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Adopting Self-Regulated Learning in Writing Instruction Viewed from the Lens of Activity Theory

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Article information	
Abstract	Despite the growing interest in investigating self-regulated learning (SRL) in a writing context, studies on pedagogical utilization of self-regulated learning-based instruction (SRL-BI) and SRL strategies from an activity theory perspective are still scant. This case study aims to explore the implementation of SRL-BI and SRL strategies in essay writing instruction and to provide an explanation for the contradictions within the activity system. Forty students and two lecturers from an essay writing class at a state university in Indonesia participated in this study. The data were collected through classroom observations, students' artifacts, and semi-structured interviews. The findings of this study encompassed two primary aspects. The first finding was that SRL-BI and SRL strategies were goal-oriented and collective activities molded by individual and environmental factors. The second finding related to the contradictions in the activity system between subject-rules, subject-tools, subject-community-division of labor-object, and subject-rules-tools-object. This study contributes research into the under-explored

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	area of the development of self-regulated learning in the writing context through the lens of activity theory.
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1. Introduction

Self-regulated learning (SRL) has been studied in many educational fields, and has been shown to have a powerful impact on student performance. In the writing context, SRL has had the impact of fostering improvements in students' writing (Abadikhah et al., 2018; Mahmud & German, 2021; Woottipong, 2020), developing students' writing skills (Anggraeni et al., 2022b; Eslami & Sahragard, 2021; Pionera et al., 2020), and motivating students to be more engaged in writing practices (Seker & Inan-Karagul, 2022; Xu, 2021). Given the potential benefits of SRL, there is an urgent need for further exploration of its impact on writing instruction, particularly in English as a foreign language (EFL) settings. It is important to address students' challenges and to ensure the effectiveness of SRL in diverse educational settings.

Writing in EFL poses challenges for students due to the need to follow various writing conventions. EFL students face writing problems in choosing correct resources (Altikriti, 2022), writing cohesion and coherence (Anggraeni et al., 2022a), grammar and vocabulary (Asaad & Shabdin, 2021), paraphrasing and summarizing academic sources (Prapobratanakul, 2024), organizing and developing ideas (Rustipa et al., 2022), originality and plagiarism (Toprak & Yucel, 2020), and producing communicative writing (Wachidah et al., 2020). Researchers have turned to SRL as a potential instructional model to address these challenges and optimize students' writing.

Utilizing SRL in writing instruction can help students overcome writing challenges, enhance their academic writing skills, and develop their writing performance. Prior research has been concerned with SRL implementation in writing instruction; however, few studies have explored SRL in writing through activity theory (AT). The current study uses the lens of AT to examine how the strategies of SRL and SRL- based instruction (SRL-BI) can be integrated to achieve desired learning outcomes.

The utilization of AT as a theoretical lens in L2 writing has facilitated a deeper comprehension of the learning processes experienced by students (Chen et al., 2022). “Compared with other frameworks, AT offers a theoretical and holistic lens to analyze the activity system structure, potential contradictions within or between activity systems, and the implementation of innovations” (Rong & Yao, 2024, p. 348). Activity theory, due to its collaborative nature, has been used in many different studies, including ones that have explored how EFL teachers can improve students’ language skills through blogs (Liu & Chang, 2011), English writing strategies (Lee, 2020), how students interact in blended-learning writing courses (Pullenayegem et al., 2021), how English teachers use research (Asadnia et al., 2022), how digital technology is used in schools (Blayone, 2019), how second language writers respond to and use teacher feedback (Sandra, 2022), and how EFL teacher agency is constructed in blended learning (Rong & Yao, 2024).

However, the lens of AT has not been applied in exploring the integration of SRL-BI and SRL strategies in EFL writing instruction. To address this gap, the researchers explored the utilization of SRL in writing instruction from an AT perspective. Therefore, the study aims to investigate the implementation of SRL-BI and SRL strategies in an activity system for essay writing instruction. A further aim is to delve into the contradictions within an activity system that utilizes SRL-BI and SRL strategies to understand the challenges and complexities involved in this process. This study addresses the following research questions:

1. How can the implementation of SRL-BI and SRL strategies be understood through the lens of an activity system?
2. What are the contradictions that emerge within an activity system that integrates SRL-BI and SRL strategies in essay writing instruction?

2. Literature Review

2.1 Self-Regulated Learning-Based Instruction

Teng (2022) introduced the instructional self-regulation strategy model of SRL-BI, which is not just a theoretical concept but a practical tool comprising six key stages. These stages provide a clear roadmap for students and lecturers in supporting learning. Table 1 details each step of Teng's practical self-regulation strategy instructional model.

