



Metacognitive Awareness of Writing Strategies, Oral Proficiency, and Writing Instructions: A Structural Equation Model of Academic Writing Skills in Filipino Language

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To determine the best-fit model for the academic writing skills of students in the Filipino language using metacognitive awareness of writing strategies, oral proficiency, and writing instructions as exogenous variables and academic writing skills as endogenous variables.

Study design: The study used Structural Equation Modeling (SEM).

Place and Duration of Study: The study was conducted at private schools in Region 12, Philippines, during the school year 2023-2024.

Methodology: The study's respondents were Grade 12 students from private schools selected using Raosoft. A four-part questionnaire was employed to collect the data. All items in each indicator received a high Cronbach's alpha coefficient, indicating excellent internal consistency and reliability, suggesting that the instruments are highly reliable.

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Results: The study revealed that metacognitive awareness of writing strategies, oral proficiency, writing instruction, and academic writing skills is highly evident among students in varied situations. The results indicate that students frequently use writing strategies based on their metacognitive awareness in planning, monitoring, and evaluating their academic compositions. Moreover, a high level of oral proficiency, including accurate pronunciation and comprehension, along with effective writing instruction, contributes to the improvement of students' academic writing skills. Furthermore, there was a significant relationship and influence between the three exogenous variables and the endogenous variable, indicating a strong correlation. Out of the five models analyzed, Model 5 exhibited indices that aligned with the criteria for selecting the most appropriate model, which suggests that the goodness of fit measures are highly acceptable.

Conclusion: The study shows that specific indicators have peaked, but activities that enhance students' academic writing skills and oral proficiency can lead to further improvement. Teachers play an important role in facilitating learning by providing clear instructions on writing standards and methods. Moreover, receiving feedback from teachers and peers is crucial for improving students' proficiency in academic writing, specifically in areas such as grammar, spelling, language structure, and technical aspects. The study emphasizes that high levels of metacognitive awareness of writing strategies, oral proficiency, and writing instructions significantly contribute to academic writing skills in the Filipino language.

Keywords: Education; metacognitive awareness of writing strategies; oral proficiency; writing instruction; academic writing skills; structural equation model; Philippines; SDG 4.

1. INTRODUCTION

Learning poverty, particularly in academic writing, has emerged as one of the pressing issues in the Philippines since the return of in-person teaching and learning procedures in schools. Academic writing is a complex macro-skill that students must acquire to participate in the global community, lifetime learning, and academic success as stated by Hundarenko [1,2]. In a global context, Iraqi students may encounter difficulties in academic writing because of their lack of experience [3]. Locally, in the 2019 Southeast Asia Primary Learning Metrics (SEA-PLM) evaluation, only two percent of Filipino children achieved high marks in academic writing, as reported by Balinbin [4]. In addition, the study of Hajan et al. revealed that senior high school students need help with all forms of academic writing, including essays, which are considered the most difficult for them, and their academic writing skills in Filipino are not as strong as their speaking skills [5-7].

The poor performance in writing assessments is attributed to students' inadequate training, poor spelling and grammar skills, and limited vocabulary [8]. Academic writing skills are crucial for academic success, especially for second-language learners. Researchers have investigated various variables to enhance academic writing skills, including metacognitive awareness of writing strategies, oral proficiency, and writing instructions [9]. However, a model

has yet to be identified to enhance these skills, and further research is needed to address these issues and improve students' overall academic writing skills.

This study aimed to investigate the best-fit model for evaluating students' academic writing skills in the Filipino language. It seeks to address the following: determine the level of metacognitive awareness of writing strategies, oral proficiency, writing instructions, and academic writing skills of students; determine the significant relationship and influence of metacognitive awareness of writing strategies, oral proficiency, and writing instructions to the academic writing skills of students; determine the influential predictors of academic writing skills; and determine the best-fit model of academic writing skills of students in the Filipino language.

Academic writing involves more than just putting words on paper; it also consists of organizing, giving meaning to, and evaluating one's ideas. It is an expression of one's growth as an individual and learner [10]. However, academic writing is a complex skill that requires development, particularly for second-language learners (Barroga and Mitoma 1). According to Domantay and Ramos, when considering academic standards, adequate academic writing instruction is critical. It entails teaching proper language usage, developing writing conventions and academic vocabulary, and developing an awareness of higher-order thinking skills [11].

However, students frequently need more writing experience. They find this problematic because writing involves many intricate details [12]. Thus, one of the biggest challenges for educators is helping students write for various purposes and contexts, including academic writing.

Metacognitive awareness of writing strategies is the ability to control one's thoughts and aids in planning, monitoring, organizing, and editing writing tasks [13,14]. It is crucial for students' academic writing skills, as it influences their learning outcomes and helps them retrieve, store, and evaluate data effectively. Metacognitive awareness of writing strategies as discussed by Teng et al. includes declarative, procedural, and conditional knowledge, which significantly impacts students' grades in academic writing (185). Learning to speak is a crucial component of language acquisition, as oral language is a system of using words to express viewpoints and knowledge [15]. According to Spencer and Petersen [16], teachers must provide feedback on students' speeches to boost their writing confidence and improve their writing skills. The structural use of spoken language in the classroom is essential for monitoring students' writing progress and developing written sentences according to Kim [17].

Teachers are crucial in giving writing instructions, proper guidance, and constructive criticism as stated by Fernandez [3,18]. Academic writing is a complex second language skill requiring teachers to be proficient in teaching and providing feedback. Students must develop cognitive processes such as planning, organization, translation, and revision [15]. Flavell's metacognitive knowledge theory aligns with academic writing's metacognitive strategy, as it aims to understand how individuals consciously observe and manage their thought processes. This theory encourages metacognition development from an early age, creating a self-regulating phylum where people with general knowledge and regulation skills can control their cognition in various domains [19].

Numerous studies have demonstrated a link between developing academic writing skills and oral proficiency [20]. The cognitive process model developed by Flower and Hayes [5] emphasizes the significance of the mental processes involved in academic writing, specifically how students build a written composition. This approach comprises three primary components: the nature of the task, the

writer's long-term memory, and the writing process itself. The nature of the task includes the writer's difficulty in determining the topic, audience, and role, which requires advanced thinking skills and metacognitive strategies. The writer's long-term memory contains their understanding of the subject topic, target audience, strategies, and challenges, which all contribute to the continuity and coherence of the writing process. The writing process comprises three distinct stages: planning, translating, and reviewing. Writers determine the specific information to incorporate into their work during the planning phase, while the translating phase transforms concepts into written language. Reviewing encompasses two distinct processes: evaluation and revision, as described by Flower and Hayes [5].

In addition, cognitive theory suggests a mental process relationship between the beginning of the writing process and the finished product, alerting teachers to help students improve their writing skills by understanding each step of the process. Moreover, academic writing skills are closely linked to genre pedagogy, a writing instruction method based on Bruner's scaffolding and Vygotsky's cooperative learning theory. In genre pedagogy, the teacher's role in teaching appropriate writing and speaking strategies is critical [21]. Teachers must monitor their students' skill development by providing instruction and insightful feedback.

