary, and all responses will be treated with confidentiality and used exclusively for research purposes.* *Construct a police blotter in a paragraph form that contains in output requirements.*	ethical considerations further strengthens the contextual framing by clarifying the scope and purpose of the task. Overall, the prompt effectively integrates both contextual information and guiding instructions to direct the AI toward a coherent and contextually appropriate output.	guiding elements enhances the AI's ability to generate accurate and relevant responses. These characteristics justify its classification as high in the use of contextual and guiding information.
Lowest-Scoring Prompt (Prompt Entry No. 51-Iterative Prompt Sequence)	*Writing Task Data Sheet (Blotter Report Scenario)* *Type of Incident: Public Nuisance/Unjust Vexation* *Who:* *Complainant: Maria L.. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent. Juan D. Reyes, 41 years old, resident of Barangay Centro 1. Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels.* *How:* *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the*	Although the prompt contains similar contextual elements, its use of contextual and guiding information is less effective in directing the AI output. The contextual details are present but are not maximized in guiding the response, resulting in weaker alignment between the provided information and the expected output. The guiding instructions, while included, are not as functionally integrated with the contextual data, leading to less precise direction for the AI system. This indicates that the issue lies not in the availability of contextual information but in how it is utilized to guide the generation process. Consequently, the prompt may produce outputs that are less consistent and less aligned with the intended task requirements.	Based on the rubric for contextual and guiding information, the prompt reflects a lower level of performance due to its limited effectiveness in utilizing available information to guide the AI output. While relevant contextual details are present, they are not sufficiently leveraged to provide clear direction for the task. The guiding instructions lack strong integration with the contextual elements, resulting in reduced clarity in how the output should be constructed. This demonstrates that effective use of contextual and guiding information requires not only inclusion but also strategic alignment between context and instruction. These limitations justify its classification as low in this dimension.

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	blotter. *Output Requirements* *The AI-assisted blotter report must:* *Be written aligned with the NAPOLCOM/PNP Blotter report format* *Follow the standard guidelines in writing a blotter report* *Use formal and objective language* *Present facts clearly and logically* *Avoid personal opinions or assumptions* *Ethical Considerations* *All names and incidents used in this task are purely fictional and are created solely for academic research purposes. No real persons or actual cases are involved. Participation in this task is voluntary, and all responses will be treated with confidentiality and used exclusively for research purposes.* *Construct a police blotter in a paragraph form that contains in output requirements.*		

Contextual and guiding information significantly affected AI output alignment and coherence. The highest-scoring prompt (23.00) produced a well-structured, contextually grounded response due to effective use of background details and clear guiding instructions. In contrast, the lowest score (17.00) led to less aligned outputs despite similar contextual content, showing that effectiveness depends on how context is used rather than its presence alone. Brown et al. (2020) found that context-rich inputs improve relevance and coherence, while Wei et al. (2022) emphasized that structured context and guiding cues enhance output quality and alignment in language models.

Table 2d. Level of Prompt Engineering Competence in terms of Sequencing, Iteration, and Refinement of Prompts

Sequencing, Iteration, and Refinement of Prompts (20%)	**Frequency**	**Percentage**
18 – 19 (Excellent)	21	25.93
16 – 17 (Very Satisfactory)	53	65.43
14 – 15 (Satisfactory)	7	8.64
Mean=16.77	**SD=0.92**	

Table 2d shows that ESL learners demonstrate a competent level in sequencing, iteration, and refinement of prompts (M = 16.77). Most respondents fall within the 16–17 range (65.43%), followed by 18–19 (25.93%), and 14–15 (8.64%). Findings indicate that while learners can structure and refine prompts, many still rely on multiple iterations rather than well-sequenced initial instructions, affecting efficiency. This suggests a need to strengthen prompt planning skills. Wei et al. (2022) found that step-by-step sequencing improves response accuracy, while Kojima et al. (2022) emphasized that structured reasoning reduces revisions and enhances AI output quality and efficiency overall.

Plate 4. Comparative Prompt Analysis in terms of Sequencing, iteration, and refinement of prompts

Prompt Type	**Verbatim Prompts**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Prompt (Prompt Entry No. 6)	*Writing Task Data Sheet (Blotter Report Scenario)* *Type of Incident: Public Nuisance/Unjust Vexation* *Who:* *Complainant: Maria L.. Santos, 38 years old, resident of Barangay Centro 1, Aparri, Cagayan* *Respondent. Juan D. Reyes, 41 years old, resident of Barangay Centro 1. Aparri, Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late*	The prompt demonstrates effective sequencing and refinement through its structured and logically organized presentation of information. Instructions are presented in a coherent and progressive manner, beginning with contextual details and followed by clearly defined output requirements. The prompt reflects a well-planned approach, where all necessary elements are provided at the outset, eliminating the need for additional clarification or revision. The absence of	Anchored on the dimension of sequencing, iteration, and refinement, the prompt demonstrates a high level of performance as it exhibits logical progression, completeness of instruction, and minimal need for iterative correction. The instructions are sequenced in a manner that allows the AI to process the task systematically, while the refinement of the prompt ensures that all necessary constraints and expectations are clearly established from the beginning. The absence of

