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The implementation of metacognitive strategies in writing a thesis

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Abstract: Empirical evidence reveals that a common obstacle for students in writing a thesis is that they have difficulties in writing literature reviews, formulating a thesis topic or problem, and writing the contents of their thesis. The research was conducted to investigate metacognitive strategies and their impact on writing students' theses. The research was conducted at the Islamic University of Nahdlatul Ulama (UNISNU) in Jepara. A case study research design guided this research. The participants involved were 30 students, comprising 20 women and 10 men, and the study included semi-structured interviews with 3 thesis supervisors. The findings reveal two main things. First, in the process of using metacognitive strategies, students map and develop writing concepts. Students are guided to compose various effective sentences, elaborating the introduction, main, and conclusion parts of the thesis in detail. Second, in terms of the impact of metacognitive skills, students can understand the contents of the thesis and recognise the characteristics of academic writing, writing procedures, and requirements for selecting topics. It can be concluded that students' metacognitive abilities contribute to the development of quality thesis writing skills.

Keywords: academic writing; metacognitive strategies; thesis.

Introduction

In the academic world, thesis writing skills are very important for students. Students who successfully compose a thesis well describe the practical application of their field of knowledge. Students learn to write, read, and analyse specific phenomena or problems within their scientific field, then present their work logically and systematically in a thesis (Cahyadi et al., 2021; Putra & Astari, 2022; Sunaiyah et al., 2022). The aim is that the direction of education can produce graduates who have multiple skills (Hoon et al., 2019). Another reason why it is important to motivate students to write a thesis is that it can produce knowledge and scientific skills that can be applied in their field of science. Writing a thesis helps students develop critical thinking skills and earn a bachelor's degree (Sekar Diasti & Laos Mbato, 2020; Lundgren & Robertsson, 2013; Wu & Buripakdi, 2022).

Empirical evidence suggests that students struggle with writing literature reviews, are uncertain about formulating a thesis topic or problem, have difficulties with writing the thesis content, and experience difficulties making progress (Ermiati et al., 2021). They also struggle to express their thoughts and ideas. Several important elements in academic writing, including language aspects such as paragraph structure, basic components, formality, providing evidence, and avoiding plagiarism, pose challenges in producing original scientific work (Ismi, 2023; Joseph Mallia, 2017; Mubarak et al., 2022). Other findings show different opinions about students' obstacles in writing their theses. Students often face tension between the academic expectations of their supervisors, who must adhere to university guidelines, and the specific expectations of companies where students work and conduct research (Jaakkola et al., 2022).

Based on initial observations of existing literature, it was found that universities have not been able to facilitate students' thinking and writing skills. Sociocultural, psychological, and linguistic factors are other main obstacles in academic writing (Dakhi & Hutabarat, 2018; Nurkamto et al., 2024). On the other hand, the systematics of writing a thesis and the conditions for writing it depend on the style of each campus, which makes it increasingly difficult for students to write their thesis on time, even taking years (Gray, 2020). As a result of the stressful situation in completing the thesis, a psychophysiological stress response appears in students (Ramírez-Adrados et al., 2020). Other studies argue that it is crucial to employ a process approach in thesis supervision and evaluation to minimise plagiarised work, which can lead to student failure (Sukandi & Rianita, 2020).

There is quantitative research evidence that reveals the practical application of metacognition in writing scientific papers has a positive impact on student learning outcomes. Metacognitive strategies can enhance students' cognitive abilities and hone their critical thinking skills to solve problems (Murtadho, 2021; Puspitasari et al., 2020; Ramadhanti & Yanda, 2021; Rosdiana et al., 2023). Another literature review also found metacognitive benefits in writing, including reflection, self-monitoring, and transfer strategies that help students activate knowledge, practice, and apply new strategies to the writing and research process; reflect on students' strengths and challenges while completing assignments; articulate the differences between genres, various disciplines and courses (Sumarno et al., 2022).

Metacognitive knowledge refers to the thought process of increasing awareness by coordinating the learning process to achieve specific goals. Metacognitive ability is the ability to understand the occurrence of the cognitive process. To be able to find the relationship between a concept as a result of the cognitive process, plan an activity, carry out the learning process, control the learning process, evaluate and reflect on the learning that has been carried out, and find appropriate follow-up actions (Pintrich Raul, 2002).

A literature review found that metacognitive strategies produce three types of skills: problem-solving skills, decision-making skills, and critical thinking skills. This third

skill aims to obtain various alternative problem solutions that are most effective for rational reasons (Antonietti et al., 2000, 3-4; Wenden, et al, 1998).