The study provides significant advantages to the global education sector by establishing a framework for identifying the strengths and weaknesses of educational programs. In the Philippines, the study is in line with the Sustainable Development Goal (SDG) 4, which aims to ensure equal access to quality education for all, while also fostering opportunities for lifelong learning and the development of skills. The results hold an opportunity to improve students' proficiency in academic writing and oral proficiency, which are essential for their academic success. Furthermore, it seeks to enhance one's understanding of metacognitive awareness of writing strategies, oral proficiency, writing instructions, and academic writing skills. The study can also contribute to the education sector by determining the benefits and drawbacks of the implementation of programs and evaluating the efficacy of various curricula and educational reforms. Lastly, future investigators addressing learning poverty in the Philippines should prioritize further research on academic writing skill development.

2. MATERIALS AND METHODS

2.1 Research Design and Procedures

The study utilized a descriptive-correlational survey design, employing a causal-comparative design and structural equation modeling to examine the relationship between academic writing skills among Filipino students. Three exogenous variables were identified: metacognitive awareness of writing strategies, oral proficiency, and writing instructions, and an endogenous variable, academic writing skills. The correlational analysis determined the relationship between the exogenous variables and students' academic writing skills. Structural equation modeling, a combination of factor analysis and multiple regression analysis, was used to analyze the structural relationships of each variable. This model, also known as causal modeling according to Caughlin does not estimate cause-and-effect relationships but instead formulates an equation representing the theoretical model of the chosen topic [11].

The data collection process contained the following steps: obtained adapted questionnaires from reputable journals, evaluated their validity, made necessary revisions, had a panel of experts review the revised questionnaire, submitted it to the University of Mindanao Ethics Reviewer Committee (UMERC) for initial review, compiled the necessary documents, obtained consent letters from the advisor and Dean of Professional Schools, sent these letters to school principals, administered the questionnaires to respondents, and analyzed the collected data using mean, Pearson r , multiple regression analysis, and path analysis. The Goodness of Fit Statistics was used for alternative models through Analysis of Moment Structure (AMOS) to identify the most appropriate model, ensuring that each level met the required measurement standards.

The appropriate model must meet the following standards: Chi-Square/Degrees of Freedom (CMIN/DF) should be less than 2 with a P-value higher than 0.05; Root Mean Square Error Approximation (RMSEA) should be below 0.05, with its corresponding P-close value higher than 0.05; and other indices like Normed Fit Index, Tucker-Lewis Index, Comparative Fit Index, and Goodness of Fit Index should be higher than 0.95. These standards ensure that the model accurately represents the meaningful relationships among the variables studied [11]. The research followed the process required for

completion, submitting all documents to the UMERC for thorough review according to their standards, with approval number UMERC-2023-586 issued on December 6, 2023. The research adhered to ethical standards, including voluntary participation, privacy and confidentiality, informed consent, recruitment, risk and benefit assessment, plagiarism prevention, fabrication and falsification avoidance, conflict of interest management, deception avoidance, organizational/location permission, and authorship integrity.

2.2 Research Respondents

Four private schools in Region XII, also known as SOCCSKSARGEN (South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos City), hosted the study. The study's respondents were 306 senior high school students in Grade 12 who are enrolled in the 2023–2024 academic year and assigned to any Filipino subject during the second semester. The Raosoft Sample Size Calculator was utilized to determine the total number of respondents adequate to gather accurate responses. It falls within the recommended range of 200 to 400 respondents for structural equation modeling investigations, with an acceptable significance level of 0.05 [22].

The study selected respondents using stratified random sampling, dividing them into four strata according to their schools. Stratified random sampling, as described by Ancheta and Napil [11], is a method of splitting the target population into smaller groups called strata. This method guarantees equal representation and selection of research respondents from each subpopulation. The respondents' parents or guardians signed consent forms, and their participation in the research was free and voluntary. As the research is proportional, the number of participants in each school may differ based on the total population and counted groups in the four local studies. Refusal or suspension was not perceived favorably or dishearteningly by the researcher. It was not a penalty for students to discontinue their participation or revoke their authorization at any given moment.

2.3 Research Instrument

The research employed questionnaires that were adapted from reputable and legitimate journals. The Metacognitive Awareness Writing Questionnaire (MAWQ), developed by Farahian [23] was used to assess metacognitive

awareness of writing strategies. This questionnaire is based on two fundamental components of metacognition: the regulation of cognition and the knowledge of cognition containing 40 items. The Oral Proficiency Assessment, which was modified from Gomez's research and validated by experts, was employed in the study to assess oral proficiency comprising five indicators with a total of 20 items. The study also adopted a questionnaire from Horverak and Haugen to assess the level of writing instruction comprising 12 indicators, consisting of a total of 53 items, and lastly questionnaire from Hudarenko to evaluate academic writing skills consisting of three indicators with a total of 32 items [9].

Following the necessary modifications of the questionnaire, the adviser received the initial draft for review, recommendations, and correction. Six experts in research and the Filipino language then validated it, resulting in an overall validation score of 4.69. After validation, pilot testing was conducted with 30 students to ensure the questionnaire's validity. Likert-type scales and Cronbach's alpha coefficient were used to analyze the data and calculate internal consistency reliability. Metacognitive awareness of writing strategies had a .852 (α) that revealed a good interpretation, indicating that all items in the questionnaire are acceptable and valid. Oral proficiency received a .917 (α), writing instruction with .974 (α), and academic writing skills with .942 (α), revealing an excellent interpretation, indicating that all items in the questionnaire are highly acceptable and valid. All items within all indicators revealed a high Cronbach's alpha coefficient, indicating excellent internal consistency reliability for all measures. This suggests that the instruments used are highly reliable, and the items within each construct are consistently aligned with one another.

The questionnaire was then administered to the respondents using a five-point Likert scale, with the following categories: "very high" (4.20–5.00), "high" (3.40–4.19), "moderate" (2.60–3.39), "low" (1.80–2.59), and "very low" (1.00–1.79). Students were assigned ratings, with five representing the highest and one representing the lowest. Consistent observation of these behaviors is indicated by the strong agreement, which ranges from 4.20 to 5.00. Agreement was indicated by the range of 3.40 to 4.19, suggesting that these behaviors were frequently observed. The range of 2.60 to 3.39 indicated ambiguity, suggesting that these behaviors were observed intermittently. The range of 1.80 to 2.59 indicated disagreement, suggesting that these behaviors were observed infrequently. No observation of these behaviors is implied by the strong disagreement, as indicated by the range from 1.00 to 1.79.