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	at night, which allegedly caused distress and disrupted the peace of the neighborhood. *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan* *Why:* *The respondent allegedly ignored prior verbal requests to reduce noise levels.* *How:* *The complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter.* *Output Requirements* *The AI-assisted blotter report must:* *Be written aligned with the NAPOLCOM/PNP Blotter report format* *Follow the standard guidelines in writing a blotter report* *Use formal and objective language* *Present facts clearly and logically* *Avoid personal opinions or assumptions* *Ethical Considerations:* *All names and incidents used in this task are purely fictional and are created solely for academic research purposes. No real persons or actual cases are involved. Participation in this task is voluntary, and all responses will be treated with confidentiality and used exclusively for research purposes.* *Construct a police blotter in a paragraph form that contains in output requirements.*	follow-up prompts indicates that the initial instruction was sufficiently refined to guide the AI system toward the desired output in a single attempt. This reflects efficient prompt construction and strong control over the generation process.	multiple iterations indicates that the prompt is well-optimized and effectively constructed. These characteristics justify its classification as high in sequencing and refinement, as it promotes efficiency and accuracy in AI-assisted output generation.
Lowest-Scoring Prompt (Prompt Entry No. 76)	*Initial Prompt: "Make me a police blotter based in this case!* *Who:* *Complainant: Maria L.Santos, 38 years old, resident of Barangay Centro 1, Aparri,Cagayan* *Respondent: Juan D. Reyes,41 years old, resident of Barangay Centro 1, Aparri,Cagayan* *What:* *The complainant reported repeated loud disturbances caused by the respondent, including shouting and playing loud music late at night, which allegedly caused distress and disrupted the peace of the neighborhood.* *When:* *December 10, 2025, at approximately 10:30 in the evening* *Where:* *In front of the complainant's residence located at Barangay Centrol, Aparri, Cagayan*	The prompt demonstrates poor sequencing and refinement, as evidenced by its reliance on multiple follow-up prompts to achieve the desired output. The initial instruction is incomplete and lacks sufficient refinement, resulting in outputs that do not fully align with expectations. Subsequent prompts attempt to modify and correct the output, indicating that the task was not properly sequenced or clarified from the outset. The progression of instructions appears fragmented and reactive rather than logically structured, reflecting a trial-and-error approach to prompt construction. This iterative	Based on the rubric for sequencing, iteration, and refinement, the prompt reflects a low level of performance due to its lack of logical sequencing and reliance on multiple iterations. The initial prompt fails to establish a complete and refined instruction set, necessitating repeated adjustments to clarify the task. The fragmented sequence of follow-up prompts indicates poor planning and weak refinement, as the instructions evolve reactively rather than being systematically organized. This results in increased cognitive load and inefficiency in AI interaction. These

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	Why: *The respondent allegedly ignored prior verbal requests to reduce noise levels to reduce noise levels.* *How:* *The Complainant personally appeared at the barangay office and verbally reported the incident to the desk officer, who recorded the complaint in the blotter"* *Follow-up Prompts:* *Give the incident/event in that case* *Give the disposition also in fourth column* *But it should be per column* *Make it in paragraph form of the incident/event* *Not like that it should be in a table! the first column is the entry no. 039"* *(Multiple revisions across several attempts as reflected in the screenshots)*	pattern increases inefficiency and reduces control over the output generation process.	deficiencies justify its classification as low in this dimension, as effective prompt engineering requires well-sequenced and refined instructions that minimize the need for iterative correction.

Sequencing, iteration, and refinement significantly influenced AI output completeness, organization, and efficiency. The highest-scoring prompt (18.40) used clear, logically ordered instructions, producing a complete and well-structured blotter entry in one response. In contrast, the lowest score (14.00) resulted in fragmented outputs and multiple revisions due to weak sequencing and lack of refinement. This shows that well-structured prompts improve accuracy and efficiency, while poorly sequenced ones create inconsistencies. Nye et al. (2021) found that step-by-step instructions enhance output completeness, while Zhou et al. (2023) emphasized that iterative refinement improves consistency and effectiveness in AI-generated responses.