Student-independent learning techniques using metacognitive knowledge were developed by Olson et al. (1994) and consist of five stages. *First*, goal setting involves applying personal and academic skills that help students achieve adequate academic standards. *Second*, planning focuses on solving problems, determining problems, or creating a project, as well as analysing the information obtained creatively and critically. *Third*, follow the plan and measure your progress through self-evaluation. Students are required to learn from their mistakes and make corrections and adjustments as needed. *Fourth*, obtain final results using portfolios, presentations, or performances that will be useful in the future. *Fifth*, authentic assessment from educators regarding the results of students' thinking is a benchmark in the independent teaching and learning process.

In the learning process, the use of metacognitive strategies includes: an introductory review that refers to the main ideas and concepts of the material being studied; increasing preparation, which means language practice required for oral or written assignments; organizational planning in the form of planning the parts, sequence and main ideas that will be expressed orally or in writing; selective attention following or skimming keywords, linguistic marker phrases, sentences, or types of information; self-monitoring which means checking one's understanding during listening or reading, oral or written production; self-evaluation which means assessing how well someone completes a learning task; self-management, which means looking for or arranging conditions that help someone learn (Isaacson & Fujita, 2006; Hauck, 2005).

Writing skills are often linked to metacognitive parameters due to their ability to enhance students' writing proficiency in college. Several findings indicate a positive relationship between metacognitive strategies and writing skills, as measured by six main parameters: declarative, procedural, conditional, planning, monitoring, and final evaluation knowledge (Djarmika et al., 2022; Teng, 2020). Learners who do not have metacognitive abilities cannot monitor their progress. The result is that it yields few achievements and lacks a clear direction to link it to the implementation of further learning (Susilowati, 2016). Recent studies have shown that metacognition can be measured using various techniques designed to help teachers identify students who experience learning difficulties (Rivers et al., 2020).

Meanwhile, writing a thesis is one of the requirements for graduation to obtain a bachelor's degree (S1), which involves determining a problem to be addressed as a topic and then developing it within the respective field of science and related fields. Scientific written material is based on data and/or information originating from literature studies, laboratory/clinical research, and/or field research. This is intended to enable students to gain research experience in both library, laboratory/clinic, and/or field settings, and convey this in the form of scientific written presentations (Evans et al., 2014).

There are various problems that students can examine in their theses. To obtain accurate data, it is necessary to search for data sources that can be accessed through primary, secondary, and tertiary data. Primary data is data collected by researchers in the field, typically through interviews or other direct measurement methods. Secondary data is data obtained by utilising the results of other parties' data collection (Oliver, 2011).

Based on a literature review, it is revealed that the maximum potential for undergraduate candidates to write a thesis has not been fully realised. There are many different opinions and findings about thesis writing skills and strategies used. Therefore, this research aims to investigate the role of metacognitive strategies in writing a thesis.

The novelty of research focusing on the process and impact of metacognitive strategies, as perceived by students and supervisors, will complement the study of

metacognitive skills. Previous literature explains that the key to successful undergraduate research participation is for students to see and understand the importance of rigour, academic integrity, and responsible research implementation (Adebisi, 2022). This means that academic institutions must carefully plan strategies, research programs, activities, and courses tailored to their students' needs. Building academic writing capacity has a long-term impact on valuable learning outcomes as undergraduate students prepare for future professional service.

From the background of the problem, investigating the use of metacognitive strategies for thesis writing skills, and referring to the literature review, there are two research problem formulations as follows: What is the process of using students' metacognitive strategies in writing their thesis?; and What is the impact of the metacognitive strategies used by students in writing their thesis?

Method

The research design used is a case study. As stated in case studies, they are useful in exploring problems about which little is known regarding the phenomenon (Baškarada, 2014). This type was chosen based on the research objective, namely, understanding various case facts regarding metacognitive strategies for students' thesis writing skills. The research method chosen is qualitative. Sequentially, data analysis in qualitative research starts from the stages of data collection, data reduction and categorisation, data display, and conclusion. This research was conducted at the Islamic University of Nadlatul Ulama Jepara (UNISNU), Jepara, Central Java, Indonesia.