3. RESULTS AND DISCUSSION

3.1 Metacognitive Awareness of Writing Strategies of Students

Table 1 displays the levels of metacognitive awareness of writing strategies. The levels are based on declarative knowledge (person), declarative knowledge (task), procedural knowledge, conditional knowledge, planning, monitoring, and evaluation with an overall mean of 4.02 (SD 0.43), indicating a high descriptive level, suggesting frequent observations of metacognitive awareness of writing strategies among students on various occasions. Upon examining each indicator, all indicators obtained a high descriptive level, with evaluation obtaining the highest mean of 4.18 (SD 0.78) at a high level and conditional knowledge obtaining the lowest mean of 3.81 (SD 0.68), also at a high level.

Table 1. Metacognitive awareness of writing strategies of students

Indicators	SD	Mean	Descriptive Level
Declarative Knowledge (Person)	0.41	4.12	High
Declarative Knowledge (Tasks)	0.53	4.07	High
Procedural Knowledge	0.61	4.04	High
Conditional Knowledge	0.68	3.81	High
Planning	0.59	3.91	High
Monitoring	0.51	4.02	High
Evaluation	0.78	4.18	High
Overall	0.43	4.02	High

The study found that the respondents are very aware of how they think about their writing strategies. This is in line with other research that has found that declarative knowledge, evaluation, and procedural knowledge have the highest means, while procedural and conditional knowledge have the lowest means [24-26]. The results confirm the frequent observation of metacognitive awareness of writing strategies among students, underscoring its crucial role in enhancing academic writing skills. This awareness greatly helps students organize their knowledge and apply it to their tasks to succeed in academic writing. This study evaluates students' competence in academic writing, revealing that despite overall good performance, specific areas need improvement. Students find writing moderately challenging, like other macro skills but show occasional errors in language structure and rules. The research highlights the importance of rigorous instruction in diverse academic texts to enhance writing skills [24]. The findings suggest a need for increased exposure to different academic texts, as indicated by the lowest mean scores.

Moreover, although individuals possess an adequate amount of conditional knowledge, the lowest average scores indicate a need for targeted instruction in strategy selection and enhancing metacognitive awareness. Planning, which is recognized as a vital element in achieving writing success, also obtained low average ratings. Efficient planning is the process of generating ideas, creating goals, and organizing tasks [4]. It is crucial to improve students' ability to strategically apply knowledge by utilizing inquiry, outlining, and goal setting. In addition, the importance of monitoring, which involves selecting the most suitable time and location for writing, is emphasized as crucial for achieving success in academic writing [24].

3.2 Oral Proficiency of Students

The oral proficiency, measured according to comprehension, fluency, vocabulary, pronunciation, and grammar, is shown in Table 2, with an overall mean of 3.73 (SD 0.61), with a descriptive level indicating high oral proficiency, often observed among students in various instances. Pronunciation garnered the highest mean of 3.94 (SD 0.68), indicating a high level, followed by comprehension, grammar, and vocabulary with high levels, and fluency obtained the lowest mean of 3.49 (SD 0.88), with a high level. The oral proficiency of the respondents

was found to be high which is consistent with previous studies regarding assessing students' oral proficiency, with pronunciation and comprehension obtaining high means, while fluency obtained the lowest mean [27-30].

Oral proficiency is a crucial factor in effectively expressing ideas, thoughts, and opinions. High oral proficiency helps students with communication, message delivery, and even writing. Despite an overall high proficiency level, some items indicate moderate results. The first item of the fluency indicator shows that students occasionally speak fluently and correctly in Filipino, as supported by Bataller et al.'s findings, which also show low Filipino oral proficiency scores. Additionally, Rahman and Suryanto's research [26] highlights students' struggles with organizing their ideas and their fear of speaking in public. The results suggest that removing Filipino as a core subject from college is inappropriate, as many students still need to develop their Filipino oral proficiency to ensure fluency.

Meanwhile, oral proficiency particularly in vocabulary reached a high level. However, the items related to the use of deep words and the extent of vocabulary suitable for classroom discussion scored moderately, indicating that students occasionally manifest confidence in speaking. Torevillas' research proves that having a sufficient vocabulary that students fully understand significantly enhances their oral proficiency, while a lack thereof decreases language mastery and affects student development (124). To address this issue, activities to improve students' vocabulary, such as learning new word sets and understanding their meanings, can be implemented. Regular study and review of grammar and language structure rules also help to expand students' vocabulary. Peck's cognitive theory asserts that structural habits in oral language positively affect students' academic writing skills, underscoring the need for intensive training to improve oral proficiency [27].

3.3 Levels of Writing Instructions

Table 3 illustrates the level of writing instruction among students, measured according to indicators such as learning to write narrative texts, self-confidence in writing narrative texts, learning to write factual texts, self-confidence in writing factual texts, learning to write formal and informal texts, clear criteria-related feedback,

Table 2. Oral proficiency of students

Indicators	SD	Mean	Descriptive Level
Comprehension	0.68	3.92	High
Fluency	0.88	3.49	High
Vocabulary	0.82	3.52	High
Pronunciation	0.68	3.94	High
Grammar	0.71	3.78	High
Overall	0.61	3.73	High

Table 3. Levels of writing instructions

Indicators	SD	Mean	Descriptive Level
Learning to write narrative texts	0.72	4.21	Very High
Self-confidence in writing narrative texts	0.69	3.80	High
Learning to write factual texts	0.70	4.15	High
Self-confidence in writing factual texts	0.73	4.02	High
Learning to write formal and informal texts	0.64	4.26	Very High
Clear evaluation criteria	0.60	4.36	Very High
Criteria-related feedback	0.60	4.34	Very High
Writing to improve	0.66	4.35	Very High
Effect on self-efficacy	0.59	4.50	Very High
Focus of feedback	0.82	3.85	High
Self-assessment	0.64	4.25	Very High
Peer assessment	0.66	4.27	Very High
Overall	0.48	4.19	High

Table 4. Academic writing skills of students

Indicators	SD	Mean	Descriptive Level
Basic academic writing skills	0.58	3.98	High
More advanced academic writing skills	0.80	3.49	High
Prospective role in the future career	0.78	4.03	High
Overall	0.62	3.83	High

writing to improve, effect on self-efficacy, focus of feedback, self-assessment, and peer assessment gaining an overall mean of 4.19 (SD 0.48), with a descriptive level indicating a high level of writing instructions often observed among students in various instances. Upon analyzing each indicator, the effect on self-efficacy obtained the highest mean of 4.50 (SD 0.59), indicating the highest level, while self-confidence in writing narrative texts had the lowest mean of 3.80 (SD 0.59), also with a high level. The level of writing instruction among respondents was found to be high. The research findings are consistent with previous studies regarding assessing students' level of writing instruction that obtained high results [3,30,31].

Writing instruction focuses on teaching various text types, acquiring writing skills, and utilizing feedback to guide students in enhancing their writing skills. Tracking students' progress in writing tasks is crucial for effective instruction. However, certain items in some indicators

obtained low mean scores, suggesting room for improvement, including creating tension in a well-structured narrative text, developing arguments in a factual text, organizing language in different writing genres, and using verbs and other connectors [3].

