



EXPLORING VISUAL THINKING STRATEGY IN ACADEMIC WRITING INSTRUCTION FOR UNIVERSITY STUDENTS: A PRELIMINARY STUDY

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ABSTRACT

Academic writing is an essential competency for students in developing ideas, constructing arguments, using evidence, and conveying academic positions systematically. However, students still face difficulties in generating ideas, organizing writing, developing arguments, maintaining coherence, and using references appropriately. This study aims to analyze academic writing learning needs, identify students' difficulties, and formulate an initial design of the *Visual Thinking Strategy* (VTS) model for academic writing instruction. This preliminary study employed an exploratory qualitative approach supported by descriptive quantitative data. The participants were students of the Indonesian Language and Literature Education Study Program at Syarif Hidayatullah State Islamic University Jakarta who were enrolled in a Writing Skills course. Data were collected through observations, questionnaires, interviews, and analysis of students' written work. Qualitative data were analyzed through data reduction, presentation, interpretation, and conclusion drawing, while questionnaire data were analyzed descriptively. The findings indicate that VTS has the potential to facilitate students in observing, interpreting, discussing, mapping, and constructing ideas more logically, visually, and argumentatively. The study produced an initial VTS model design as a foundation for further development of an academic writing instructional model.

Keywords: *academic writing; visual thinking strategy; preliminary studies; writing skills; indonesian language learning*

INTRODUCTION

Academic writing is one of the essential competencies in higher education because it is the main means for students to develop, test, and communicate ideas scientifically. In a global context, academic writing skills are no longer seen as mere language skills, but as intellectual practices that reflect critical, analytical, reflective, and argumentative thinking skills (Hyland, 2010; Lea, 2008). Through academic writing, students are required to be able to compile essays, papers, research reports, scientific articles, and various other forms of academic work in a systematic, logical, and evidence-based manner. Therefore, the quality of students' academic writing is often one of the important indicators of the success of the learning process in higher education. The better the ability of students to build arguments, organize ideas, use relevant references, and convey academic positions clearly, the stronger their capacity to participate in the academic community and respond responsibly to scientific developments (Hyland, 2009; Mayuni et al., 2022; Paltridge, 2004; Street, 2010b, 2010a).

Academic writing is a complex activity because it not only demands the precise use of language, but also involves interrelated cognitive, social, and academic processes. In

writing academic papers, students need to go through the stages of planning, developing ideas, organizing arguments, drafting, revising, and reflecting on the quality of their writing (Budiarto et al., 2023; Hyland, 2010; Lea, 2008; Resyadi et al., 2021; Wingate, 2012). Students are also required to understand the structure of academic genres, build coherence between ideas, choose relevant scientific sources, use citations appropriately, and convey academic positions logically and responsibly. Difficulties often arise when students have to find ideas that are worth studying, draft a written framework, develop strong arguments, and connect theories with supporting data or facts (Calvo et al., 2020; Delgado-Orsorio et al., 2023; Kadir et al., 2014; Meza, 2021). Thus, academic writing requires high-level thinking skills, especially the ability to analyze, evaluate, synthesize information, and build scientific arguments systematically.

Academic writing also has special characteristics that distinguish it from popular or expressive forms of writing. Academic writing requires clarity of focus, conceptual accuracy, objectivity, coherence of ideas, and the use of formal and measured language (Paltridge, 2004; Street, 2010b). Every idea presented is not enough to be a personal opinion, but must be supported by theories, data, research results, or scientific arguments that can be accounted for (Hudson, 2024; Hyland, 2009; Wingate, 2012). In this context, students need to understand that academic writing is not just about composing correct sentences, but rather building logical relationships between problems, theories, data, analysis, and conclusions. Therefore, academic writing skills are closely related to the ability to read critically, think analytically, manage references, and formulate arguments systematically (Hyland, 2010; Lea, 2008; Lea & Street, 2006). In addition, academic writing functions as a means of forming students' academic identity. Through academic writing, students learn to enter the scientific community by following applicable writing conventions, such as the use of clear writing structures, consistent citations, the selection of academic diction, and the presentation of arguments in a polite and evidence-based manner. This ability is important because students are not only required to understand knowledge, but also to be able to produce and communicate knowledge scientifically. Thus, academic writing learning needs to be directed at a process that helps students find ideas, formulate focus, formulate a framework, develop arguments, integrate references, and revise writing reflectively. Such a learning approach will help students understand that academic writing is a gradual, dialogical, and continuous thinking process.

In the practice of learning in college, academic writing is still a challenge for many students. The most common difficulties that arise are the inability of students to start writing, find the focus of ideas, and systematically arrange the flow of thought (Lustyantie, 2022; Paltridge, 2004; Wigglesworth, 2019). As a result, the resulting writing is often still descriptive, does not show strong arguments, and lacks coherence between ideas. Students also often use references only as a formal complement, not as a basis for building, supporting, or strengthening academic arguments. This condition shows that learning to write has not fully helped students understand the thinking process behind academic writing. In many classrooms, learning still tends to focus on assigning, explaining theories, text examples, and assessing the final product of writing, while explicit strategies for finding ideas, visualizing ideas, developing arguments, and structuring writing structures have not been given much systematically (Resyadi et al., 2021; Wingate, 2012). Therefore, a learning approach is needed that not only directs students to produce writing, but also guides them through the



process of thinking, designing, organizing, and reflecting on ideas before they are poured into academic form.

This condition shows that there is a gap between the academic demands that students must achieve and the learning strategies available in the classroom. On the one hand, students are required to be able to produce academic writing that is systematic, critical, argumentative, and evidence-based. However, on the other hand, the learning process does not always provide adequate pedagogical support to help students build a way of thinking before writing. Learning to write is often still understood as the activity of producing texts, not as a process of building ideas, arranging relationships between concepts, testing arguments, and reflecting academic positions (Hyland, 2010; Kellogg, 2008). In fact, the quality of writing is largely determined by the quality of the thought process that precedes it. Therefore, learning academic writing needs to shift from a mere orientation on writing products to learning that emphasizes the academic thinking process. In this context, a learning model is needed that is able to help students develop ideas visually, dialogically, and reflectively so that ideas that are originally abstract can be organized into a logical, coherent, and scientific-argument-based writing structure.

In addition to the problem of organizing ideas and developing arguments, learning academic writing in higher education also needs to pay attention to the linguistic characteristics of Generation Z students. The study of canonical syntax as a strategy for constructing linguistic politeness in Generation Z shows that syntactic structure not only functions as a grammatical aspect, but also plays a role in shaping the accuracy, clarity, and politeness of academic communication (Anwar et al., 2026). In the context of academic writing, this aspect is important because students are not only required to be able to produce logical and argumentative writing, but also to be able to use polite, structured, and in accordance with academic conventions.

Visual strategies have an important role in learning academic writing because they can help students change ideas that are still abstract into more concrete, directed, and easy to develop. Through visualization, students can see the relationship between ideas, find the connection between concepts, and understand the necessary flow of thought before compiling the writing (Hailey et al., 2015). In the academic writing process, visual strategies can be used in the form of mind mapping to explore and expand ideas, concept mapping to connect key concepts, argument mapping to structure claims, reasons, evidence, and conclusions, and paragraph structure schemes to help students build writing coherence (Cappello & Walker, 2016; Firat et al., 2022; Yenawine, 1999). Thus, visualization not only serves as a technical tool, but also as a cognitive strategy that strengthens writing planning. Through visual thinking, initial ideas that are still scattered can be bridged into a more systematic, logical, and argumentative writing framework, so that students have a clearer foothold in developing organized academic writing.

Visual Thinking Strategy (VTS) can be positioned as a potential pedagogical alternative in academic writing learning because it places the activities of observing, interpreting, dialogue, and constructing meaning as an important part of the learning process (Albert et al., 2022; Hailey et al., 2015; Housen & Yenawine, 1996; Jancsary et al., 2016). Initially, VTS was widely used in visual stimulus-based learning to train observation,

interpretation, communication, and critical thinking skills. Through VTS, students are encouraged to carefully observe objects, images, visual data, or phenomena, then express their understanding and interpretation based on observable evidence (Kelly-Hedrick et al., 2022; Kress, 2009; Kress & Van Leeuwen, 2020). This process is important in learning to write because students are not directly asked to produce text, but are first trained to find issues, ask questions, formulate conjectures, and construct logical reasoning. Visual-based discussions can also provoke the emergence of various ideas, viewpoints, and arguments that are the starting material for the development of academic writing. Thus, VTS has the potential to be used as a prewriting strategy that helps students turn the results of observations and reflective dialogue into more directed and systematic written claims, reasons, evidence, and arguments.