The study involved 30 undergraduate students in the seventh semester of the Faculty of Tarbiyah and Teacher Training (FTIK). Participants consisted of 20 women and 10 men. This research also involved 3 supervisors. The criteria for students who meet the requirements to become participants are as follows: pass 144 credits; no D and E grades in all courses taken; complete the Community Service Program (KKN), the Internship program (PPL), and pass proposal seminars. Meanwhile, the criteria for supervisory lecturer participants are (1) a supervisory lecturer who has at least the position of Lector with a Strata 2 degree in a Master's Study Program.

Data collection was carried out through observation and semi-structured interviews. Observation techniques are used to see participants' activities in building metacognitive skills. Interviews were conducted to gather information from participants regarding attitudes and responses to metacognitive strategies to shape students' thesis writing skills. The interview instruments for students are presented in Table 1 of Appendix 1, while those for lecturers are presented in Table 1 of Appendix 2.

Qualitative data analysis, as defined by Miles and Huberman (2001), consists of three stages. *First*, do data reduction. *Second*, data presentation. *Third*, verify the data. The analysis focused on eliciting experiences and participants' responses to open-ended questions. The results of responses to open questions were summarised and coded to identify categories of experiences felt by participants, both students and supervisors, as the process and impact of cognitive strategies in writing a thesis. The Excel program was used for coding. Researchers independently coded a subset of responses and then discussed the codes that emerged to clarify them and resolve any discrepancies that arose during the coding process. Researchers then grouped a subset of their codes into categories and subcategories, generating thematic statements to explain the relationships between categories that would be presented in the results. The next step is data presentation, which enables us to effectively express the process of examining ideas, ensuring that no categories are overlooked. The final step is data verification to ensure that the data entered matches the data from the source.

Finding and Discussion

Findings

Students' Use of Metacognitive Strategies in Writing a Thesis

The initial findings reveal the process of using metacognitive strategies to enhance students' writing skills in completing the final assignment report for the undergraduate program at FTIK of UNISNU Jepara. The experience of using metacognition encourages students to improve their thesis writing skills. Having metacognitive abilities will direct students to utilise their thinking abilities systematically through a series of processes as follows: (1) planning process in writing a thesis so that it is carried out well, (2) monitoring students' ability to write a thesis, and (3) evaluating the results of the thesis writing activities that students have carried out.

Planning Process

Metacognitive means students need to be aware of their learning patterns and thought processes. Of the total 30 participants, only around 21 students (70%) carried out the planning process well, 8 students (26%) did quite well, and the rest did not do well. The majority of students admit that they read actively to understand the research problem in their thesis. The supervisors explained that students pay careful attention to the text by taking notes, asking questions, thinking about what the supervisor says, making connections to other texts, and engaging in a series of other important activities aimed at constructing accurate sentences about the background of the problem. This activity enhances students' ability to understand what they write and enables them to develop these writing skills further in their thesis.

Data 1 from the interview is as follows:

“Students do not experience significant difficulties in making a thesis outline by applying metacognitive strategies because students are explained how to make a research proposal outline. Students are also helped by applying metacognitive strategies in the activity of writing a thesis by being invited to look at examples of good writing models consisting of an introduction, main and closing sections using the Podcast technique.”

Data 1 describes the experience of the planning process, which involved creating a draft of the main points to be discussed in the thesis and recording them. The interview results also revealed that in this process, there are three things that students must achieve to be successful in writing their thesis: a) predicting what will be learned, how it will be mastered, and the impact of what is learned, b) preparing themselves physically, and c) making a good plan.

Monitoring Process

The supervising lecturers carry out a monitoring process for each student's thesis they supervise. The monitoring process involves observing what has been written by examining both the content and form of expression from an academic writing perspective. Data from the 2 interviews are as follows:

“Students are helped in writing their thesis by applying metacognitive strategies. Because with this strategy, students can make observations and pay close attention to the contents of scientific papers by paying attention to examples in the environment or human life.”

From Data 2, it can be understood that the monitoring process involves detecting progress in planning and implementing thinking and making conscious modifications. In this process, students carry out self-introspection about the following things: a) Will writing a thesis benefit me? b) How can writing this thesis be understood by readers? and c) Why don't I understand how to write a thesis?

These three things are part of the monitoring process to help students understand metacognitive strategies in new ways.

Evaluating or assessing a process

The process of correcting and determining product quality, and the thought process that has been passed. The evaluation process makes improvements to the writing

produced, both in terms of content and form aspects of the writing technique. Students are directed to evaluate the text source and then describe the text carefully. In this evaluation process, students reflect to find out: a) how can I master the skills, values, and knowledge of writing a thesis? b) why is it easy/difficult for me to master thesis writing? and c) what actions/modifications should I take?