Teachers play a significant role in developing students' skills through proper writing instruction. Students tend to trust teachers with high self-confidence to deliver quality education, which greatly influences their success. However, monitoring each student is challenging for teachers due to the large number of students they teach, but it is the teachers' responsibility to boost students' morale and self-confidence to encourage writing, emphasizing the importance of providing feedback and guidance in writing [3]. Moreover, Wu and Schunn [32] emphasize peer review as an additional feedback mechanism to address students' lack of attention due to the large class sizes in the Philippines. This method shows potential for improving students'

interactions with peers and learning to give and receive comments on their writing, enhancing their ability to defend their positions and reason logically. Flower and Hayes' cognitive process model supports the study's findings, incorporating three critical elements: the nature of the task, the writer's long-term memory, and the writing process that stems from their teacher-led learning. Genre pedagogy from Vygotsky's learning theory further reinforces it, emphasizing the teacher's crucial role in developing students' skills through teaching writing interventions, providing feedback, monitoring, and writing instruction [21].

3.4 Academic Writing Skills of Students

Table 4 presents the level of students' academic writing skills, measured according to their basic academic writing skills, more advanced academic writing skills, and prospective role in future careers obtaining an overall mean of 3.83 (SD 0.62), with a high descriptive level indicating that it is often observed among students in various situations. Upon analyzing each indicator, the prospective role in future career obtained the highest mean of 4.03 (SD 0.78), indicating a high level, followed by the basic academic writing skills with a high level, garnering a mean of 3.98 (SD 0.58), and more advanced academic writing skills obtained the lowest mean of 3.49 (SD 0.80), also with a high level. The level of proficiency in academic writing among respondents was found to be high. Various research has shown the high level of students' academic writing skills due to various influencing factors. In Hudarenko's research, students exhibited a proficient level in their basic academic writing skills, and prospective role in their future careers indicating their preference for writing tasks, their pre-writing activities, and their utilization of writing strategies. Additionally, consistent with the research results, the more advanced academic writing skills obtained the lowest mean (97). Meanwhile, the study by Purnamasari et al. [33] found that students have a moderate to high level of academic writing skills across various academic texts.

The study shows that students generally have a high level of academic writing skills, but some areas show average or low means. The low mean indicates occasional concerns about writing tasks due to the intricate processes they experience. Students with lower writing anxiety tend to produce higher-quality compositions. The complexity and systematic nature of writing often affects students, leading to stress, fatigue,

anxiety, and difficulty. The teacher's role is crucial in addressing these issues by providing opportunities for students to practice and learn writing strategies [3]. The cognitive process model proposed by Flower and Hayes illustrates the systematic and complex process of monitoring writing, which includes activities such as reading, reflection, and review [4]. Flavell's Metacognitive Knowledge Theory aligns with this model, which classifies writing as an "applied metacognitive" process. It emphasizes that the writer plays a crucial role in their growth by actively managing their thoughts through the stages of planning, monitoring, and evaluating writing tasks. As a result, it is critical to prioritize students' instruction when using strategies to improve their academic writing skills.

3.4.1 Relationship between metacognitive awareness of writing strategies and academic writing skills

Table 5.a shows a significant relationship between metacognitive awareness of strategies and academic writing skills among students, with a total R-value of .599 and a corresponding P-value of .000, lower than the .05 level of significance set in this study. The results rejected the hypothesis in favor of the alternative hypothesis, indicating a significant relationship between metacognitive awareness of strategy and proficiency in academic writing among students. This reinforces that when students have high metacognitive awareness of writing strategies in academic writing, their academic writing skills are also high.

The Table 5 also displays the results of correlational analysis between each indicator of metacognitive awareness of strategies in writing and each indicator of academic writing skills. Declarative knowledge (person) showed an R-value of .394, declarative knowledge (task) with an R-value of .432, procedural knowledge with an R-value of .302, conditional knowledge with an R-value of .508, planning with an R-value of .402, monitoring with an R-value of .454, and evaluation with an R-value of .365. It can be observed that all indicators of each variable have the same P-value of .000, indicating a significant relationship among them. The results highlight the significant relationship between metacognitive awareness of strategies in writing and academic writing skills of Filipino students, which is consistent with the findings of various studies showing a strong significant relationship among variables, including indicators such as declarative knowledge (person), procedural

knowledge, conditional knowledge, planning, monitoring, and evaluation, and proficiency [24-26].

The results only demonstrate the consistency of indicators of metacognitive awareness of writing strategies as predictors of students' academic writing skills. The findings emphasize that metacognition may stem from a systematic knowledge structure mentioned in metacognition theory, which encompasses a wide range of strategies related to the indicators of metacognitive awareness of writing strategies [26]. Ramadhanti and Yanda [24] also proved that it is the primary factor affecting academic texts, such as explanatory texts, reinforcing the relationship between the two variables. The cognitive process model by Flower and Hayes supports the findings, highlighting a strong correlation between metacognitive awareness of writing strategies and academic writing skills [4]. According to them, the mental process is the most crucial unit in the writing process, linked to metacognition, indicating that individuals can control their minds to succeed in writing tasks.

3.4.2 Relationship between oral proficiency and academic writing skills

Table 5.b demonstrates a significant relationship between oral proficiency and academic writing skills among students, with a total R-value of .499 and a corresponding p-value of .000, which is lower than the .05 level of significance set in this study. The results indicate that the hypothesis was rejected in favor of the alternative hypothesis, indicating a significant relationship between oral proficiency and academic writing skills among students. The table also presents the results of correlational analysis between each indicator of oral proficiency and each indicator of proficiency in academic writing. Comprehension showed an R-value of .462, fluency with an R-value of .252, vocabulary with an R-value of .450, pronunciation with an R-value of .495, and grammar with an R-value of .407. It can be observed that all indicators of each variable have the same P-value of .000, indicating a strong significant relationship among them. This reinforces that when students have high oral proficiency, their academic writing skills are also high, emphasizing its importance to students as it helps broaden their knowledge to be utilized in their writing tasks.

The significant relationship between oral proficiency and academic writing skills among

students in the Filipino language continues to be proven by various studies [27,28,30]. Gomez also demonstrated that increasing oral proficiency significantly correlates with increasing academic writing skills. Safariyan and Shakroki's [34] research also showed a strong correlation between oral proficiency and academic writing skills. The cognitive process model by Flower and Hayes reinforces the strong relationship between oral proficiency and academic writing skills, comprising three key elements: the nature of the task, the writer's long-term memory, and the writing process [4]. The writing process itself includes three steps: planning, translating, and reviewing. Additionally, writing is considered a systematic and intricate process. Vocabulary, grammar, and spelling are critical factors contributing to their writing success, which in turn is an indicator of oral proficiency (224–226).

3.4.3 Relationship between writing instructions and academic writing skills

In Table 5.c, a significant relationship between writing instruction and academic writing skills among students is depicted, with a total R-value of .572 and a corresponding P-value of .000, which is lower than the .05 level of significance set in this study. The null hypothesis was rejected, and the alternative hypothesis suggesting a significant relationship between writing instruction and proficiency in academic writing among students was accepted. The correlational analysis results between each indicator of writing instruction and each indicator of academic writing skills are also shown.