Quality of AI-assisted Academic Writing Quality among ESL learners

Table 3a. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Content of AI-Assisted Academic Texts

Content (30%)	**Frequency**	**Percentage**
27 – 30 (Excellent)	8	9.88
23 – 26 (Very Satisfactory)	60	74.07
19 – 22 (Satisfactory)	11	13.58
15 – 18 (Poor)	2	2.47
Mean=24.12	*SD=2.19*	

Table 3a shows high content quality in AI-assisted texts (M = 24.12), with most outputs scoring 23–26 (74.07%). This indicates strong idea development and task alignment. However, some variability exists, reflecting the influence of prompt quality. Bommasani et al. (2021) and Kasneci et al. (2023) noted that well-structured prompts enhance content richness, but output quality remains input-dependent.

Plate 5. Comparative Analysis of AI-Assisted Outputs in terms of Content

Output Type	**Reference**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Output (Entry No. 009)	Figure 3.1	The output demonstrates a comprehensive and well-developed narration of the incident. It systematically integrates all essential elements, including identification of parties, nature of the incident, location, time, and sequence of events. The details are elaborated with clarity, such as specifying the type of disturbance, its impact on the complainant, and the actions taken by authorities. The narrative flows logically from reporting to documentation, reflecting completeness and depth.	The output satisfies the criteria for high content quality as it presents complete, accurate, and relevant information. All necessary components of a blotter entry are present and clearly articulated. The ideas are fully developed, and supporting details are appropriately included. The content is coherent, contextually grounded, and aligned with expected reporting standards, justifying its high score of 27.60.
Lowest-Scoring Output (Entry No. 020)	Figure 3.2	The output contains only basic information and lacks elaboration of key details. While it identifies the complainant and respondent and mentions the incident, the description is limited and insufficiently developed. Important contextual elements such as the sequence of	The output falls within a lower level of content quality as it provides incomplete and minimally developed information. Although relevant details are present, they are not sufficiently explained or expanded. The lack of depth and limited contextualization weaken

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		events, impact of the disturbance, and procedural handling are either briefly stated or missing. The narrative appears fragmented and less informative.	the overall quality of the content, justifying its lower score of 16.20.

Differences in content quality (27.60 vs 16.20) show that detail and completeness strongly affect AI-generated outputs. The highest score produced a well-structured, comprehensive response, while the lowest showed limited idea development. This indicates that richer, more complete inputs yield better results. Brown et al. (2020) found that detailed inputs improve coherence and contextual relevance in AI outputs, while Dwivedi et al. (2023) emphasized that input quality directly determines the depth and effectiveness of AI-generated academic texts.

Table 3b. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Organization and coherence

Organization and coherence (20%)	**Frequency**	**Percentage**
17 – 18 (Excellent)	30	37.04
15 – 16 (Very Satisfactory)	45	55.56
13 – 14 (Very Satisfactory)	5	6.17
11- 12 (Satisfactory)	1	1.23
Mean=16.14	**SD=1.26**	

Table 3b shows moderate organization and coherence in AI-assisted texts (M = 16.14), with most scores in the 15–16 range (55.56%). This indicates generally logical sequencing, though transitions need improvement. Bommasani et al. (2021) and Bender et al. (2021) found that coherent outputs depend on well-structured prompts and clear input organization.

Plate 6. Comparative Analysis of AI-Assisted Outputs in terms of Organization and Coherence

Output Type	**Reference**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Output (Entry No. 22)	Figure 3.3	The output demonstrates a clear and logical sequence of ideas, beginning with the identification of the incident, followed by a structured narration of events, and concluding with procedural documentation. The progression of information is systematic, with each sentence building upon the previous one. Transitional elements are evident, ensuring smooth flow from one part of the narrative to another. The coherence of the text allows the reader to easily follow the incident without confusion.	The output meets the criteria for high organization and coherence as it presents ideas in a logical, well-sequenced manner. The structure reflects a clear beginning, middle, and end, with consistent flow and connectivity of details. Sentences and ideas are properly linked, demonstrating strong cohesion and clarity, thereby justifying its high score of **18.60.**
Lowest-Scoring Output (Entry No. 20)	Figure 3.4	The output shows weak sequencing of ideas and limited logical progression. Although the basic details are present, the arrangement of information appears less structured, with abrupt transitions between statements. The narrative lacks smooth flow, making it more difficult to follow the sequence of events. Some ideas appear isolated rather than cohesively connected.	The output falls within a lower level of organization and coherence as it lacks clear structure and smooth transitions. The sequencing of information is inconsistent, and connections between ideas are weak. This results in a fragmented narrative that does not fully guide the reader through the incident, justifying its lower score of **11.40.**

Differences in organization and coherence (18.60 vs 11.40) show that logical sequencing strongly affects AI output quality. The higher score reflects clear structure and smooth idea flow, while the lower score shows fragmented and weak transitions. Clark et al. (2021) and Raffel et al. (2020) found that structured input and explicit sequencing improve coherence and logical flow in language model outputs.