Metacognitive strategies are a tool that helps students in their learning process when writing theses. This strategy helps facilitate and accelerate the student learning process. This is evident in the responses given by students during interviews. Students provided responses indicating that the application of metacognition was necessary for students to deepen their experience in the thesis writing process. Data from 3 interviews is as follows:

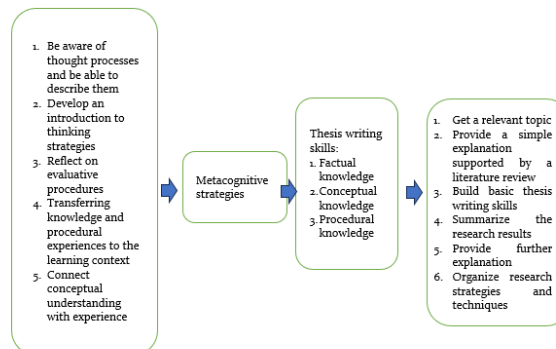
“Metacognitive strategies provide facilities for students to have the ability to build understanding and internalise new information. Students can learn effectively after studying with lecturers and classmates. The supervisor helps to facilitate the learning process, provides explanations, shows examples of good writing by watching video podcasts, and accompanies students in monitoring the writing produced to see shortcomings in the writing by looking at examples from video podcasts and explanations from the lecturer”

Data 3 illustrates how supervisors accompany students in revising their thesis for errors in writing, both in terms of content and writing techniques, by providing examples and contextual discussion.

The Impact of Metacognitive Strategies Used by Students in Writing Their Thesis

Based on the results of data analysis, it was found that metacognitive knowledge has an impact on writing a thesis, which includes three components: factual knowledge, conceptual knowledge, and understanding of procedural knowledge or writing techniques used in writing a thesis. This finding aligns with students' background knowledge and experience in seeking various reference sources to aid them in memorising or recalling the contents of their thesis. Students have a stated goal or reason for why they must immediately complete their thesis writing. Students believe in personal goals in writing a thesis, such as "hoping to quickly continue to a higher level or using the thesis as a reference for further learning and research", meaning that the student has metacognitive knowledge. The findings are illustrated in Figure 1.

Figure 1. Metacognitive Strategies for Writing a Thesis in Education Majors



As shown in Figure 1, several components related to thesis writing skills are presented, including skills in obtaining sources of information to identify topics and providing explanations and techniques used. Data from 4 interviews are as follows:

“Factual knowledge means students know the requirements for selecting a topic, which are basic aspects for studying a scientific discipline. This means that students can complete academic writing assignments by completing thesis courses. Thus, in terms of factual knowledge, it means that students can recognise the requirements for selecting research topics that are appropriate to their scientific field. The conceptual knowledge shown by students is that they can recognise the conditions for selecting topics obtained from various sources.

Students can also recognise the characteristics of academic writing. For example, recognising scientific work in the form of ideas or solving a problem based on empirical evidence in scientific articles.”

Discussion

Students' Use of Metacognitive Strategies in Thesis Writing

Having metacognitive abilities will enable students to utilise their thinking abilities systematically through a series of processes, as follows: planning a thesis effectively, monitoring students' ability to write a thesis, and evaluating the results of the thesis writing activities that students have carried out.

Previous studies explain that cognitive writing strategies can support the organisational process when writing. In this case, students identify the main ideas and their relationships in the source text and with their writing; organisational strategy can also refer to the structuring of text content (Weinstein et al., 1986). Students apply various writing skills to anticipate the reader's perspective on their text, guided by their supervisor, so that they consider both structure and content. Research in Higher Education shows that the acquisition of writing skills can be supported by single-strategy training. However, research in the field of higher education is still scarce (Jusslin & Widlund, 2024).

The planning stage involves gathering the necessary information for writing a thesis. This stage is a preparatory phase that encompasses several key steps. The first step involves determining the topic or theme by gathering information from various sources, including direct observation, journals, opinions, and responses. The study found that students who received metacognitive strategy intervention and gained greater benefits in terms of academic writing skill acquisition and the quality of their texts than students who did not receive this intervention. Previous studies have highlighted the importance of communication factors, as well as sociocultural, psychological, and linguistic factors, in improving preparation for thesis writing skills. This is because supervisors often find that their students have difficulty understanding what they are suggesting to improve their theses (Dakhi & Hutabarat, 2018; T. N. Fitria, 2022) Nurkamto et al., 2024).