Learning to write narrative texts, self-confidence in writing narrative texts, learning to write factual texts, self-confidence in writing factual texts, learning to write formal and informal texts, clear evaluation criteria, criteria-related feedback, writing to improve, effect on self-efficacy, focus of feedback, self-assessment, and peer assessment all demonstrated significant relationships, with P-values of .000 across all indicators. These results affirm that when students receive effective writing instruction, their proficiency in academic writing also improves. The significant relationship between writing instruction and academic writing skills among students in the Filipino language is consistent with the findings of various studies [3], Torevillas [30, 31, 32].

Table 5.a. Relationship between metacognitive awareness of writing strategies and academic writing skills

Metacognitive Awareness of Writing Strategies	Academic Writing Skills			Overall
	Basic academic writing skills	More advanced academic writing skills	Prospective role in the future career	
Declarative Knowledge (Person)	.440**(.000)	.240**(.000)	.369**(.000)	.394**(.000)
Declarative Knowledge (Tasks)	.469**(.000)	.343**(.000)	.330**(.000)	.432**(.000)
Procedural Knowledge	.353**(.000)	.267**(.000)	.186**(.001)	.302**(.000)
Conditional Knowledge	.566**(.000)	.454**(.000)	.327**(.000)	.508**(.000)
Planning	.404**(.000)	.326**(.000)	.323**(.000)	.402**(.000)
Monitoring	.547**(.000)	.317**(.000)	.351**(.000)	.454**(.000)
Evaluation	.459**(.000)	.223**(.000)	.301**(.000)	.365**(.000)
Overall	.636**(.000)	.427**(.000)	.423**(.000)	.559**(.000)

Table 5.b. relationship between oral proficiency and academic writing skills

Oral Proficiency	Academic Writing Skills			Overall
	Basic academic writing skills	More advanced academic writing skills	Prospective role in the future career	
Comprehension	.504**(.000)	.411**(.000)	.306**(.000)	.462**(.000)
Fluency	.323**(.000)	.274**(.000)	.079(.166)	.252**(.000)
Vocabulary	.496**(.000)	.443**(.000)	.251**(.000)	.450**(.000)
Pronunciation	.597**(.000)	.362**(.000)	.366**(.000)	.495**(.000)
Grammar	.561**(.000)	.310**(.000)	.235**(.000)	.407**(.000)
Overall	.599**(.000)	.440**(.000)	.293**(.000)	.499**(.000)

Table 5.c. Relationship between writing instructions and academic writing skills

Writing Instructions	Academic Writing Skills			Overall
	Basic academic writing skills	More advanced academic writing skills	Prospective role in the future career	
Learning to write narrative texts	.502**(.000)	.301**(.000)	.281**(.000)	.403**(.000)
Self-confidence in writing narrative texts	.594**(.000)	.442**(.000)	.378**(.000)	.533**(.000)
Learning to write factual texts	.528**(.000)	.327**(.000)	.344**(.000)	.449**(.000)
Self-confidence in writing factual t texts	.577**(.000)	.370**(.000)	.388**(.000)	.502**(.000)
Learning to write formal and informal texts	.567**(.000)	.289**(.000)	.427**(.000)	.480**(.000)
Clear evaluation criteria	.482**(.000)	.220**(.000)	.333**(.000)	.385**(.000)
Criteria-related feedback	.435**(.000)	.195**(.001)	.311**(.000)	.349**(.000)
Working to improve	.478**(.000)	.216**(.000)	.298**(.000)	.367**(.000)
Effect on self-efficacy	.456**(.000)	.192**(.001)	.346**(.000)	.370**(.000)
Focus of feedback	.234**(.000)	.279**(.000)	.165**(.004)	.262**(.000)
Self-assessment	.549**(.000)	.303**(.000)	.352**(.000)	.449**(.000)
Peer assessment	.425**(.000)	.235**(.000)	.303**(.000)	.360**(.000)
Overall	.677**(.000)	.398**(.000)	.454**(.000)	.572**(.000)

Wu and Schunn's results confirm the significant relationship between writing instruction and improving students' academic writing skills, particularly in providing feedback. They noted that feedback inspires students to consider its implementation in their writing, which they believe enhances their problem-solving skills in writing tasks (517). Similarly, Wale and Bogale [31] found that writing instruction in classes teaching academic writing improves students' academic writing skills by providing them with shared processes for writing. Canada and Miralles also support the relationship between writing instruction, particularly in teaching writing and the feedback process, as essential factors in enhancing and increasing proficiency in academic writing, reducing writing anxiety, and replacing it with confidence derived from the teaching and feedback process in academic writing (223).

The cognitive process model by Flower and Hayes substantiates the strong correlation between writing instruction and academic writing skills. It comprises three essential units: the nature of the task, the writer's long-term memory, and the writing process [4]. The writer continuously monitors their writing throughout the process, which involves reading, re-reading, reflecting, and reviewing (217). As a result, writing instruction is critical for achieving success in composing academic texts.

3.5 Influence of Metacognitive Awareness of Writing Strategies, Oral Proficiency and Writing Instructions on Academic Writing Skills

In Table 6, a significant influence of all exogenous variables, metacognitive awareness

of writing strategies, oral proficiency, and writing instructions, can be observed on the endogenous variable of academic writing skills of senior high school students. It is also noted in the table that it has an f-value of 63.195 with a corresponding P-value of .000, which is significantly lower than the .05 level of significance, confirming a significant positive relationship between the three exogenous and endogenous variables. The results show that the exogenous variables predict the academic writing skills of senior high school students. Upon further analysis of the table regarding the significance of the study's variables, it obtained an R2 of .386, indicating that 38.6% of the variance in students' academic writing skills is explained by predictor variables such as metacognitive awareness of writing strategies, oral proficiency, and writing instructions. This means the remaining 61.4% of the variance in their academic writing skills comes from other factors besides the three exogenous variables.

Table 6 also shows the unstandardized and standardized coefficients and the corresponding P-values of each exogenous variable to the endogenous variable. The writing instructions, with the highest beta of .294 and a P-value of .000, signify that this variable has a significant influence and relationship with academic writing skills in the Filipino language of senior high school students. Meanwhile, metacognitive awareness of writing strategies with a beta of .255 and a P-value of .016, and oral proficiency with a beta of .294 and a P-value of .000, both indicate significant influence and show significant positive relationships with academic writing skills of senior high school students.