VTS has a strong compatibility with the academic writing process because the stages can be integrated from pre-writing to writing reflection. In the early stages, visual observation of certain images, diagrams, infographics, visual data, or phenomena can help students find issues, recognize problems, and capture important information that is worthy of being developed into a topic of writing. Furthermore, the process of visual interpretation encourages students to build perspectives, interpret meaning, and formulate possible ideas based on observed evidence (Hailey et al., 2015; Kelly-Hedrick et al., 2022; Nickel, 2022; Rautiainen & Jäppinen, 2017; Yenawine, 1999). Through discussions, students have the opportunity to compare opinions, enrich their point of view, and test the accuracy of their initial arguments. The results of these observations, interpretations, and dialogues can then be directed into claims, reasons, evidence, and explanations that are compiled in the form of academic writing. In the final stage, reflection helps students review the structure of the writing, the coherence of ideas, the strength of evidence, and the quality of the argumentation, so that the resulting writing is not only systematically arranged, but also more critical, logical, and evidence-based.

In addition, VTS can also be understood as a form of learning based on the construction of meaning. Students are not placed as passive recipients of information, but as subjects who actively build understanding through interaction with visual objects, peers, and lecturers. Dialogue in VTS provides space for students to compare points of view, expand interpretation, test the accuracy of arguments, and revise initial understanding (Ishiguro et al., 2021; Nickel, 2022; Permana et al., 2025; Sutama et al., 2020). This process is in line with the learning needs of academic writing which requires students to be able to think reflectively and be open to feedback. Therefore, VTS functions not only as a visual strategy, but also as a dialogical-reflective strategy that can strengthen the quality of the prewriting process and the development of academic arguments. VTS is also related to critical thinking skills because students are trained not to directly accept a single meaning (Khalil, 2024; Mohana Aishwarya, 2025). They need to examine the evidence, consider other possible interpretations, listen to different opinions, and come up with stronger arguments. In learning to write, this ability is important because good academic writing not only presents information, but also shows the writer's ability to choose viewpoints, build academic positions, and assess the relevance of the evidence used. Thus, the application of VTS in academic writing learning can strengthen students' ability to compose more analytical, argumentative, and evidence-based writing.



Although VTS has been widely used in various learning contexts, especially in the development of visual literacy, art appreciation, observation, communication, and critical thinking skills, its use in academic writing learning has not been studied specifically. Research on academic writing has so far focused more on genre-based approaches, writing processes, giving feedback, the use of digital technology, and improving grammar skills and writing structure (Al Fatta & Marco, 2015; Rahman et al., 2026). Meanwhile, studies that explicitly link visual observation, visual interpretation, reflective dialogue, idea mapping, and academic argument construction are still relatively limited. In fact, visual and dialogical processes have the potential to help students overcome difficulties in finding ideas, drafting a framework, building claims, choosing evidence, and developing arguments (Cottrell, 2017). The limitations of the study show that there is an important research space to explore VTS as a learning model for academic writing, especially in the context of higher education in Indonesia.

Based on these gaps, preliminary studies are important before the VTS model is developed and implemented more widely in academic writing learning. Preliminary studies are needed to obtain an initial overview of students' needs, the form of difficulties they experience in writing, the characteristics of academic writing learning that have been taking place, and the readiness of lecturers to apply visual and dialogical-based strategies. In addition, initial research is also important to identify the parts of learning writing that need VTS support the most, for example in the pre-writing stage, drafting, argument development, use of evidence, or reflection on writing. With the preliminary study, the model design developed is not only conceptual, but is really based on real needs in the field. Therefore, the results of this study can be the initial basis for the development of a VTS model that is more systematic, relevant, and in accordance with the learning needs of academic writing in higher education.

The novelty of this research lies in the effort to adapt Visual Thinking Strategy as a learning model for academic writing, not just as a visual appreciation strategy or image-based learning. This study positions VTS as a cognitive and pedagogical strategy that can help students build academic ideas through the stages of visual observation, interpretation, reflective dialogue, idea mapping, and construction of written arguments (Cerqueira et al., 2023; Rautiainen & Jäppinen, 2017). Unlike previous studies that tended to use VTS to improve the ability to observe, interpret artwork, or develop critical thinking in general, this study was directed to connect VTS directly with the academic writing process. Through this approach, students are expected to not only be able to understand visual stimuli, but also be able to turn the results of these observations and interpretations into claims, reasons, evidence, and logical writing structures. Thus, this research offers a new contribution to the development of academic writing learning strategies that are more visual, dialogical, reflective, and based on scientific argumentation.

Based on this description, this study aims to analyze the learning needs of academic writing, identify students' difficulties in building academic writing, and formulate an initial design of the Visual Thinking Strategy model that can be used in learning academic writing in universities. As a preliminary study, this study is not directed to test the effectiveness of the model broadly, but rather to map the problems, needs, and potential applications of VTS

in the context of writing learning. The results of this research are expected to provide a conceptual and empirical basis for the development of a more comprehensive learning model at the next stage. In addition, this research is also expected to contribute to strengthening academic writing learning which is not only oriented to writing products, but also to the thought process, organizing ideas, building arguments, and academic reflection of students.

METHOD

Research Design

This study uses a preliminary study design with an exploratory qualitative approach supported by quantitative descriptive data. This design was chosen because the research was not directed to test the effectiveness of the model broadly, but to map learning needs, identify students' difficulties in academic writing, and formulate an initial design of the Visual Thinking Strategy model in academic writing learning in college (Nowell et al., 2017; O'Brien & Scharber, 2008). The qualitative approach is used to gain a deep understanding of the student experience, the learning strategies used by lecturers, obstacles in the writing process, and the potential application of visual and dialogical strategies in learning. Meanwhile, descriptive quantitative data was used to strengthen qualitative findings through the dissemination of needs questionnaires to students. This research is positioned as the initial stage of learning model development. Therefore, the main focus of the research lies in the analysis of needs, analysis of learning problems, and the preparation of the initial conceptual design of the VTS model. This preliminary study design allows researchers to obtain an empirical basis before the model is developed, validated, and tested at the next stage of research (Nowell et al., 2017). Thus, the results of this research are expected to be the initial foundation for the development of a more systematic, contextual, and academic writing learning model that is in accordance with the needs of students.

The subject of the study is a student of the Indonesian Language and Literature Education Study Program, Syarif Hiayatullah State Islamic University, Jakarta who took the Writing Skills course. The selection of subjects was carried out by purposive sampling by considering that students have obtained basic material about Indonesian Language Writing, Indonesian language rules, sentence structure, paragraph development, and the basics of academic writing.

Research Procedure

The research procedure is carried out through four main stages, as presented in the following table.

Table 1. Preliminary Study Research Procedure of Visual Thinking Strategy Model in Academic Writing Learning

Stages	Main Activities	Output
Study literature	Examine academic writing theory, writing process, visual literacy, multiliteracy, and Visual Thinking Strategy	Initial conceptual framework of the VTS model



Stages	Main Activities	Output
Needs analysis	Collect data through questionnaires, interviews, observations, and analysis of student written documents	Map of students' needs and difficulties
Analysis of field findings	Classify learning problems, writing barriers, and potential VTS implementation	Categories of learning problems and needs
Formulation of the initial model	Prepare an initial design of the VTS model based on the results of needs analysis and theoretical studies	Preliminary draft of the VTS model in academic writing learning

Data Collection Techniques

Data was collected through observation, questionnaires, interviews, and document analysis. Observation was used to see the learning practices of academic writing in the classroom, especially lecturer strategies, student activities, the pre-writing process, and the form of feedback. The questionnaire is used to find out the needs and difficulties of students in academic writing. Interviews were conducted with students and lecturers to explore their experiences, obstacles, and views on the possible use of VTS. Document analysis is carried out on students' academic writing, such as essays, papers, mini-articles, or assignment reports.

Research Instruments

The research instrument consists of observation sheets, student needs questionnaires, student interview guidelines, lecturer interview guidelines, and document analysis sheets. Observation sheets are used to record learning practices. The questionnaire is used to map the difficulties and needs of students. Interview guidelines are used to dig into the data in depth. Document analysis sheets are used to examine the quality of student writing based on aspects of the focus of ideas, organization of writing, argumentation, coherence, use of references, and the accuracy of academic language.