Table 3c. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Grammar and Language Accuracy

Grammar and language accuracy (20%)	**Frequency**	**Percentage**
17 – 18 (Very Satisfactory)	17	20.99
15 – 16 (Very Satisfactory)	51	62.96
13 – 14 (Satisfactory)	11	13.58
11- 12 (Satisfactory)	2	2.47
Mean=15.58	**SD=1.28**	

Table 3c shows that AI-assisted texts are generally grammatically acceptable (M = 15.58), with most scores in the 15–16 range (62.96%). This indicates correct sentence construction and generally appropriate word use, though minor errors persist. A smaller portion (20.99%) shows strong grammatical accuracy, while very few outputs exhibit frequent errors. Radford et al. (2019) noted that large language models produce fluent, grammatically sound text due to extensive training data, while Kasneci et al. (2023) emphasized that human refinement is still needed to correct subtle errors and ensure higher precision in academic writing.

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Plate 7. Comparative Analysis of AI-Assisted Outputs in terms of Grammar and Language Accuracy

Output Type	Reference	Content Analysis	Criteria-Based Analysis
Highest-Scoring Output (Entry No. 035)	Figure 3.5	The output demonstrates strong control of grammar and language use. Sentences are well-constructed, with proper subject–verb agreement, correct tense usage, and appropriate sentence structure. Vocabulary is used accurately, and the overall expression is clear and formal. Minor errors, if present, do not affect comprehension. The text reflects consistency in grammatical patterns and maintains clarity throughout the narrative.	The output meets the criteria for high grammar and language accuracy as it exhibits minimal grammatical errors and maintains clarity and correctness in sentence construction. The consistent use of appropriate language structures and accurate word choice justifies its high score of 18.60, indicating strong linguistic competence in the AI-assisted output.
Lowest-Scoring Output (Entry No. 033)	Figure 3.6	The output shows noticeable grammatical inconsistencies, including errors in sentence construction, tense usage, and word forms. Some sentences appear awkward or improperly structured, which affects clarity. There are also issues in word choice and punctuation that disrupt the flow of the narrative. These errors make the text less polished and slightly difficult to follow.	The output falls within a lower level of grammar and language accuracy as it contains multiple grammatical errors that affect clarity and readability. The inconsistencies in sentence structure and language use justify its lower score of 11.40, indicating limited control over grammatical conventions in the AI-assisted output.

Differences in grammar and language accuracy (18.60 vs 11.40) show that linguistic control strongly affects clarity and readability of AI outputs. The higher score reflects correct sentence construction and appropriate word use, while the lower score shows grammatical inconsistencies and structural errors that hinder comprehension. Floridi & Chiriatti (2020) noted that AI-generated text can still contain errors despite fluency, while Jiao et al. (2023) emphasized the need for human refinement to ensure grammatical accuracy and clarity in large language model outputs.

Table 3d. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Vocabulary

Vocabulary (15%)	Frequency	Percentage
14 -15 (Very Satisfactory)	6	7.41
12 – 13 (Very Satisfactory)	62	76.54
10 -11 (Satisfactory)	11	13.58
8 – 9 (Satisfactory)	2	2.47
Mean=12.20	**SD=0.98**	

Table 3d shows that AI-assisted texts generally use appropriate but limited vocabulary (M = 12.20), with most scores in the 12–13 range (76.54%). This indicates functional but repetitive word use, with few instances of advanced lexical variety. Gehrmann et al. (2019) and Holtzman et al. (2020) found that language models often rely on high-frequency words, reducing lexical diversity and richness in generated texts.

Plate 8. Comparative Analysis of AI-Assisted Outputs in terms of Vocabulary

Output Type	Reference	Content Analysis	Criteria-Based Analysis
Highest-Scoring Output (Entry No. 009)	Figure 3.7	The output demonstrates appropriate and contextually accurate vocabulary. Words such as "allegedly," "disturbances," "disrupted," and "documentation" are used correctly and contribute to a formal tone suitable for a blotter entry. There is moderate lexical variation, and the vocabulary supports clarity and precision in describing the incident.	The output meets the criteria for acceptable to strong vocabulary use, as it employs contextually appropriate and functionally varied terms that enhance clarity and formality. The correct use of domain-relevant vocabulary justifies its score of 13.80, reflecting adequate lexical competence in the AI-assisted output.
Lowest-Scoring Output (Entry No. 024)	Figure 3.8	The output uses generally understandable but more basic and repetitive vocabulary. While the meaning is conveyed, there is limited variation in word choice, and some expressions are simplistic or less precise. The reliance on common terms reduces the level of formality and lexical richness expected in an academic or formal report.	The output falls within a lower level of vocabulary use due to limited lexical diversity and less precise word choice. The simplicity and repetition of terms justify its lower score of 10.00, indicating restricted vocabulary range in the AI-assisted output.