Table 6. Influence of metacognitive awareness of writing strategies, oral proficiency, and writing instructions on academic writing skills

Academic Writing Skills				
Variables	B	β	t	Sig.
Constant	.190		.685	.494
Metacognitive Awareness of Writing Strategies	.368	.255	3.749	.000
Oral Proficiency	.152	.150	2.427	.016
Writing Instructions	.381	.294	4.276	.000
R	.621			
R ²	.386			
ΔR	.380			
F	63.195			
p	.000			

The research results demonstrate that all exogenous variables significantly influence the endogenous variable, making them predictors of students' skills in academic writing. The study by Ramadhanti and Yanda [24] confirms that metacognitive awareness of writing strategies significantly influences students' academic writing skills, emphasizing its importance in developing academic writing skills, particularly in academic texts like explanatory texts. They also explained the need to increase metacognitive knowledge through intensive training following each academic text's structure and specific standards. They also emphasized the role of teachers in the classroom as facilitators and not just error correctors. Similarly, the research by Teng et al. [26] also proves that metacognitive awareness of writing strategies is a predictor of academic writing skills, stating that metacognition constructs stem from a systematic structure of knowledge, and indicators of these exogenous variables are factors for improving students' academic writing skills. Further evidence is provided by Rosdiana et al. [25] that exogenous variables significantly influence students' skills in academic writing.

Meanwhile, based on various research outcomes, oral proficiency shows moderate to high influence depending on the low or high level of oral proficiency [35]. According to their research results, the high level of oral proficiency indicates whether it will predict academic writing skills, as their research results show a low and not robust relationship between the variables. Rausch's research also proved that students' oral proficiency influences the development of academic writing skills [36]. He added that the teacher plays a significant role in guiding students to utilize their oral proficiency in academic writing. Peck's research emphasized that when students are exposed to activities that

enhance their speaking skills, their writing skills also improve, reinforcing that oral proficiency significantly influences their academic writing skills [15].

The influence of writing instructions, which can be aligned with teaching and providing feedback from teachers and students on their writing skills, is also essential. The research by Wale and Bogale [31] confirms the significant influence of writing instructions on students' academic writing skills. They further stated that providing clear writing instructions improves students' academic writing skills because of the content of each type of academic writing, particularly its form, characteristics, nature, processes, and ethical considerations, which guide students in understanding the writing process. The research by Canada and Miralles [3] also supports the influence of writing instructions, particularly in teaching writing and the feedback process, as essential factors in developing students' academic writing skills in the Filipino language.

3.6 Summary of Goodness of Fit of Measures of the Five Generated Models

Table 7 analyzes the relationship between metacognitive awareness of writing strategies, oral proficiency, and writing instructions on students' academic writing skills. Five alternative models were developed and tested against fit indices to determine whether the generated models would be accepted or rejected concerning the academic writing skills of senior high school students in the Filipino language. All its indices must meet the required standards to determine the most appropriate model. The chi-square/degrees of freedom value should be less than 5, with a P-value higher than 0.05. The root mean square error approximation value should

Table 7. The Goodness of Fit with the Comparative Criterion Indices

Model	P-value (>0.05)	CMIN / DF (0<value<2)	GFI (>0.95)	CFI (>0.95)	NFI (>0.95)	TLI (>0.95)	RMSEA (<0.05)	P-close (>0.05)
1	.000	4.628	.724	.767	.722	.745	.109	.000
2	.000	3.939	.752	.813	.765	.794	.098	.000
3	.000	3.939	.752	.813	.765	.794	.098	.000
4	.000	3.258	.770	.856	.806	.842	.086	.000
5	.000	1.290	.966	.991	.962	.987	.031	.960

Legend:

CMIN/DF Chi-Square/Degrees of Freedom

GFI Goodness of Fit Index

RMSEA Root Mean Square of Error Approximation

NFI Normed Fit Index

TLI Tucker-Lewis Index

CFI Comparative Fit Index

be less than 0.05, and its equivalent P-close value should be greater than 0.05. Other indices, such as the normed fit index, Tucker-Lewis's index, comparative fit index, and goodness of fit index, should all be higher than 0.95.

Model 1 demonstrates a direct relationship between the exogenous variables of metacognitive awareness of writing strategies, oral proficiency, and writing instructions, and their causal relationship with the endogenous variable, academic writing skills. Model 2 also shows a similar direct relationship between the exogenous variables and the endogenous variable, academic writing skills. Model 3 likewise presents a direct relationship between the exogenous variables and the endogenous variable, academic writing skills. Lastly, Model 4 also exhibits a direct relationship between the exogenous variables and the endogenous variable, academic writing skills. However, none of the indices from Model 1 to Model 4 reached

the acceptable indices listed in the standard: $CMIN/DF < 2$, $GFI, CFI, NFI, TLI > 0.95$, $RMSEA < 0.05$ with $P\text{-Close} > 0.05$ indicating that the models were not the best-fit model for academic writing skills.

Model 5 shows the results of goodness of fit. Its Chi-Square value divided by degrees of freedom ($CMIN/DF$) is 1.290; the Normed Fit Index (NFI) is .962; the Tucker-Lewis Index (TLI) is .987; the Comparative Fit Index (CFI) is .991; the Goodness of Fit Index (GFI) is .966; the Root Mean Square Error Approximation ($RMSEA$) is .031; and the P of Close Fit ($P\text{-close}$) is .960. The goodness of fit results indicate that all indices are highly acceptable as they meet the set standards: $CMIN/DF < 2$, $GFI, CFI, NFI, TLI > 0.95$, $RMSEA < 0.05$ with $P\text{-Close} > 0.05$, suggesting that this is the best and most appropriate model for the academic writing skills of students.

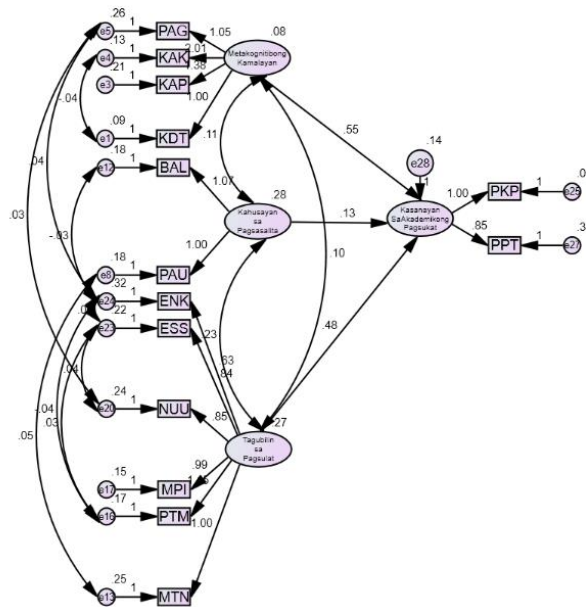


Fig. 1. Best-fit structural model on academic writing skills

Legend:

PAG	Planning	ESS	Self-assessment
KAK	Conditional Knowledge	NUU	Writing to improve
KAP	Procedural Knowledge	MPI	Learning to write formal and informal texts
KDT	Declarative Knowledge-Person	PTM	Self-confidence in writing factual texts
BAL	Grammar	MTN	Learning to write narrative texts
PAU	Comprehension	PKP	Basic academic writing skills
ENK	Peer Assessment	PPT	Prospective role in the future career
Metakognitibong Kamalayan		Metakognitibong Kamalayan	
Kahusayan sa Pagsasalita		Oral Proficiency	
Tagubilin sa Pagsulat		Writing Instructions	
Kasanayan sa Akademikong Pagsulat		Academic Writing Skills	

3.7 Best Fit Model

In Fig. 1, the standard estimates in the most appropriate model, Model 5, are showcased. The model illustrates the relationship between metacognitive awareness of writing strategies, oral proficiency, writing instructions, and their direct causal relationship with the academic writing skills of students in the Filipino language [37,38].