Data Analysis Techniques

The research data was analyzed using qualitative descriptive analysis techniques combined with simple descriptive statistical analysis. Qualitative data derived from observation, interviews, and document analysis are analyzed through the stages of data reduction, data presentation, interpretation, and conclusion drawn. At the data reduction stage, the researcher sorted out data relevant to the research focus, namely students' difficulties in academic writing, the characteristics of ongoing learning, the need for visual strategies, and opportunities for VTS model development. Data that are not directly related to the focus of the research are set aside so that the analysis is more directed.

At the data presentation stage, the results of observation, interviews, and document analysis are arranged in the form of thematic narratives and category matrices. The initial categories used in the analysis include: difficulty finding ideas, difficulty in composing a

writing framework, weakness in argument development, weakness in the use of evidence, coherence problems, use of references, academic politeness, and the need for visual and dialogical strategies in learning. At the interpretation stage, the researcher relates the field findings with academic writing theory, writing process, visual literacy, and Visual Thinking Strategy. Interpretation was carried out to find the pattern of the relationship between the problems experienced by students and the need for the development of learning models. The results of the interpretation were then used to formulate the initial components of the VTS model in learning academic writing.

Questionnaire data were analyzed using descriptive statistics in the form of percentages, averages, and trend categories. The results of the questionnaire analysis were used to strengthen the qualitative findings and provide an overview of the level of student needs for academic writing learning support. Quantitative data are not used to test hypotheses, but to support needs mapping in preliminary studies. The analysis of student written documents was carried out using analytical rubrics. The aspects analyzed include the clarity of the focus of the writing, the organization of ideas, the development of arguments, the use of evidence and references, the coherence between paragraphs, the accuracy of academic language, and politeness in conveying academic positions. The results of document analysis are used to validate the findings from questionnaires and interviews, so that students' difficulties are not only based on perception, but also seen in the written products they produce.

Data Validity

The validity of the data in this study is maintained through source triangulation techniques, triangulation techniques, member checking, and peer debriefing. Source triangulation is carried out by comparing data obtained from students, lecturers, and student written documents. In this way, the researcher can see whether the difficulties expressed by students also appear in the lecturer's assessment and are seen in the written products analyzed.

Technical triangulation is carried out by comparing the results of observations, questionnaires, interviews, and document analysis. Data from these various techniques are used in a complementary manner so that research findings do not depend only on one type of data. For example, students' difficulties in composing arguments are not only seen from the results of the questionnaire, but also confirmed through interviews and analysis of student writing. Member checking is carried out by reconfirming the provisional results of the interview to the informant to ensure that the researcher's interpretation is in accordance with the intention conveyed by the participant. This technique is important to reduce misinterpretation and increase the credibility of the data. In addition, peer debriefing is carried out by involving peers or language learning experts to discuss the analysis process, categories of findings, and the initial design of the VTS model produced.

Data dependency is maintained by compiling research records systematically, starting from the data collection process, interview transcription, data coding, theme categorization, to drawing conclusions. Meanwhile, confirmability is maintained by ensuring that each finding has a clear data trace, both from observation results, interview citations, questionnaire responses, and analysis of student written documents.



RESULTS AND DISCUSSION

Early Conditions of Learning Academic Writing

The results of the preliminary study show that learning academic writing in the Writing Skills course has been carried out through several main activities, namely the explanation of academic writing concepts, the provision of text examples, brief discussions, and writing assignments. Lecturers have provided directions on the basic structure of academic writing, such as determining topics, preparing introductions, developing content, using references, and preparing conclusions. However, based on the results of observations, the learning process still emphasizes more on understanding the form of writing and completing the final product, while the process of thinking before writing has not been explicitly guided. Students tend to be directly directed to produce writing, but have not fully received assistance in finding ideas, mapping ideas, formulating the focus of the writing, arranging the flow of arguments, and reflecting on the quality of their writing.

During the learning process, lecturers play the role of material givers, example providers, task directors, and feedback on student writing results. The feedback provided is generally related to the completeness of the writing structure, the accuracy of the use of language, the neatness of formatting, and the use of references. However, assistance with the pre-writing process is still relatively limited. Students are not much directed to create idea maps, concept maps, or argument maps before writing. As a result, some students have difficulty when they have to change general topics to focus on more specific and argumentative writing. Learning has also not consistently used visual strategies that can help students see the relationship between the two in a more concrete way before it is poured into the form of academic paragraphs.

The findings of the student needs questionnaire strengthened the results of these observations. Based on the questionnaire distributed to 36 students, as many as 28 students or 77.8% stated that they had difficulty finding the initial idea of writing. A total of 26 students or 72.2% stated that it was difficult to compile a writing framework in a sequential manner. In addition, 24 students or 66.7% stated that they were not confident in developing academic arguments, especially when they had to connect personal opinions with theories or references. A total of 22 students or 61.1% stated that they still have difficulty using references as an argument reinforcement, while 29 students or 80.6% stated that they need a learning strategy that can help them map out ideas before writing. This data shows that the main obstacles for students lie not only in the linguistic aspect, but also in the thought process, organization of ideas, and the construction of academic arguments. The following table presents the initial tendency of students' difficulties in learning academic writing.

Table 2. Early Trends in Students' Difficulties in Learning Academic Writing

Observed Aspects	Number of Students	Percentage	Findings Trends
Difficulty finding writing ideas	28 of 36	77,8%	Students are confused about starting writing and determining issues that are worth developing

Observed Aspects	Number of Students	Percentage	Findings Trends
Difficulty in drafting a writing outline	26 of 36	72,2%	Ideas have not been arranged in a systematic and systematic manner
Difficulty developing arguments	24 of 36	66,7%	The writing still tends to be descriptive and has not shown a strong academic position
Difficulty using references	22 of 36	61,1%	References are more often used as citations, not yet as the basis of analysis
Need for an idea mapping strategy	29 of 36	80,6%	Students need visual help to organize ideas before writing

The results of interviews with students also show that the pre-writing stage is the most challenging part. One of the students said, "I am usually confused when I am asked to start writing. The topic already exists, but I don't know where to start from and which ideas to write about first." This statement shows that students do not yet have a strong strategy to break down the topic into more directed ideas. Another student stated, "I often have ideas, but when they are written into paragraphs, the order becomes unclear. Sometimes the first paragraph and the next paragraph feel disconnected." The quote shows that the main problem of students is not only related to the availability of ideas, but also to the ability to organize interracial relationships logically.

Another difficulty appears in the use of references in academic writing. Students tend to understand references as a formal obligation, not as a basis for building arguments. One student revealed, "When writing a paper, I usually look for references first, then insert citations. But I don't really understand how to explain the relationship between the quote and my opinion." This statement shows that students still need guidance in integrating scientific sources into arguments. In the context of academic writing, references should not only be present as a complement, but as evidence, a conceptual basis, and a reinforcement of the author's academic position.

The students' activities during learning also show that they are more likely to convey ideas orally than to organize them in writing. During class discussions, some students can express their opinions, give examples, or respond to certain issues. However, when asked to develop these opinions into academic writing, some students had difficulty compiling the flow of ideas. This shows that there is a gap between the ability to express ideas spontaneously and the ability to construct ideas into systematic academic writing. Thus, students need a learning strategy that can bridge the oral, visual, and written thinking process.

The results of the initial analysis of student written documents also show a trend that is in line with the results of questionnaires and interviews. Some student writings already have a fairly complete basic structure, such as introduction, discussion, and conclusion. However, in terms of content quality, there are still some weaknesses. The focus of the writing is not always clear, the ideas in the paragraphs have not been arranged sequentially, the arguments are still descriptive, and the use of references has not fully supported the



analysis. In some writings, students have included reference sources, but these references have not been processed as part of the argument. In addition, the relationship between problems, theories, examples, and conclusions has not been seen as strong, so the resulting writing has not fully demonstrated a critical and evidence-based academic character.

This condition shows that learning academic writing needs to pay more attention to the process before writing. It is not enough for students to be given an explanation of the structure of writing and writing assignments, but also to be guided to observe problems, find issues, develop ideas, construct relationships between concepts, and build evidence-based arguments. In this case, the prewriting process is an important stage that determines the quality of academic writing. If students do not have a strategy to map out ideas from the beginning, the resulting writing tends to be unfocused, less coherent, and weak argumentatively.