The literature explains that planning activities in writing a thesis involve identifying focus strategies and thinking skills in composing a thesis, starting from the stages of determining the title and compiling a proposal, to conducting research and writing it based on the substance and procedures for writing (Gottlieb, 2017). Apart from that, students need to know how to implement strategies effectively to achieve the goal of writing a quality thesis (Murray, 2018). In this activity, students plan what they have learned, how they will master it, and the effects of what they have learned, providing themselves with physical, mental, and psychological benefits, and make plans in stages to achieve satisfactory results.

Achieving successful planning for writing a thesis involves awareness of the process, concepts, and writing techniques. So, students can know what to do when faced with the situation of writing thesis chapters. The chapters build on previous writing experience. For example, writing a paper or research proposal assigned by the lecturer in a research methodology course, which is generally done to hone students' writing skills. It can be understood that the development of thesis writing skills at the planning stage has been supported quite effectively through cognitive strategies. This writing experience helps students deepen their understanding of metacognitive processes carried out during the planning stage, enabling them to anticipate how they will apply this concept in the future.

The monitoring process is carried out by detecting progress in planning and implementing thinking, and making conscious modifications. In this process, students engage in self-introspection about the benefits of the thesis and how to write it. Although not all supervisors conduct the monitoring process effectively, some of them

understand how it benefits students. On the other hand, students also realise that observing various data sources and any research model can produce better quality thesis writing than studying without using any strategy.

Previous research has revealed that one of the strategies employed by students is participating in practical workshops as an active activity to support thesis writing (Jusslin & Widlund, 2024). In this phase, self-efficacy and motivation encourage students to develop skills in compiling texts and information obtained from various sources.

From the data of the interviews about the evaluation or assessment process, it can be seen how supervisors accompany students in revising their thesis for errors in writing, both in terms of content and writing techniques, by providing examples and contextual discussions. Thus, as explained in various literature regarding the metacognitive skills process, which can hone students' cognitive abilities in thinking critically to solve problems (Murtadho, 2021; Puspitasari et al., 2020; Ramadhanti & Yanda, 2021; Rosdiana et al., 2023).

The first findings have revealed that the metacognitive strategy for writing a thesis begins with creating an outline. Students read various sources according to the topic they will write about. Apart from that, they also read the material repeatedly as part of the process of their cognitive abilities and critical thinking skills.

The impact of implementing metacognitive strategies

The impact of implementing metacognitive strategies for students is to accelerate the development of writing skills. Students construct knowledge and experience more quickly at each stage of writing, which includes planning, monitoring, and evaluation. The application of this strategy is designed to help students become more focused on completing their scientific work.

Previous studies have demonstrated that integrating metacognitive strategies yields positive results for students' writing processes. This learning produces a meaningful learning atmosphere for students because students can hone their skills in the process of learning to write, which is marked by students getting better at understanding the concept of writing and students becoming more adept at expressing their ideas in written language in terms of the content and form of writing (Susilowati, 2016). This is evident in Table 3 of Appendix 3. Table 3 explains the impact of the metacognitive process on students' ability to write a thesis, which is essential to do. The reason is that in this way, students become more focused and systematic in producing quality scientific thesis work. The table also provides an illustration that student metacognitive processes, starting from planning, monitoring, and evaluation, provide many benefits for students. Conceptual understanding and writing skills can be facilitated in this way. In this way, students can experience meaningful learning during the thesis writing process guided by the academic supervisor. With meaningful learning, students become more enthusiastic about learning because the learning process provided can maximise their potential for writing scientific papers in their field, thereby achieving maximum competence.

Metacognitive has benefits in writing, including reflection, self-monitoring, and transfer strategies that help students activate knowledge, practice, and apply new strategies to the writing and research process; reflect on students' strengths and challenges while completing assignments; articulate the differences between genres, various disciplines and courses (Sumarno et al., 2022).

The results of the two findings show that students' metacognitive experience in writing a thesis means that students' needs in maximising their thesis writing competence cannot be separated from the role of the supervisor. The supervisor acts as a facilitator who is well-versed in the student's condition and writing abilities. And able to provide supporting facilities according to needs during the learning process. The

supervisor plays a direct role in creating an environment conducive to writing scientific papers. For this reason, lecturers are also required to be able to innovate creatively and have sufficient knowledge to support the learning process. This aligns with the opinion of Bakhou & Bouhania (2020) that, in writing a thesis, language is not the primary concern. The communication factor with academic supervisors is also an obstacle. Supervising lecturers often find that their students have difficulty understanding what they are suggesting to improve their theses (T. N. Fitria, 2022).