Table 1

Self-Regulation Strategy Instructional Model

Stages	Description
1. Knowledge Activation	The lecturer helps students recall their prior knowledge of genre-specific writing and SRL strategies while the students assess their comprehension of the writing materials.
2. Teacher-Led Discussion	The lecturer and students discuss writing techniques and strategies for SRL. The lecturer also poses challenging questions to help students understand how well they implement the strategies.
3. Modeling	The lecturer demonstrates engaging ways to utilize self-regulation and writing strategies. Then, the lecturer guides the students in applying supported writing strategies.
4. Memorizing	The lecturer organizes classroom tasks to help students apply specific writing strategies effectively and motivates them to implement them.
5. Supporting	The lecturer gives different levels of support depending on the students' progress. It is the students' responsibility to

		apply the specified strategies as the lecturer gradually reduces support.
6.	Independent Performance	The lecturer provides booster sessions to maintain and generalize the implementation of SRL strategies. The students use the designated SRL strategies for a fresh writing task and actively engage in the writing development process.

2.2 Self-Regulated Learning Strategies

Self-regulated learning (SRL) is a learning strategy in which students have an essential role in regulating their learning. Zimmerman (1989) suggests that students can be identified as self-regulated learners when actively engaging in their learning. This concept involves metacognitive processes, motivation, and behavior. Fitriati et al. (2023) emphasize that self-regulated learning involves goal-oriented learners systematically stimulating cognitive, action, and emotional aspects. Self-regulated learning has an important role in academic writing by improving internal and external motivation, which helps students become more self-motivated foreign language writers (Wijaya, 2021). Zimmerman and Moylan (2009) propose a self-regulation model that integrates metacognitive processes and critical measures of motivation, including the forethought phase, the performance phase, and the self-reflection phase.

2.3 Activity Theory

Activity theory (AT) originated in the 1920s and 1930s through the work of three Russian psychologists and educational theorists: L. S. Vygotsky, A. N. Leont'ev, and A. R. Luria (Engeström, 1999). While activity theory is employed in educational research as a conceptual framework for data interpretation, the triangular model of an activity system is utilized as a graphical representation and analytical framework for interpretive data analysis (Gedera & Williams, 2016). The development of AT spans four generations. Engeström and Sannino (2021) explain that activity theory has evolved through each generation, each focusing on a

specific unit of analysis while sharing core principles of object-oriented work practices, transformative agency, and the value of formative interventions to explore new possibilities. Table 2 presents an overview of each generation.

Table 2

Four Generations of Activity Theory

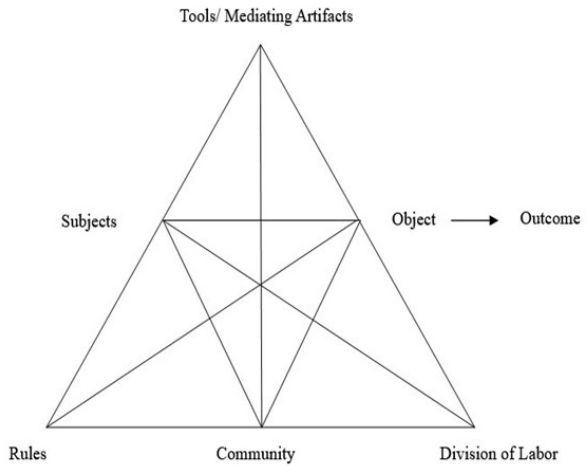
Generations	Description
1. First generation	The object and problem deal with individual learning or development challenges, the unit of analysis is mediated action, and the learning concept is internalizing skills and knowledge. The components cover subject, mediating artifacts, and object (Engeström & Sannino, 2021).
2. Second generation	The object and problem relate to collective contradictions requiring expansive solutions, the unit of analysis is a collective activity system, and the learning concept is an expansive learning cycle (Engeström & Sannino, 2021).
3. Third generation	The object and problem are contradictions in development between and within interconnected activity systems, the unit of analysis is comprised of at least two interconnected activity systems sharing a partially shared object, and the learning concept is an expansive learning cycle that involves horizontal learning and boundary crossing. The components consist of a minimum of two interacting activity systems (Engeström & Sannino, 2021).
4. Fourth generation	The object and problem deal with multifaceted societal issues requiring trans-sectoral solutions, the unit of analysis is comprised of amalgamating expansive learning cycles across diverse alliances,

and the learning concept is dynamic interaction (horizontal and vertical) among many converging cycles of expansive learning. The components deal with the expansive learning cycle at the front line, city level, national level, or international level (Engeström & Sannino, 2021).

The current study employs second-generation activity theory since the study's aims relate to the concerns of this generation. The second generation of AT has six key domains that cover a subject, an object that relates to outcomes, rules, community, mediating artifacts or tools, and division of labor (Engeström, 1987; 1999; 2015). Engeström (1993) points out that the subject designates the selected individual or subgroup as the analysis's point of view; the object deals with the entity of the phenomenon or problem where the activity is focused and which is converted to the outcomes by considering the aid of symbolic and physical, internal, and external tools; the rules refer to the conventions and regulations that govern acts and interactions in the activity system; the community relates to a group of individuals or subgroups who have similar object; and the mediating artifacts or tools deal with the instruments. Figure 1 visually represents the relationships between each component.