Thus, the initial conditions of learning academic writing show four main findings. First, learning has introduced the basic structure and rules of academic writing, but it is still predominantly oriented towards the final product of writing. Second, lecturers have provided directions, examples, and feedback, but assistance with the pre-writing process, idea mapping, and argument development still needs to be strengthened. Third, students show involvement in learning, but still experience difficulties in turning initial ideas into logical, coherent, and argumentative writing frameworks. Fourth, the most prominent initial weakness is the lack of explicit strategies that help students visualize ideas, connect concepts, and build evidence-based arguments. These findings are an important basis for the development of the Visual Thinking Strategy model in learning academic writing, especially as a strategy that can help students observe, interpret, dialogue, map, and construct ideas before writing.

Student Needs in Academic Writing Learning

The results of the preliminary study show that students need academic writing learning that not only emphasizes the final result of writing, but also provides more structured guidance on the process before, during, and after writing. Based on the results of questionnaires, interviews, class observations, and analysis of student written documents, it was found that the main needs of students are related to five aspects, namely the need to find ideas, develop a writing framework, develop arguments, use references, and reflect and revise. These findings show that students' barriers to academic writing are not only technical linguistic, but also related to the process of academic thinking, the organization of ideas, and the ability to build evidence-based arguments.

Based on the results of the questionnaire given to 36 students, the majority of students stated that they needed a more concrete strategy to help them find and focus on writing ideas. A total of 31 students or 86.1% stated that they needed guidance in exploring initial ideas before writing. A total of 29 students or 80.6% stated that they needed help in compiling a writing framework so that ideas could be arranged sequentially. In addition, 27 students or 75% stated that special training is needed in developing academic arguments, especially in building relationships between claims, reasons, evidence, and explanations. A total of 25 students or 69.4% stated that they needed guidance in using references appropriately, while

28 students or 77.8% stated that they needed guidance on reflection and revision in order to improve writing in a more targeted manner.

Table 3. Student Needs in Academic Writing Learning

Aspects of Student Needs	Percentage	Description of Findings
The need to find ideas	86,1%	Students need strategies to explore, choose, and focus writing ideas
The need to write a writing outline	80,6%	Students need help in arranging ideas so that they are coherent and systematic
The need to develop an argument	75,0%	Students need to be trained to build claims, reasons, evidence, and explanations
Need to use references	69,4%	Students need to understand the function of reference as the basis for reinforcing arguments
The need for reflection and revision	77,8%	Students need guidance to review the coherence, structure, language, and strength of the argument

The first and most prominent need is the need to find ideas. Students stated that they often understood the general theme given by the lecturer, but were not able to change the theme into a more specific focus of writing. In an interview, one of the students stated, "I often understand the big theme, but I am confused about the smaller ideas. Finally, my writing widened and was unfocused." This quote shows that students need strategies to break down general topics into clearer, more directed, and worthy of being developed into academic writing. In this context, prewriting activities are very important because they help students choose their focus, determine their point of view, and limit the scope of discussion.

The second need is related to the preparation of a writing framework. The results of observations show that students tend to write immediately after receiving the assignment, without drafting ideas first. As a result, the resulting writing often does not have a flow. Some students write based on ideas that arise spontaneously, rather than based on the logical relationship between parts of the writing. One of the students revealed, "I usually just write right away. After I finished it, I felt that the order was not neat, but I was confused about how to rearrange it." This statement shows that students need tools to organize ideas before writing, such as idea maps, concept maps, or argument maps. With a clear framework, students can more easily develop their writing systematically from the introduction, content, to conclusion.

The third need is the development of academic arguments. Based on the results of the analysis of student writing documents, some writings still tend to be descriptive and have not shown a strong academic position. Students have been able to explain a topic, but have not been fully able to build an argument supported by reason and evidence. In an interview, one of the students stated, "I can explain my opinion, but I'm still confused about how to make it a strong argument." This quote shows that students need practice in distinguishing between



opinions, claims, reasons, evidence, and explanations. This need is important because academic writing is not enough to just present information, but must demonstrate the writer's ability to establish a logical and accountable academic position.

The fourth need has to do with the use of references. The results of the questionnaire and document analysis show that students still need guidance in using references as part of argumentation. Some students have included sources in their writings, but they have not been fully integrated into the analysis. References often come as stand-alone citations, not yet clearly connected to the main idea of the paragraph. One of the students said, "I know that academic writing must have references, but sometimes I only include citations so that there is a source. I don't know how to relate it to my argument yet." These findings suggest that students need to understand that references are not just formal requirements, but conceptual foundations, supporting evidence, and arguments reinforcement in academic writing.

The fifth need is reflection and revision. Based on learning observations, revision activities have not been fully carried out as a deep reflective process. Students usually improve writing based on lecturer corrections, especially in terms of language, format, or completeness of writing sections. However, revisions to the focus of ideas, coherence between paragraphs, strength of argument, and the accuracy of the use of evidence are still not optimally carried out. One student stated, "When revising, I usually only correct the language or punctuation. I rarely check again whether the argument is strong or not." This statement shows that students need a more systematic revision guide, not only on the linguistic aspect, but also on the structure of ideas and the quality of argumentation.

In general, the results of the study show that students need more processual, visual, dialogical, and reflective academic writing learning. Procedural means that learning needs to guide students from the stage of finding ideas, drafting, developing arguments, writing drafts, to revising writing. Visual means that students need media or strategies that can help them see the relationship between the two in a concrete way. Dialogical means that students need to be given space to discuss ideas, compare points of view, and test arguments through interaction with friends and lecturers. Reflective means that students need to be accustomed to reviewing the quality of their writing based on focus, coherence, evidence, references, academic language, and strength of argument.

These findings show that the needs of students are in line with the direction of developing the Visual Thinking Strategy model in learning academic writing. VTS has the potential to answer this need because it provides learning stages that can help students observe visual stimuli, interpret meaning, dialogue ideas, map ideas, and construct written arguments. Thus, the development of the VTS model is not only based on theoretical considerations, but also based on the real needs of students in the classroom. This model is expected to be a pedagogical strategy that helps students transform ideas that are still abstract into a more directed, logical, coherent, and evidence-based academic writing structure.

Results of Analysis of Student Written Documents

The analysis of student written documents was carried out to strengthen the findings obtained through questionnaires, interviews, and class observations. The documents analyzed are in the form of student academic writing in the form of essays or mini-articles prepared in

the Writing Skills course. The analysis was carried out using an analytical rubric that included seven aspects, namely the focus of ideas, the organization of the writing, argumentation, the use of references, coherence, academic language, and academic politeness. Through this analysis, students' difficulties in academic writing are not only understood as students' subjective perceptions, but also proven through the quality of the writing they produce.

Based on the analysis of 36 student writing documents, it was found that most of the writings have shown a basic understanding of the general structure of academic writing. Students are generally able to organize their writing into introduction, discussion, and closing sections. However, such structures have not always been followed by the quality of strong ideas and arguments. Some writings still show a wide focus, relationships between paragraphs that have not collapsed, arguments that are still descriptive, and the use of references that have not been fully integrated with the analysis. These findings show that students have understood the external form of academic writing, but still need reinforcement in building content, flow of thinking, and academic positions.

Table 4. Results of Analysis of Student Academic Writing Documents

Aspects of Writing	Percentage	Findings Trends
Focus of ideas	66,7%	The topic of the article is still too general and the direction of discussion is not sharp
Writing organization	72,2%	The structure of the writing already exists, but the sequence of ideas is not yet completely systematic
Argumentation	75,0%	The writing is still predominantly descriptive and has not shown strong claims, reasons, and evidence
Use of references	63,9%	References are already listed, but they have not been used critically to strengthen the analysis
Coherence	69,4%	The relationship between the two paragraphs has not been logically straightforward
Academic language	58,3%	Less effective sentences, informal diction, and language styles that are not academically consistent are still found
Academic politeness	50,0%	Some writings still convey judgments normatively and less evidence-based

The first finding relates to the focus of ideas. Some student writings do not have clear problems or discussion directions. The topic chosen is still too broad so that the discussion becomes wider and less in-depth. For example, in the article themed "The Importance of Literacy for Students", some students only explain the benefits of literacy in general without limiting the focus to certain problems, such as academic literacy, digital literacy, or critical reading literacy. As a result, the writing tends to contain a lot of information, but it does not have a firm academic position. One of the students in the interview said, "I usually choose a big theme because I'm afraid that the theme is too small and not enough to write. But after writing, the discussion went everywhere." This quote shows that students need guidance in narrowing down the topic and formulating the focus of the writing.