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Vocabulary differences (13.80 vs 10.00) show that lexical choice strongly affects clarity and formality in AI-generated texts. The higher score reflects precise, context-appropriate vocabulary, while the lower score shows repetitive and simplistic word use. Crossley et al. (2017) and Li et al. (2022) emphasized that lexical diversity and richness enhance writing quality and academic sophistication.

Table 3e. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Relevance to the Task

Relevance to the task (10%)	**Frequency**	**Percentage**
9 (Excellent)	46	56.79
8 (Very Satisfactory)	30	37.04
7 (Very Satisfactory)	3	3.7
6 (Satisfactory)	2	2.47
Mean=8.47	**SD=0.61**	

Table 3e shows that AI-assisted texts are highly relevant to the blotter-writing task (M = 8.47), with most outputs scoring 9 (56.79%) and 8 (37.04%). This indicates strong alignment with required format and content, with only minimal deviations. Brown et al. (2020) and Ouyang et al. (2022) found that clear, task-specific instructions improve output relevance and alignment with user intent in language models.

Plate 9. Comparative Analysis of AI-Assisted Outputs in terms of Relevance to the Task

Output Type	**Reference**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Output (Entry No. 041)	Figure 3.9	The output fully aligns with the required task of constructing a barangay blotter entry. It includes all essential elements such as the identification of parties, time and place of incident, nature of the complaint, and appropriate disposition. The narrative remains focused on the task and follows the expected structure without introducing irrelevant details.	The output demonstrates full adherence to task requirements, justifying its score of 9.60. It satisfies all criteria for relevance, including completeness, appropriateness of content, and alignment with the expected blotter format. The high score reflects the AI's ability to generate outputs that directly respond to the given prompt with minimal deviation.
Lowest-Scoring Output (Entry No. 029)	Figure 3.10	The output, while generally related to the task, shows partial alignment with the expected blotter format. Some essential elements are either underdeveloped or insufficiently detailed, and certain portions of the narrative appear simplified. Although the main idea is present, the response lacks full completeness in addressing all required components.	The output demonstrates partial relevance to the task, which justifies its lower score of 6.00. While it remains within the scope of the assignment, the limited detail and incomplete adherence to the expected format indicate weaker task alignment compared to higher-scoring outputs.

Task relevance differences (9.60 vs 6.00) show that adherence to requirements strongly affects AI output quality. The higher score fully meets blotter-writing components, while the lower score shows incomplete alignment and missing details. Ouyang et al. (2022) and Chung et al. (2022) found that explicit instructions and instruction-tuned models improve task consistency and alignment with user intent.

Table 3f. Quality of AI-Assisted Academic Texts produced by ESL learners in terms of Citation and Structure

Citation and structure (5%)	**Frequency**	**Percentage**
5 (Excellent)	1	1.23
4 (Very Satisfactory)	56	69.14
3 (Satisfactory)	24	29.63
Mean=3.69	**SD=0.32**	

Table 3f shows acceptable citation and structural quality in AI-assisted texts (M = 3.69), with most outputs scoring 4 (69.14%). This indicates generally correct blotter formatting, though few achieved full structural refinement (1.23%), and 29.63% showed lapses in organization. Bommasani et al. (2021) and Gao et al. (2023) found that while AI can generate structured outputs, consistency depends on clear instructions and human validation to ensure complete and standardized formatting.

Plate 10. Comparative Analysis of AI-Assisted Outputs in terms of Citation and Structure

Output Type	**Reference**	**Content Analysis**	**Criteria-Based Analysis**
Highest-Scoring Output (Entry No. 028)	Figure 3.11	The output demonstrates a clear and systematic structure, presenting the incident in a logical sequence from introduction to reporting and documentation. The narrative reflects proper organization, with well-arranged details that follow the conventional blotter format. The inclusion of formal elements	The output satisfies the criteria for strong citation and structure, justifying its score of 4.60. It reflects a well-organized format with clear sequencing and adherence to expected reporting conventions. The structure supports readability and aligns with formal documentation standards.

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		such as documentation purpose and procedural handling enhances the structural integrity of the text.	
Lowest-Scoring Output (Entry No. 037)	Figure 3.12	The output presents the essential details of the incident but lacks full structural refinement. The arrangement of information appears less systematic, and certain expected elements are either underdeveloped or not clearly organized. The narrative is understandable but does not fully conform to a formalized structure.	The output demonstrates limited adherence to structural standards, resulting in a lower level of organization and formatting consistency. This justifies its placement within the lower range, indicating gaps in citation and structural completeness.