Model 5 obtained results that aligned with the standards for selecting the most appropriate model for academic writing skills. In the process of choosing the most appropriate model, it appeared that out of the seven indicators of metacognitive awareness of writing strategies, the predictors of planning (PAG), conditional knowledge (KAK), procedural knowledge (KAP), and declarative-personal knowledge (KDT) remained significant predictors of students' academic writing skills. Meanwhile, among the five indicators of oral proficiency, grammar (BAL) and comprehension (PAG) remained significant predictors of students' academic writing skills in the Filipino language. For the writing instruction with 12 indicators, six of them remained significant predictors of the academic writing skills of students in the Filipino language: peer assessment (ENK), self-assessment (ESS), writing to improve (NUU), learning to write formal and informal texts (MPI), self-confidence in writing factual texts (PTM) and learning to write narrative texts (MTN). Based on the results, it can be inferred that students' academic writing skills are primarily measured by basic academic writing skills (PKP) and prospective roles in future careers (PPT).

Writing is a macro skill, and academic writing as a genre is crucial for students to develop so they can attain a high level of knowledge and be prepared for various fields, especially in their prospective careers or professions in the future. Developing their metacognitive awareness of writing strategies and enhancing their oral proficiency are significant factors that can help them become knowledgeable and proficient in academic writing. Additionally, the role of the teacher as a supervisor of writing instructions, particularly in teaching and providing feedback, is also essential in improving their academic writing skills.

4. CONCLUSION

The structural equation modeling analysis findings reveal that metacognitive awareness of

writing strategies, oral proficiency, writing instruction, and academic writing skills are highly evident among students. Students frequently apply writing strategies based on their metacognitive awareness, particularly in planning, monitoring, and evaluating their academic compositions, which significantly improves their academic writing skills. High levels of oral proficiency, especially in correct pronunciation and comprehension, are crucial factors in improving academic writing skills. Moreover, writing instruction plays a significant role in developing academic writing skills, as students' interest in learning to write academic texts and strong self-confidence contribute to success in writing.

The research also found a significant relationship and influence between metacognitive awareness of writing strategies, oral proficiency, writing instructions to academic writing skills. Flower and Hayes' cognitive process model supports this, demonstrating a strong relationship and influence of metacognitive awareness of writing strategies on academic writing skills [4]. Flavell's Metacognitive Knowledge Theory asserts that individuals with high metacognitive knowledge possess the ability to control their minds to succeed in tasks such as academic writing. The cognitive process model also confirms the strong relationship and influence of oral proficiency on academic writing skills. Writing is considered systematic and involves a complex process, with vocabulary, grammar, and spelling being critical factors contributing to students' success in writing. Similarly, the cognitive process model substantiates the strong relationship and influence of writing instruction on academic writing skills. The writer continuously monitors their writing throughout the process, which involves reading, re-reading, reflecting, and reviewing. As a result, writing instruction is critical for achieving success in composing academic texts.

Model 5 has indices consistent with values meeting the standards for selecting the most appropriate model, showing that the goodness of fit result is highly acceptable and was recognized as the most appropriate model for academic writing skills. The cognitive process model by Flower and Hayes validates the relationship between the three exogenous variables and the endogenous variable. The mental process is the most critical unit in the writing process, with the nature of the task signaling the writer to identify the topic, audience, and role. Solving the

problem necessitates high-level thinking skills and strategies emphasizing the importance of metacognitive strategies throughout the process.

Metacognitive awareness of writing strategies, oral proficiency, and writing instruction are predictors of academic writing skills, and developing these variables can help improve students' academic writing skills in Filipino. Despite this, it is observed that certain indicators have reached their peak in the study. As a result, all indicators can still rise to the highest level through activities such as seminars and workshops on improving writing strategies and oral proficiency. The curriculum maps of Filipino subjects can also incorporate these activities, which include tasks that improve writing and speaking skills, like public speaking and the composition of academic texts.

It is also important to remember that the teacher's role in subjects, particularly writing, is that of a learning facilitator, not just a corrector. Therefore, teachers must clearly articulate the standards, requirements, and steps in writing. The results also highlight the value of feedback from teachers to students and from students to their peers in further developing their academic writing skills, addressing grammar, spelling, language structure, and technical aspects of each academic composition. Through feedback, students better understand the requirements for each type of academic composition according to its standards and ethical considerations. Thus, since metacognitive knowledge plays a significant role in an individual's development, it is essential to impart this concept to students and conduct class activities that develop their metacognition by providing tasks that hone their critical thinking, such as writing reflective essays, argumentative texts, and others, as well as conducting authentic assessments of students' academic writing skills.

CONSENT AND ETHICAL APPROVAL

The research conducted ensured adherence to ethical standards evaluated by the University of Mindanao Review Ethics Committee (UMERC), such as voluntary participation, privacy, confidentiality, written consent process, recruitment, risks, benefits, harm, fabrication, falsification, conflict of interest (COI), deception, permission from organization/location, and authorship.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