In the aspect of writing organization, the results of the analysis show that students are familiar with the basic structure of academic writing, but are not yet fully able to organize ideas systematically. Some writings have an introduction, content, and conclusion, but the connection between the parts is not yet strong. The introduction often does not direct the reader to the main issue to be discussed. The discussion section is also not always arranged in a logical order, but based on a collection of information obtained from various sources. In some documents, the paragraphs appear to stand alone and have not formed a complete flow of argument. This condition shows that students need a strategy for preparing an outline before writing so that each piece of writing has a clear function.

The argumentation aspect is the most prominent finding in the document analysis. As many as 27 out of 36 documents or 75% still need strengthening in this aspect. Student writings generally contain opinions or explanations, but have not yet strongly shown the relationship between claims, reasons, evidence, and explanations. Many writings are still descriptive, that is, explaining a concept or phenomenon without establishing a clear academic position. For example, students state that "academic literacy is important for students," but have not explained argumentatively why it is important, what evidence supports the statement, and how it impacts the quality of learning. One of the students stated, "I felt that I had explained my opinion, but when I read it again, it turned out that the content explained more understanding, not proving my opinion." This statement reinforces the finding that students still need to be trained to build academic arguments gradually.

In terms of the use of references, it was found that most students have included sources in their writings, but the use of these sources has not fully supported the analysis. References are often present in the form of direct quotes or brief paraphrases, but are not followed by explanations that connect the reference to the author's ideas. In some writings, references are placed after certain statements only to satisfy formal demands, not to establish the basis of an argument. One student revealed, "I know I have to use references, but sometimes I get confused after the quote what else to explain." This quote shows that students have not fully understood the function of reference as part of the academic thinking process. References should be used to support claims, strengthen reasons, compare views, or show the author's position on previous studies.

Another problem that appears in student documents is the coherence of writing. A total of 25 documents or 69.4% showed an inter-paragraph relationship that was not completely logical. In some writings, the first paragraph addresses one issue, but the next paragraph moves on to another without a clear transition. The main sentence in a paragraph is also not always developed consistently. This condition causes the writing to feel intermittent and does not show a flowing line of thought. One of the students said, "I often feel like all ideas are important, so I put them all in. After that, it will be seen that the paragraphs are not connected." This statement shows that students need tools to sort, group, and connect ideas before writing.

In the aspect of academic language, student writing in general has shown an effort to use formal language. However, sentences are still found to be too long, ineffective, repetitive, and have not shown the accuracy of academic diction. Some writings also still use conversational language styles or expressions that are too subjective, such as "I personally

think this is very good" or "this problem is indeed very severe". The use of such expressions suggests that students still need to be trained to use language that is more objective, measurable, and in accordance with academic conventions. In addition, some sentences have not shown a logical relationship due to the lack of use of cohesion markers, such as "in addition", "thus", "therefore", or "vice versa".

The aspect of academic politeness is also an important part of document analysis. Some students have been able to express their opinions in a fairly objective way, but others still use statements that are too normative, judgmental, or not supported by evidence. For example, there is an article that states that "students who do not read must not care about the future", but the statement is not accompanied by sufficient data or arguments. In academic writing, the author's position needs to be conveyed politely, carefully, and evidence-based. Academic politeness does not mean avoiding criticism, but conveying criticism in objective, argumentative, and accountable language.

Overall, the results of the document analysis show that students' difficulties in academic writing mainly lie in the ability to organize ideas and build evidence-based arguments. Students need not only an understanding of the structure of writing, but also strategies that can help them see the relationships between ideas, determine focus, formulate a framework, develop claims, select evidence, and revise writing reflectively. These findings reinforce the results of questionnaires and interviews that show that students need more concrete, visual, dialogical, and procedural learning strategies.

Thus, the analysis of student written documents provides a strong empirical basis for the development of the Visual Thinking Strategy model in academic writing learning. VTS has the potential to help students from the early stages of writing through observing visual stimuli, interpreting meaning, discussing points of view, mapping ideas, and constructing arguments. Through this strategy, students are expected not to write spontaneously directly, but first build understanding, arrange relationships between ideas, and design argumentation structures. Therefore, the results of the analysis of this document show that the development of the VTS model is relevant to answer the needs of students in producing more focused, organized, coherent, argumentative, and evidence-based academic writing.

The Relevance of Visual Thinking Strategies to Academic Writing Needs

Based on the results of the preliminary study, students' difficulties in academic writing are not only related to limited language mastery, but also related to the ability to think academically, organize ideas, build arguments, use evidence, and reflect on the quality of writing. The findings in the previous subchapter show that students still need learning strategies that can guide them from the stage of finding ideas, drafting frameworks, developing arguments, using references, and reflecting and revising writing. In this context, the Visual Thinking Strategy is relevant to be developed because it functions not only as a visual-based approach, but also as a thinking strategy that connects the activities of observing, interpreting, dialogue, mapping ideas, and constructing academic ideas.

The relevance of VTS can be understood through the theory of the writing process. In the perspective of the writing process, writing activities are not seen as linear activities that directly produce the final product, but as a recursive process that involves planning, drafting, revision, and reflection (Kellogg, 2008; Hyland, 2010; Wingate, 2012). The findings of the study show that students are still weak in the early stages of writing, especially in finding



ideas, formulating focus, and drafting a writing framework. Therefore, VTS can be placed as a pre-writing strategy that helps students build cognitive readiness before writing. Through visual observation, students get an initial stimulus to find the issue. Through interpretation, students learn to develop ideas. Through dialogue and idea mapping, students can construct relationships between ideas before developing them into academic texts. Thus, VTS is in line with the principles of the writing process because it helps students understand that academic writing is not born spontaneously, but through a gradual, reflective, and repetitive thought process.

In addition, the relevance of VTS can also be attributed to the academic literacies approach. In this approach, academic writing is not only understood as a technical skill of composing sentences and paragraphs, but as a social-academic practice that requires students to understand how to think, how to argue, how to use evidence, and how to place themselves in the scientific community (Lea, 2008; Lea & Street, 1998; Street, 2010). The findings of the study show that students still often use references as a formal complement, rather than as a basis for building arguments. In this case, VTS can help students understand that every opinion must have a basis of evidence. Typical questions in VTS, such as "What did you see that makes you say so?" can be adapted in academic writing into reflective questions such as "What is the basis of this argument?", "What evidence supports the claim?", and "How are references used to strengthen the author's academic position?". Thus, VTS supports the strengthening of academic literacy because it accustomed students to build ideas based on evidence.

The next relevance has to do with visual literacy theory. Visual literacy emphasizes a person's ability to read, interpret, and communicate meaning through visual representations, such as images, graphs, infographics, diagrams, and multimodal text (Hailey et al., 2015; Kress & Van Leeuwen, 2020). In learning academic writing, visual literacy can help students turn abstract ideas into more concrete and easy to organize. The research findings show that students need help mapping ideas and structuring relationships between concepts. VTS can answer this need because students are trained to observe visual details, interpret meaning, find relationships between elements, and communicate their understanding logically. This activity can be the basis for students to put together an idea map, concept map, or argument map before writing. Thus, VTS is not just an activity of looking at images, but a cognitive strategy to help students build a more directed thinking structure.

In the perspective of multiliteracy, VTS also has strong relevance. Academic learning today is no longer only related to verbal texts, but also to various forms of representation of meaning, such as images, symbols, visual data, graphics, and digital media. Students need to have the ability to read and integrate these various forms of information into academic writing. VTS supports this need because it accustomed students to interact with visual and multimodal stimuli before drafting a written idea. Through VTS, students can learn to connect visual information with academic reasoning. For example, an image or infographic is not only understood as an illustration, but as a source of problems, initial data, or a spark for argument. Thus, VTS can help students enter academic writing practices that are more in line with the needs of 21st century literacy, namely the ability to manage visual, verbal, and conceptual information in an integrated manner.

The relevance of VTS can also be explained through social constructivism. In this perspective, knowledge is built through interaction, dialogue, and negotiation of meaning. Students are not placed as passive recipients of information, but as subjects who actively build understanding through experience, discussion, and reflection. VTS has a dialogical character because students are asked to convey interpretations, give reasons, listen to other people's views, and improve understanding based on dialogue. This is relevant to the needs of students in academic writing because good writing is not only born from individual ideas, but also from the process of testing opinions, comparing perspectives, and strengthening arguments. Through reflective dialogue, students can learn that academic ideas need to be tested, developed, and logically accounted for.