Differences in citation and structure (4.60 vs 2.80) show that organization strongly affects formal quality of AI outputs. The higher score reflects clear, complete, and logically sequenced formatting, while the lower score shows weak structure and incomplete organization. Bommasani et al. (2021) and Gao et al. (2023) noted that structured prompts and explicit guidance improve formatting consistency and completeness in AI-generated texts.

Differences in the Prompt Engineering Competence and AI-assisted Academic Writing Quality among ESL Learners when grouped according to profile variables

Table 4a. Differences in Prompt Engineering Competence and AI-assisted Academic Writing Quality among ESL Learners when grouped according to profile variables

	Prompt Engineering Competence			**AI-assisted Academic Texts**		
	t-value	F/P	Statistical Inference	t-value	F/P	Statistical Inference
I. Personal Profile						
A. Age (Years)	2.025	.117	Not Significant	.113	.893	Not Significant
B. Sex	.232	.631	Not Significant	.974	.328	Not Significant
C. Religion	.041	.841	Not Significant	1.354	.250	Not Significant
D. Ethnicity	1.588	.186	Not Significant	.506	.680	Not Significant
E. Language used at home	.700	.500	Not Significant	1.596	.212	Not Significant
F. Senior High School strand	.745	.564	Not Significant	**3.359**	**.016**	**Significant**
Parents' occupation						
G. Father Occupation	.503	.681	Not Significant	.046	.987	Not Significant
H. Mother Occupation	.613	.608	Not Significant	1.021	.391	Not Significant
I. Availability of a tutor	2.813	.097	Not Significant	.460	.500	Not Significant
J. Monthly allowance	.259	.854	Not Significant	**3.549**	**.021**	**Significant**
K. Parents' monthly income	2.050	.114	Not Significant	1.517	.221	Not Significant

tested at 0.05 level of significance using paired t-test

Differences in citation and structure (4.60 vs 2.80) demonstrate that organization strongly influences the formal quality of AI-generated outputs. The higher-scoring output reflects clear, complete, and logically sequenced formatting, ensuring that all required components are properly presented. In contrast, the lower-scoring output shows weak structural consistency and incomplete organization of details, resulting in less formal and less coherent presentation. Bommasani et al. (2021) and Gao et al. (2023) emphasized that structured prompts and explicit instructional guidance improve formatting consistency, structural completeness, and overall quality of AI-generated academic texts, highlighting the importance of clear input design.

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Table 4b. Differences in Prompt Engineering Competence and AI-assisted Academic Writing Quality among ESL Learners when grouped according to Academic and Technological Profile

	Prompt Engineering Competence			AI-assisted Academic Texts		
II. Academic and Technological Profile	**t-value**	**F/P**	**Statistical Inference**	**t-value**	**F/P**	**Statistical Inference**
H. General Weighted Average	**2.787**	**.046**	**Significant**	**3.329**	**.026**	**Significant**
I. Gadgets personally owned	.188	.904	Not Significant	.226	.878	Not Significant
J. Frequency of AI-assisted writing tool use	.349	.844	Not Significant	1.832	.137	Not Significant
K. Purpose of AI-assisted writing tool use	.936	.463	Not Significant	.835	.531	Not Significant
L. AI tools	1.603	.182	Not Significant	**2.607**	**.046**	**Significant**

tested at 0.05 level of significance using paired t-test

Table 4b shows that gadgets owned, frequency of AI use, and purpose of use do not significantly affect prompt engineering competence or AI-assisted writing, indicating that access and usage alone are insufficient for improving performance. In contrast, General Weighted Average significantly influences both prompt competence (t = 2.787, p = .046) and writing quality (t = 3.329, p = .026), suggesting that higher academic achievers perform better in AI-assisted tasks. Type of AI tool also shows a significant effect on writing quality (t = 2.607, p = .046). Ranalli (2021) and Kasneci et al. (2023) support these findings.