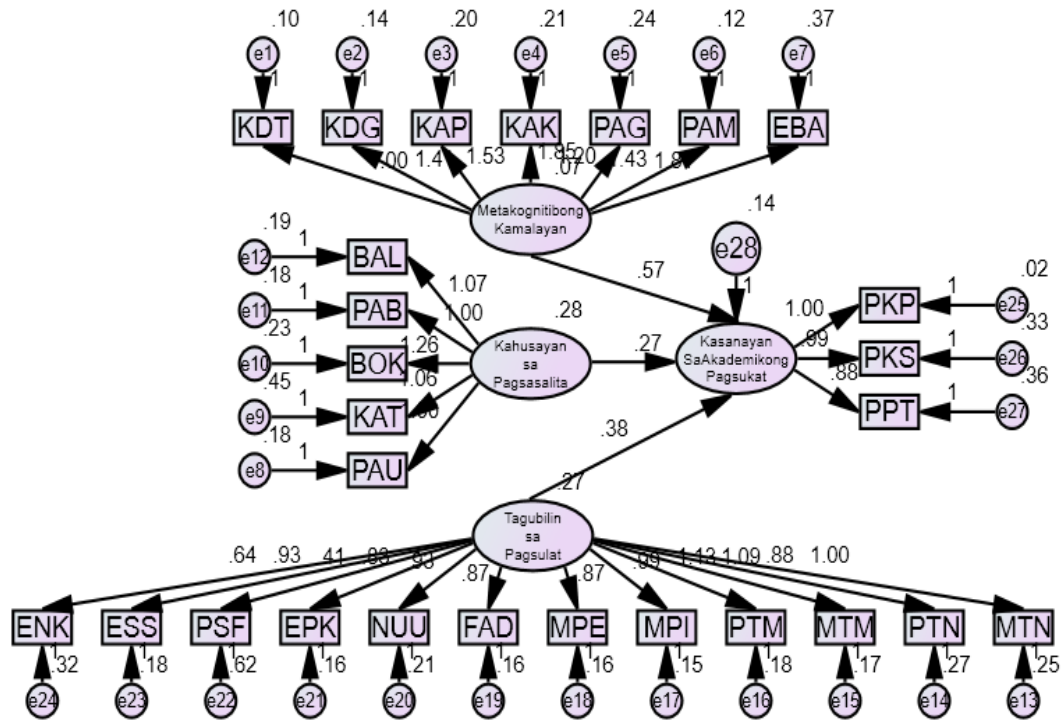


Fig. 2. Structural model 1

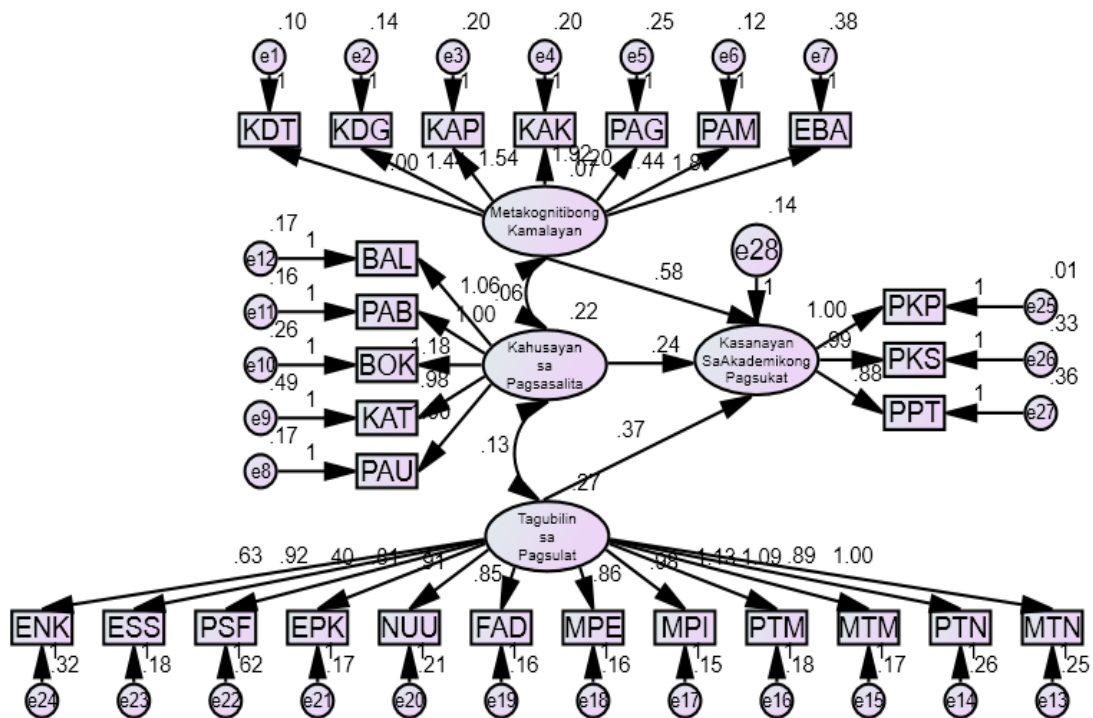


Fig. 3. Structural model 2

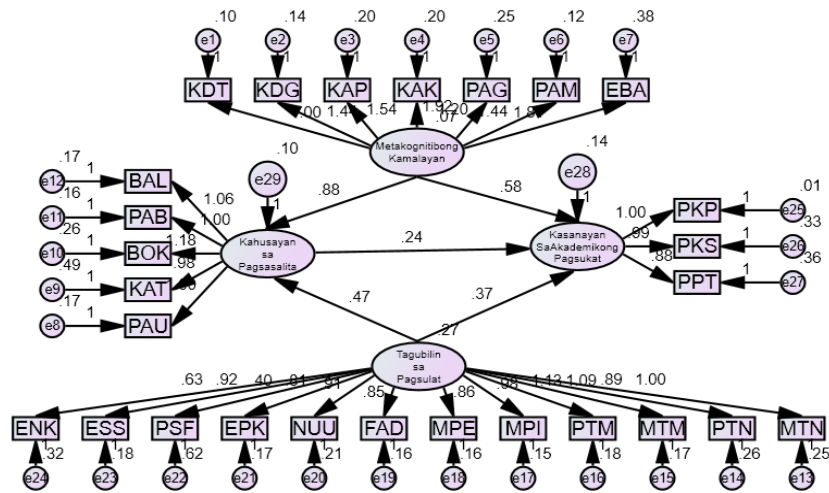


Fig. 4. Structural model 3

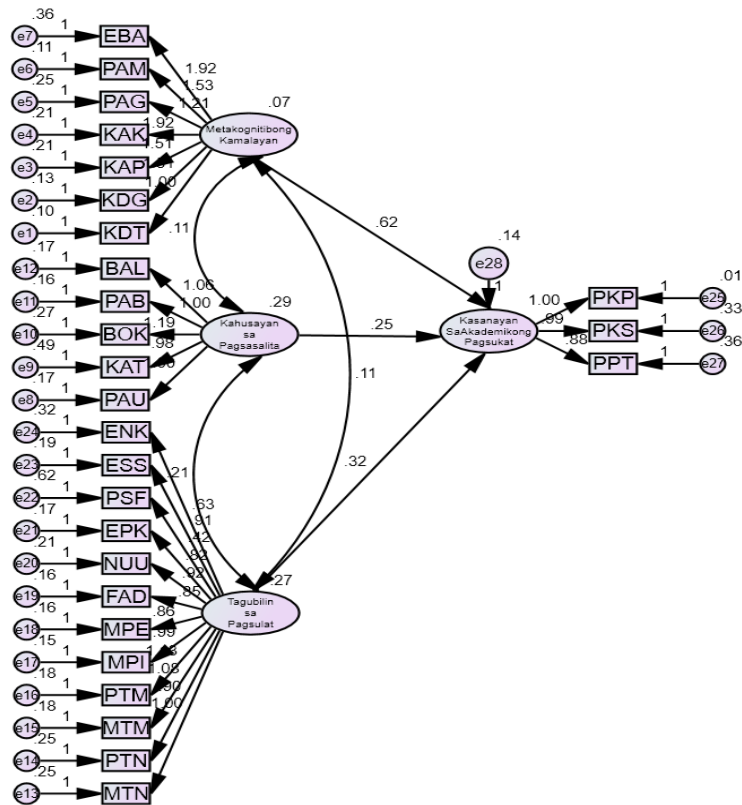


Fig. 5. Structural model 4

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