From the perspective of academic genres, VTS can also help students understand that academic writing has a certain structure, purpose, and argumentation pattern. Academic writing requires clarity of focus, objectivity, coherence, use of evidence, and accuracy in conveying academic positions (Paltridge, 2004; Hyland, 2009; Wingate, 2012). The findings of the study show that some student writings are still descriptive, less coherent, and have not shown a strong academic position. Through the VTS stage, students can be trained to formulate ideas in a more structured manner. Visual observation helps students find issues. Interpretation helps students formulate meaning. Dialogue helps students enrich their perspectives. Idea mapping helps students structure ideas. Argument construction helps students turn ideas into claims, reasons, evidence, and explanations. Thus, VTS can be a bridge between the process of visual thinking and the production of genre-based academic texts.

More specifically, the components of VTS have a direct relationship with students' academic writing needs. Visual observation is relevant to the need to find ideas because students are helped to identify important issues, details, and information from visual stimuli. Interpretation is relevant to the need to develop ideas because students are trained to interpret meanings based on evidence. Reflective dialogue is relevant to the need to strengthen arguments because students can compare points of view and test opinions. Idea mapping is relevant to the need to compose a writing framework because students can organize the relationships between ideas before writing. The construction of arguments is relevant to the need to build academic writing because students are directed to systematically compile claims, reasons, evidence, and explanations. Reflection is relevant to the need for revision because students are trained to review the coherence, structure, language, and strength of argument.

Table 5. Relevance of Visual Thinking Strategy to Academic Writing Needs

Komponen Visual Thinking Strategy	Relevance to Academic Writing	Theoretical Basis
Visual observation	Help students find important issues, information, and details as starting material for writing	Visual literacy and pre- writing process



Interpretasi	Train students to interpret meaning based on observed evidence	Academic literacies and critical thinking
Reflective dialogue	Help students compare points of view, test opinions, and strengthen arguments	Constructivism social
Idea mapping	Help students organize ideas before writing so that the writing is more coherent	Theory of the writing process and visual strategy
Argument construction	Directing students to formulate claims, reasons, evidence, and explanations logically	Academic genres and argumentative writing
Reflection	Help students review the quality of writing, coherence of ideas, and strength of evidence	Recursive and reflective writing process

Based on this description, VTS has a strong conceptual and pedagogical relevance to the learning needs of academic writing. Conceptually, VTS is supported by the theory of the writing process, academic literacies, visual literacy, multiliteracy, social constructivism, and academic genres. Pedagogically, VTS can help students overcome difficulties in finding ideas, drafting outlines, developing arguments, using evidence, and revising writing. Therefore, VTS can be positioned as a learning model that bridges the visual thinking process to the verbal-academic thinking process. Through the stages of observing, interpreting, dialogue, mapping, constructing arguments, and reflecting on writing, students are expected to be able to produce academic writing that is more focused, logical, coherent, argumentative, polite, and evidence-based.

Preliminary Design of Visual Thinking Strategy Model in Academic Writing Learning

Based on the results of needs analysis, identification of student difficulties, and analysis of student written documents, this study formulates the initial design of the Visual Thinking Strategy model in academic writing learning. This design was developed because research findings show that students still have difficulties in finding ideas, composing writing frameworks, developing arguments, using references, maintaining coherence, and reflecting on the quality of writing. These difficulties show that learning academic writing is not enough to be directed only at mastering the structure of the text or the completion of the final product, but it is necessary to guide students in the process of academic thinking before, during, and after writing. This is in line with the view that academic writing is an intellectual practice that involves the ability to think critically, analytically, reflectively, and argumentatively (Hyland, 2010; Lea, 2008).

The initial design of the VTS model in this study was built on the basis of the theory of the writing process, academic literacy, visual literacy, multiliteracy, social constructivism, and academic genre. Writing process theory asserts that writing is not a linear activity, but rather a recursive process that involves planning, drafting, revision, and reflection (Kellogg, 2008; Wingate, 2012). Therefore, the VTS model is designed to strengthen the pre-writing stage through visual observation, interpretation, dialogue, and idea mapping activities before students draft their writing. Thus, students are not directly asked to produce texts, but are

first guided to observe problems, find important information, interpret meanings, and arrange relationships between ideas.

From the perspective of academic literacy, the design of this model also departs from the understanding that academic writing is not just a technical skill in composing sentences, but a social-academic practice that requires students to understand how to build arguments, use evidence, manage references, and place academic positions in the scientific community (Lea, 2008; Lea & Street, 1998; Street, 2010). Therefore, the stages in the VTS model are directed to help students systematically compile claims, reasons, evidence, and explanations. This model also encourages students to understand that every academic idea must have an argumentative basis, not just a personal opinion that is not supported by evidence.

From a visual literacy perspective, VTS is relevant because learning academic writing can begin with reading activities and interpreting visual representations. Visual strategies can help students transform abstract ideas into more concrete, directed, and easy to organize (Hailey et al., 2015). Through images, infographics, graphs, diagrams, visual phenomena, or multimodal text, students can find the initial issue, see the relationship between elements, and organize ideas that are then developed into writing. This is in line with the view that visual texts have a grammar and meaning structure that can be read, interpreted, and communicated academically (Kress & Van Leeuwen, 2020). Thus, visual stimuli in this model not only serve as a learning medium, but as a thinking tool to build academic ideas.

The design of this model is also related to multiliteracy because students today are not only dealing with verbal texts, but also with various forms of visual, digital, symbolic, and multimodal information. In this context, students need to be trained to read, interpret, connect, and integrate various forms of information into academic writing. The use of mind mapping, concept mapping, and argument mapping can help students connect concepts, construct thinking structures, and build argumentation flows more systematically (Cappello & Walker, 2016; Firat et al., 2022). Thus, the VTS model developed in this study seeks to bridge visual reading skills and academic writing skills.

In addition, this model is based on social constructivism because the learning process in VTS places students as active subjects who build meaning through interaction, dialogue, and negotiation of ideas. Dialogue in learning is important to encourage students to express opinions, listen to other points of view, test reason, and improve initial understanding. This is in line with the view that academic dialogue can encourage student thinking productivity in collaborative learning (Gillies, 2019). In the context of academic writing, reflective dialogue becomes a means to strengthen an argument before ideas are poured into writing.

From the perspective of academic genres, the VTS model is also geared towards helping students understand that academic writing has certain structures, goals, and conventions. Academic writing requires clarity of focus, objectivity, coherence, use of evidence, and the delivery of academic positions logically and politely (Paltridge, 2004; Hyland, 2009; Wingate, 2012). Therefore, the stages in this model do not stop at observing and discussing activities, but continue with idea mapping, argument construction, drafting, and reflection and revision. In this way, students are directed to transform the results of visual observations into a more systematic, coherent, argumentative, and evidence-based structure of academic writing.

Based on these empirical and theoretical foundations, the initial design of the Visual Thinking Strategy model in learning academic writing consists of seven stages, namely



Visual Observation, Visual Interpretation, Reflective Dialogue, Idea Mapping, Academic Argument Construction, Drafting Academic Text, and Reflection and Revision. These seven stages are arranged sequentially, but remain recursive. This means that students can return to the previous stage if in the writing process weaknesses are found in the focus of ideas, relationships between ideas, supporting evidence, or the strength of arguments.