Relationship between Prompt Engineering Competence and the Quality of AI-assisted Academic Writing among ESL Learners

Table 5. Relationship between Prompt Engineering Competence and the Quality of AI-assisted Academic Writing among ESL Learners

	Prompt Engineering Competence											
	Clarity of prompts			*Specificity and precision of prompts*			*Use of contextual and guiding information*			*Sequencing, iteration, and refinement of prompts*		
	R	**P**	**S.I**	**R**	**P**	**S.I**	**R**	**P**	**S.I**	**R**	**P**	**S.I**
AI-assisted Academic texts												
1. Content	0.663	0.00	***H.S***	0.662	0.00	***H.S***	0.664	0.00	***H.S***	0.631	0.00	***H.S***
2. Organization and coherence	0.706	0.00	***H.S***	0.717	0.00	***H.S***	0.713	0.00	***H.S***	0.705	0.00	***H.S***
3. Grammar and language accuracy	0.576	0.00	***H.S***	0.571	0.00	***H.S***	0.575	0.00	***H.S***	0.554	0.00	***H.S***
4. Vocabulary	0.507	0.00	***H.S***	0.499	0.00	***H.S***	0.504	0.00	***H.S***	0.496	0.00	***H.S***
5. Relevance to the task	0.468	0.00	***H.S***	0.454	0.00	***H.S***	0.461	0.00	***H.S***	0.442	0.00	***H.S***
6. Citation and structure	0.61	0.00	***H.S***	0.601	0.00	***H.S***	0.607	0.00	***H.S***	0.587	0.00	***H.S***

tested at 0.05 level of significance using Pearson-r.

N.S -Not Significant; S-Significant; H.S-Highly Significant; ; R -r-value; P-p-value; S.I-Statistical Inference

Table 5 shows that all dimensions of prompt engineering competence are significantly related to AI-assisted writing quality (r = 0.442–0.717, p = 0.00). Clarity strongly correlates with organization and coherence (r = 0.706), content (r = 0.663), and other writing aspects. Specificity, contextual use, and sequencing likewise show strong positive relationships across all dimensions. These results indicate that better prompt construction leads to higher-quality outputs in content, grammar, vocabulary, relevance, and structure. Oppenlaender (2023), Kasneci et al. (2023), Zhai (2022), and White et al. (2023) all support that well-designed, iterative prompts significantly enhance AI-generated academic writing performance overall.

Strengthening **P**rompt **E**ngineering **C**ompetence through

***T**intero's* **R**efined **U**ser-AI **M**odel

***S.P.E.C.T.R.U.M.* Model**

Rationale

The integration of AI in academic writing shows that ESL learners have generally acceptable prompt engineering competence and writing quality, but variations exist in clarity, specificity, context use, and refinement, affecting output quality across content,

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coherence, grammar, vocabulary, relevance, and structure. All prompt dimensions are significantly related to writing quality, indicating that effective AI-assisted writing depends more on how learners construct prompts than on AI tools alone. Differences across academic profile variables further show that academic preparation and digital familiarity influence performance. In criminology contexts, where structured writing is essential, guided instruction is needed. Thus, the S.P.E.C.T.R.U.M. Model is proposed to enhance prompt engineering competence and improve AI-assisted academic writing outcomes.

Objectives

To develop and implement an instructional guide based on the S.P.E.C.T.R.U.M. Model, namely Set the Task Clearly, Provide Specific Instructions, Establish Context, Clarify Structure, Target the Required Output, Refine the Prompt, Use Appropriate Language, and Monitor and Evaluate Output, to enhance the prompt engineering competence and AI-assisted academic writing quality of Bachelor of Science in Criminology students at Cagayan State University–Aparri.

Specific Objectives

1. To improve students' ability to construct clear and purpose-driven prompts in AI-assisted writing tasks.
2. To enhance learners' precision and specificity in formulating prompts for structured academic and criminology-related outputs.
3. To develop students' competence in integrating contextual and guiding information in prompt construction.
4. To strengthen learners' ability to organize, sequence, and refine prompts for improved AI-generated outputs.
5. To improve students' grammatical accuracy and appropriate language use in AI-assisted academic texts.
6. To ensure that learners can produce outputs that are relevant, coherent, and aligned with criminology writing standards.
7. To develop learners' critical evaluation skills in assessing and refining AI-generated outputs.
8. To promote responsible and effective use of AI tools in academic and technical writing tasks.

Participants

The participants of the proposed instructional guide are Bachelor of Science in Criminology students enrolled at Cagayan State University–Aparri. These learners are engaged in academic and technical writing tasks such as police blotter reports, incident documentation, and case summaries, which require accuracy, clarity, and adherence to formal writing conventions. The instructional guide is designed to support ESL learners within this program by enhancing their prompt engineering competence and their ability to effectively utilize AI tools in producing high-quality academic and professional texts.