Integrating the application of metacognitive strategies helps overcome students' difficulties in completing their theses. So that they have a more comprehensive understanding by designing learning that is closely related to daily life experiences. The creativity of supervisors in guiding students through the process of learning to write scientific papers can enrich students' knowledge of writing concepts and hone their skills in writing scientific papers in the future. These findings provide evidence that supports previous studies proposed by Adebisi (2022), which suggest that the key to the success of metacognitive strategies in writing scientific papers lies in students' ability to recognise and understand the importance of thoroughness, academic integrity, and responsible research implementation. At least three types of skills are produced by metacognitive strategies in writing a thesis, namely problem-solving skills, decision-making skills, and critical thinking skills. The aim is to obtain various alternative problem solutions that are most effective for rational reasons (Antonietti et al., 2000; Wenden, 1998). The application of metacognition in the writing learning process is carried out by supervisors who assist students in navigating the writing stages, which include creating an outline, writing, observing the results, and revising the writing in the thesis.

Conclusion

The findings have revealed two key aspects of metacognitive abilities in writing a thesis that are essential for students to master. Being armed with metacognitive skills is one of the fundamental things students need to plan an appropriate writing framework, develop it, control what has been written, and evaluate parts of the writing that are not appropriate. After passing these stages, students can reflect on their learning methods in writing a quality thesis. Ultimately, students can develop effective strategies for learning to write independently. The conclusion is that students can formulate goals and steps for writing a thesis using metacognitive abilities. Apart from that, metacognitive abilities enable students to think critically in writing classes. Students can understand how they learn in writing classes and provide opportunities for students to be able to explore the writing they produce, enrich their insight by conducting interactive dialogue with lecturers related to the concept of knowledge and skills in writing, and solve problems independently, so that they can take appropriate action in complete writing assignments

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Appendix 1.

Table 1. Student Interview Instrument from each Metacognitive Level

No	Metacognitive Level	Metacognitive sub level
1	Preparation of action planning strategies	a. What knowledge can help you in completing the thesis writing assignment? b. Where will these thoughts take you? c. What should be done first? d. Why are you reading this section? e. How long do you estimate it will take to complete the thesis writing assignment?
2	Monitor and control actions	a. How do you do it? b. Are you on the right path? c. How should you do it? d. What information is important to remember given by the supervisor? e. Should you switch to a different way of writing? f. Should you make step adjustments due to difficulty?
3	Evaluation of actions	a. How well have you done? b. Did the thesis writing tutoring produce more or less than you expected? c. Could you have done it differently? d. Is it possible for you to apply the method your supervisor gave to other problems? e. Do you need to go back to the original assignment to fill in areas where you lack understanding?

Appendix 2.

Table 2. Metacognitive Strategy Indicators

No	Metacognitive level	Metacognitive sub level
1	Critical thinking process and being able to develop strategies or action plans	a. State the goals the student wants to achieve b. Know what problem you want to solve c. Realizing that the thesis writing assignment given requires many references d. Identify the information obtained during the research e. Select the procedures and methods used f. Be aware of your abilities in completing thesis writing g. Plan what will be researched
2	Development of an introduction to thinking strategies	a. Collaborative data collection from various sources b. Decide on the most appropriate operations c. Explain the operational sequence specifically d. Thinking about how other people complete their thesis
3	Reflecting on procedures evaluatively	a. Assessing goal achievement b. Compile and interpret data c. Evaluate the procedures used d. Overcoming errors/obstacles in problem-solving e. Identify sources of error from experiments
4	Transferring knowledge and procedural experiences to other contexts	a. Using different operations to solve the same problem b. Use the same operation/procedure for other problems c. Develop procedures for similar problems d. Applying understanding to a situation
5	Connecting conceptual understanding with experience	a. Link observations with discussion b. Analyze efficiency and effectiveness c. Concluding the results of data interpretation

Table 3. Student Responses
Regarding the Implementation of
Metacognitive Strategies

Stages of the Metacognitive Process	Student Response
Outline planning	a. Students will understand how to outline a thesis research proposal b. Students can organize their scientific writing quite well c. Students can develop their thesis writing quite well
Writing monitoring	a. Students can identify shortcomings in their scientific work in terms of content b. Students can identify deficiencies in terms of components in writing a thesis
Final evaluation	a. Students can correct deficiencies in their scientific work in terms of content b. Students can correct deficiencies in terms of components in writing a thesis