Table 6. Preliminary Design of the Syntax of the Visual Thinking Strategy Model in Academic Writing Learning

Model Stage	Learning Activities	Learning Objectives	Theoretical Basis
1. Visual Observation	Students observe images, infographics, graphs, phenomena, or multimodal texts relevant to the learning topic	Find issues, initial information, important details, and possible writing topics	Visual literacy and prewriting strategies (Hailey et al., 2015; Kress & Van Leeuwen, 2020; Kellogg, 2008)
2. Visual Interpretation	Students interpret visual meanings based on the evidence observed through the lighter questions	Practice interpretation, critical thinking, and evidence-based reasoning	Visual Thinking Strategy and academic literacy (Yenawine, 1999a; Kelly-Hedrick et al., 2022; Lea, 2008)
3. Reflective Dialogue	Students discuss through sparker questions from lecturers, compare opinions, and test reasons	Enrich viewpoints, test initial arguments, and build common understanding	Social constructivism and academic dialogue (Gillies, 2019; Albert et al., 2022)
4. Idea Mapping	Students create idea maps, concept maps, or argument maps based on the results of observations and dialogues	Organize ideas before writing so that the relationship between the two is more complete	Visual strategies and writing processes (Cappello & Walker, 2016; Firat et al., 2022; Wingate, 2012)
5. Academic Argument Construction	Students compile claims, reasons, evidence, and explanations as the basis for academic writing	Forms a logical and evidence-based basis for academic argumentation	Academic literacy and academic genre (Hyland, 2009; Hyland, 2010; Street, 2010)
6. Drafting Academic Text	Students develop idea maps and argument structures into draft academic writings	Produce academic writing that is systematic, coherent, and in	Theory of writing processes and academic genres (Kellogg, 2008;

Model Stage	Learning Activities	Learning Objectives	Theoretical Basis
7. Reflection and Revision	Students review the focus, structure, coherence, language, references, and strength of argumentation	accordance with the genre structure Improve the quality of writing through continuous reflection and revision	Paltridge, 2004; Wingate, 2012) The process of writing is recursive and reflective (Hyland, 2010; Kellogg, 2008; Wingate, 2012)

The first stage, Visual Observation, is the initial stage to help students find issues and information before writing. At this stage, lecturers present visual stimuli in the form of images, infographics, graphs, diagrams, social phenomena, or multimodal texts that are relevant to the learning theme. Students are asked to observe carefully, note important details, and identify problems that may develop into academic writing. This stage is important because many students have difficulty starting writing and determining the focus of ideas. Through visual observation, students get the initial material to think so that the pre-writing process becomes more concrete and directed. This stage is in line with the view that visual strategies can help learners develop visual literacy and understand meaning through a directed process of observation (Hailey et al., 2015; Kress & Van Leeuwen, 2020).

The second stage, Visual Interpretation, is directed to train students to interpret visual meaning based on observed evidence. Lecturers can ask triggering questions such as "What is going on in this visual?", "What did you see to conclude so?", and "What meaning can be developed from the information?". This kind of question is an important feature of VTS because it encourages students to relate interpretation to available visual evidence (Yenawine, 1999a; Kelly-Hedrick et al., 2022). In the context of academic writing, this stage helps students understand that every opinion must be supported by reason and evidence. Thus, visual interpretation becomes the initial exercise for building academic reasoning.

The third stage, Reflective Dialogue, is a discussion stage to enrich students' perspectives. At this stage, students convey interpretations, listen to friends' opinions, respond to differing views, and test the reasons used. Lecturers play the role of facilitators who keep the dialogue evidence-based and lead to the development of academic ideas. This stage is important because knowledge and meaning in learning are not only built individually, but also through interaction and dialogue. Productive academic dialogue can help students develop understanding, strengthen reasoning, and build arguments more reflexively (Gillies, 2019). Thus, reflective dialogue becomes a bridge between the results of visual observation and the development of academic ideas.

The fourth stage, Idea Mapping, is the stage of organizing ideas resulting from observation, interpretation, and dialogue into the form of an idea map, concept map, or argument map. Students are asked to group main ideas, supporting ideas, evidence, examples, and possible conclusions. This stage is designed to overcome students' difficulties in composing a writing framework and maintaining coherence between paragraphs. Visual mapping strategies help students see the relationship between the two in a more concrete way so that the writing produced does not simply follow the spontaneous flow of thoughts, but is



based on the structure of ideas that have been designed. This is in line with the use of visual strategies, such as concept mapping and argument mapping, to help organize concepts and strengthen thinking structures (Cappello & Walker, 2016; Firat et al., 2022).

The fifth stage, Academic Argument Construction, is the core of strengthening academic writing in this model. At this stage, students are directed to prepare the main claims, supporting reasons, evidence, and explanations. Claims are built from the focus of the ideas that have been formulated; reasons developed from the results of interpretation and dialogue; evidence obtained from visual stimuli, data, experience, or scientific references; while explanations are used to connect claims and evidence logically. This stage is important because academic writing requires students to convey ideas objectively, argumentatively, and evidence-based (Hyland, 2009; Street, 2010). Through the construction of arguments, students are trained to turn initial ideas into stronger academic positions.

The sixth stage, Drafting Academic Text, is the stage of developing idea maps and argument structures into academic writing. At this stage, students prepare a draft by paying attention to the focus of the writing, the structure of the introduction, the development of paragraphs, the use of references, the coherence between ideas, and conclusions. Lecturers can provide guidance on the structure according to the targeted type of writing, such as academic essays, papers, mini-articles, or scientific reports. This stage is in line with the view of academic genres which emphasizes that academic writing has certain structures, communicative goals, and conventions (Paltridge, 2004; Wingate, 2012). Thus, students do not only write based on ideas that arise spontaneously, but also based on ideas maps and arguments structures that have been designed.

The seventh stage, Reflection and Revision, is the final stage as well as the recursive stage. Students are asked to review the quality of their writing based on the focus of ideas, the structure of the writing, the coherence between paragraphs, the use of references, the strength of arguments, academic language, and academic politeness. This stage is important because academic writing is a process that continues to undergo improvement through reflection and revision. Revision is not only understood as an activity to improve spelling or punctuation, but also as a process of reviewing the quality of ideas, the accuracy of evidence, and the strength of academic positions. This is in line with the theory of the writing process which places revision and reflection as an important part of the formation of quality writing (Kellogg, 2008; Hyland, 2010; Wingate, 2012).

Overall, the initial design of the VTS model in academic writing learning shows the integration of visual, dialogical, argumentative, and reflective processes. This model starts from observation of visual stimulus, followed by interpretation, dialogue, idea mapping, argument construction, drafting, as well as reflection and revision. This series of stages shows that VTS can bridge the visual thinking process to the verbal-academic thinking process. Thus, this model is expected to help students produce academic writing that is more focused, organized, coherent, argumentative, evidence-based, and in accordance with academic conventions.

As an initial design, the model still needs further development through expert validation, device readability tests, limited trials, and effectiveness testing at the next stage of research. However, in the context of this preliminary study, the design already has an

empirical basis of student needs and a theoretical basis of the theory of the writing process, academic literacy, visual literacy, multiliteracy, social constructivism, and academic genre. Therefore, the initial design of this VTS model can be the foundation for the development of academic writing learning models that are more systematic, contextual, and relevant to the needs of students in higher education.

Implications of the Findings for the Development of Learning Models

The results of the preliminary study provide several important implications for the development of the Visual Thinking Strategy model in academic writing learning. These implications are not only related to learning practices in the classroom, but also to strengthening the theoretical basis and direction of model development at the next stage of research. Based on previous findings, students still have difficulties in finding ideas, composing a writing framework, developing arguments, using references, maintaining coherence, and reflecting on the quality of writing. These findings show that academic writing learning needs to be developed more procedurally, visually, dialogically, argumentatively, and reflectively.

The first implication is the pedagogical implication. The results of the study show that academic writing learning is not enough to be directed only to the assignment of writing assignments and the assessment of the final product of writing. Lecturers need to guide students from the pre-writing stage, which is when students begin to find ideas, choose a focus, observe problems, interpret information, and build relationships between ideas. This is in line with the theory of the writing process which views writing as a recursive process that involves planning, drafting, revision, and reflection (Kellogg, 2008; Hyland, 2010; Wingate, 2012). Thus, learning academic writing needs to provide a wider space for students to build ideas before writing, not just improve the writing after the draft is completed.

Pedagogically, lecturers also need to provide strategies that can help students visualize ideas. Research findings show that students often have difficulty organizing ideas in a sequential manner and maintaining relationships between paragraphs. Therefore, the use of visual strategies, such as visual observations, idea maps, concept maps, and argument maps, is important to help students see the relationships between ideas more concretely. Visual strategies can help change ideas that are still abstract into more directed and easy to develop (Hailey et al., 2015; Cappello & Walker, 2016; Firat et al., 2022). In this context, VTS can be used as a prewriting strategy that helps students observe, interpret, dialogue, and map ideas before they are poured into academic writing.

The next pedagogical implication is the need for more dialogical and reflective learning. Students not only need to be given the opportunity to write individually, but they also need to be involved in discussions to compare points of view, test reasoning, and strengthen arguments. Academic dialogue can help students build a more productive understanding in collaborative learning (Gillies, 2019). In the VTS model, reflective dialogue is an important stage because students are trained to convey interpretations, give reasons, listen to other opinions, and review their understanding. This process is relevant to the needs of academic writing because good writing not only contains information, but also demonstrates the writer's ability to build a logical and evidence-based academic position.