Table 6. Proposed Instructional Guide for Prompt Engineering Competence among BS Criminology Students of CSU–Aparri (S.P.E.C.T.R.U.M. Model)

Component	Objective	Instructional Activities	Expected Output	Assessment Strategy	Time Frame	Participants
Set the Task Clearly	To enable learners to accurately define the communicative purpose of AI-assisted writing tasks in criminology contexts	Students analyze authentic criminology tasks such as police blotter entries, incident reports, and case summaries used in CSU Aparri. They identify the purpose, audience, and required output before constructing prompts.	Clearly defined and purpose-driven prompts aligned with criminological writing tasks	Task clarity checklist focusing on purpose, audience, and intent	1 session (1–2 hours)	BS Criminology students;
Provide Specific Instructions	To develop precision and control in prompt formulation for structured legal and technical writing	Students transform vague prompts into detailed, instruction-driven prompts specifying format, tone, and required elements based on standard police documentation practices	Highly specific and instruction-bound prompts that reduce ambiguity	Analytic rubric on specificity, precision, and completeness of instructions	1 session (1–2 hours)	BS Criminology students;
Establish Context	To strengthen the use of contextual and factual information in generating accurate AI-	Using simulated case scenarios (e.g., unjust vexation, theft, disturbance), students construct prompts incorporating	Context-rich prompts that generate accurate, situation-based outputs	Content completeness rubric anchored on factual accuracy and contextual adequacy	1 session (1–2 hours)	BS Criminology students;

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	assisted outputs	complete case details such as Who, What, When, Where, Why, and How, consistent with criminology documentation standards				
Clarify Structure	To guide learners in producing logically organized and formally structured outputs consistent with criminology reporting formats	Students specify required output structures such as paragraph-form blotter entries, structured incident reports, or narrative case documentation following NAPOLCOM/PNP conventions	Logically organized outputs with clear sequencing and formal structure	Organization and coherence rubric focusing on logical flow and structural consistency	1 session (1–2 hours)	BS Criminology students;
Target the Required Output	To ensure alignment of prompts with formal, objective, and discipline-appropriate writing standards	Students explicitly define output expectations such as formal tone, objectivity, neutrality, and adherence to institutional reporting formats used in criminology practice	Outputs that strictly conform to professional and academic writing standards	Relevance-to-task checklist emphasizing format compliance and disciplinary alignment	1 session (1–2 hours)	BS Criminology students;
Refine the Prompt	To enhance learners' ability to iteratively improve prompts for optimal AI-generated results	Students engage in guided prompt revision cycles by comparing initial and improved outputs, identifying gaps, and refining instructions to achieve completeness and accuracy	Iteratively improved prompts leading to higher-quality outputs	Iteration and refinement tracking sheet evaluating improvement across attempts	2 sessions (2–3 hours total)	BS Criminology students;
Use Appropriate Language	To develop linguistic accuracy and formal expression in AI-assisted academic and technical writing	Students evaluate and revise prompts and outputs focusing on grammar, sentence structure, and appropriate terminology used in criminology contexts	Grammatically accurate and professionally expressed prompts and outputs	Language accuracy rubric focusing on grammar, syntax, and clarity	1 session (1–2 hours)	BS Criminology students;
Monitor and Evaluate Output	To cultivate critical evaluation skills in assessing the quality and reliability of AI-generated texts	Students analyze AI-generated outputs against standard rubrics, identifying errors in content, structure, language, and relevance, and proposing necessary revisions	Critically evaluated and improved AI-assisted outputs	Comprehensive evaluation rubric aligned with content, coherence, grammar, vocabulary, relevance, and structure	1 session (1–2 hours)	BS Criminology students;

Conclusions

The study concludes that ESL learners demonstrate a generally competent level of prompt engineering competence and produce generally high-quality AI-assisted academic texts, although variations exist across specific dimensions. Prompt engineering competence, particularly in terms of clarity, specificity, contextualization, and refinement, directly influences the quality of AI-assisted writing in areas such as content, organization, grammar, vocabulary, relevance, and structure. While most profile

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variables do not significantly affect these outcomes, selected factors such as academic performance, academic strand, monthly allowance, and type of AI tools used contribute to variations in both competence and writing quality. Most importantly, a significant relationship exists between prompt engineering competence and AI-assisted academic writing quality, indicating that learners who construct well-defined, structured, and contextually appropriate prompts are more likely to produce higher-quality academic texts.

Recommendations

In light of the findings, it is recommended that Cagayan State University integrate prompt engineering and AI-assisted writing into the curriculum, supported by ethical guidelines on AI use. The College of Criminal Justice Education and other programs may adopt the S.P.E.C.T.R.U.M. framework in developing structured instructional guides for technical writing tasks such as blotter reports and incident documentation. Writing courses should revise syllabi to include outcomes and rubrics assessing prompt quality alongside AI-assisted outputs. Instructors are encouraged to conduct prompt-writing workshops and iterative practice activities, while students engage in prompt optimization exercises. Future research may further test structured prompt engineering interventions and related digital literacy variables.

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The author hereby declares no conflict of interest and this article is her original work.

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