The second implication is the theoretical implication. The research findings reinforce the view that academic writing is not just a technical linguistic skill, but an intellectual and



social-academic practice. Academic writing requires the ability to think critically, analytically, reflectively, argumentatively, and the ability to use evidence and references appropriately (Hyland, 2009; Hyland, 2010; Lea, 2008; Street, 2010). In this context, VTS can be positioned as a strategy that connects visual literacy, critical thinking, and academic writing. Through visual observation and interpretation activities, students are trained to read information, find meaning, and explain reasoning based on evidence. This pattern is in line with the demands of academic writing which requires that every claim be supported by reasoning and evidence that can be accounted for.

Theoretically, VTS also expands the understanding of learning to write within the framework of multiliteracy. In contemporary academic learning, students are not only dealing with verbal texts, but also with images, graphs, infographics, visual data, symbols, and multimodal texts. Kress and Van Leeuwen (2020) affirm that visuals have a structure of meaning that can be read and interpreted. Therefore, visual reading skills can be part of the process of building academic ideas. VTS in this case is a bridge between visual literacy and academic text production. Students are not only asked to understand images or infographics, but also directed to turn the results of visual observations and interpretations into claims, reasons, evidence, and explanations in academic writing.

Another theoretical implication is related to the academic literacies approach. This approach emphasizes that students need to understand academic practices, values, and conventions in writing, including how to construct arguments, use references, and position writers in the scientific community (Lea & Street, 1998; Lea, 2008; Street, 2010). The research findings show that students still tend to use references as a formal complement, rather than as part of the construction of arguments. Thus, the development of the VTS model needs to be directed to strengthen students' awareness that references are part of academic evidence. Typical questions in VTS, such as "What did you see that makes you say so?" can be developed into academic questions, such as "What evidence supports this claim?", "What references reinforce the reason?", and "What is the author's position on the sources used?".

The third implication is the implications for model development. The results of the preliminary study are an important basis for compiling syntax, learning tools, evaluation instruments, and VTS model validation procedures at the next stage. Based on the findings of the research, the syntax model needs to contain stages that are able to guide students from the process of visual thinking to the process of academic writing. Therefore, the stages of Visual Observation, Visual Interpretation, Reflective Dialogue, Idea Mapping, Academic Argument Construction, Drafting Academic Text, and Reflection and Revision can be used as an initial basis in model development. Each stage needs to be equipped with learning objectives, lecturer activities, student activities, triggering questions, visual media, worksheets, and indicators of academic writing achievement.

The development of learning tools also needs to be directed to the real needs of students. The tools developed can include lecturer guides, student guides, visual observation sheets, interpretation sheets, idea map sheets, argument construction sheets, academic writing assessment rubrics, and self-reflection instruments. These tools are important so that the VTS model is not only a concept, but can be implemented operationally in the classroom. The

development of this tool is in line with the need for writing learning which emphasizes the process of planning, drafting, revising, and reflection (Kellogg, 2008; Wingate, 2012).

In addition to the device, the results of the preliminary study also have implications for the preparation of assessment instruments. The assessment instrument of the VTS model needs to measure not only the final product of the writing, but also the thinking process of the students. Assessment can include the ability to observe visual stimuli, interpret meaning based on evidence, participate in reflective dialogue, construct an idea map, build arguments, write drafts, use references, maintain coherence, and revise. Thus, assessment in this model is not only results-oriented, but also on the process of forming academic ideas. This is important because the quality of writing is highly determined by the quality of the thought process that precedes it.

The findings of the preliminary study are also the basis for validating the model at the next stage. Validation needs to involve language learning experts, academic writing experts, learning design experts, and writing course teaching practitioners. The validation is needed to ensure that the VTS model has the feasibility of theoretical rational aspects, learning syntax, social systems, lecturer reaction principles, support systems, as well as instructional and accompanying impacts. After expert validation, the model can be continued on a limited trial to see the applicability, practicality, and response of students to the use of VTS in academic writing learning. In summary, the implications of the research findings can be presented in the following table.

Table 7. Implications of Findings for Learning Model Development

Types of Implications	Explanation	Theoretical Basis
Pedagogical implications	Lecturers need to guide students from the pre-writing stage, facilitate idea mapping, reflective dialogue, and revision of writing, not just assessing the final product of the writing	Theory of the writing process and academic dialogue (Kellogg, 2008; Hyland, 2010; Gillies, 2019; Wingate, 2012)
Theoretical implications	VTS can be positioned as a strategy that connects visual literacy, critical thinking, multiliteracy, and evidence-based academic writing	Literasi visual, akademik literacies, dan multiliterasi (Lea, 2008; Street, 2010; Hailey et al., 2015; Kress & Van Leeuwen, 2020)
Implications of model development	The findings of the preliminary study became the basis for the preparation of syntax, learning tools, assessment instruments, expert validation, and VTS model trials	Development of process-based learning, academic genres, and argumentation (Paltridge, 2004; Hyland, 2009; Wingate, 2012; Yenawine, 1999a)

Thus, the main implication of this research is the need to develop an academic writing learning model that not only emphasizes the final result of writing, but also guides students in the thinking process that precedes the birth of academic writing. VTS has the potential to



answer these needs because it integrates visual, dialogical, argumentative, and reflective activities. Pedagogically, this model can help lecturers design more gradual and directed writing learning. Theoretically, this model strengthens the relationship between visual literacy, academic literacy, and argumentative writing. In terms of development, the results of this preliminary study are the foundation for the preparation of a VTS model that is more systematic, valid, practical, and ready to be tested at the next stage of research.

CONCLUSION

This preliminary study shows that learning academic writing in college requires a learning model that is not only oriented to the final product of the writing, but also guides students systematically in the thinking process before, during, and after writing. The findings of the study show that students' difficulties in academic writing are not solely related to the accuracy of language, but also related to the ability to find ideas, formulate the focus of the writing, formulate the framework of ideas, develop arguments, use references meaningfully, maintain coherence, and reflect on the quality of writing. Thus, academic writing needs to be understood as a complex intellectual practice because it involves critical thinking skills, visual reasoning, organizing ideas, constructing arguments, using evidence, and reflective revision.

The results of this study also show that Visual Thinking Strategy has strong conceptual and pedagogical relevance to be developed in academic writing learning. VTS can be a bridge between the visual thinking process and the production of academic texts through the stages of Visual Observation, Visual Interpretation, Reflective Dialogue, Idea Mapping, Academic Argument Construction, Drafting Academic Text, and Reflection and Revision. Through these stages, students are guided to observe visual stimuli, interpret meanings based on evidence, dialogue ideas, map the relationships between ideas, compile claims, reasons, evidence, and explanations, then develop these ideas into more targeted academic writing. Therefore, VTS can not only be understood as a visual-based learning strategy, but also as a cognitive and pedagogical strategy that supports strengthening academic literacy, visual literacy, critical thinking, and argumentation-based writing skills.

The main contribution of this research lies in the formulation of the initial design of the Visual Thinking Strategy model in academic writing learning which is compiled based on the real needs of students and supported by relevant theoretical foundations, namely writing process theory, academic literacies, visual literacy, multiliteracy, social constructivism, and academic genre theory. Pedagogically, this model design provides direction for lecturers to guide students from the pre-writing stage, not just assign assignments and assess the final results of writing. This model also encourages more visual, dialogical, reflective, and argumentative writing learning through the use of visual stimuli, triggering questions, reflective discussions, idea mapping, argument construction, draft writing, and evidence-based revision.

As a preliminary study, this study has limitations. This research has not been directed to test the effectiveness of the model broadly, but it still focuses on mapping student needs, identifying academic writing difficulties, analyzing student writing documents, and formulating the initial design of the VTS model. Therefore, further research needs to be

carried out through expert validation, device readability tests, limited trials, practicality tests, and model effectiveness tests in improving the quality of students' academic writing. Subsequent research can also examine the contribution of each stage of VTS to certain aspects of academic writing, such as idea development, coherence, reference integration, argumentative strength, use of academic language, and academic politeness.

Overall, this research provides the initial basis for the development of a more systematic, contextual, and academic writing learning model that is in accordance with the needs of students in higher education. The design of the VTS model produced in this study is expected to be a foundation for the development of writing learning that not only emphasizes the ability to produce texts, but also builds a critical, visual, dialogical, reflective, and evidence-based way of academic thinking.

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