Figure 1

Second Generation of Activity System (Adopted from Engeström, 1987)



The realm of activity theory posits five fundamental principles that provide a lens to analyze and understand human activity, particularly in an educational setting. The five principles cover “a collective, artifact-mediated, and object-oriented activity system; the multi-voicedness of activity systems; historicity; contradictions; and expansive transformations in activity systems” (Engeström, 2001, pp. 136-137). One of the principles is contradictions. Engeström (2001) highlights that contradictions are necessary for change and growth, creating structural tension within and between activity systems that can cause problems and conflict as new ideas and big changes happen.

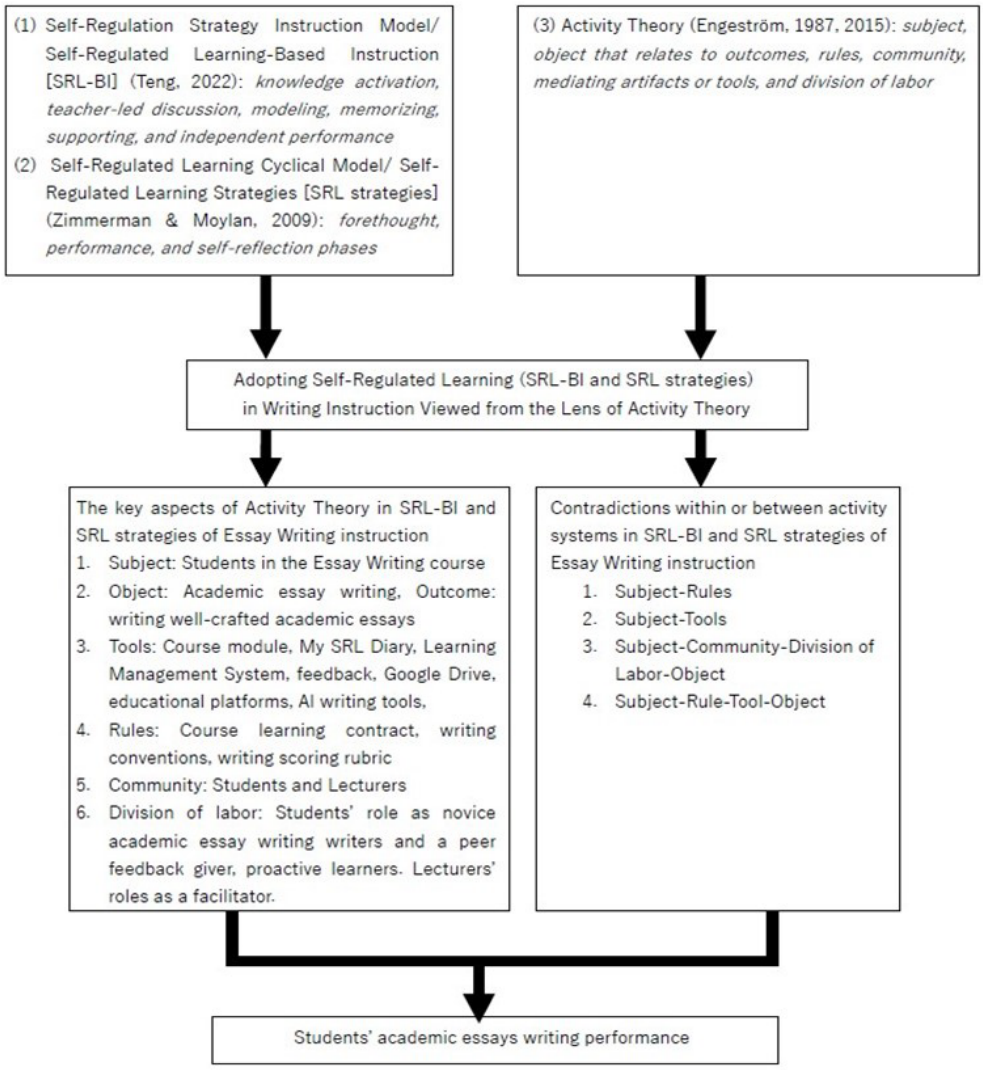
Prior studies focus on identifying the contradictions within and among activity systems. Gedera (2016) observed contradictions within and between the subject, roles, and community. The findings highlighted the contradictions in feedback perception, student participation, and course objectives, which led to student misunderstandings and frustrations. Pullenayegem et al. (2021) revealed that the contradictions within the components in the activity system were caused by several factors, including time limitations, different levels of English language proficiency, and motivation. Sandra (2022) found that contradictions in written teacher feedback were caused by time constraints. These prior studies highlight that contradictions in an activity system have an impact on the learning processes. Factors like time, language, motivation, feedback, participation, and course objectives need to be considered to mitigate these contradictions and to achieve the learning outcomes.

2.4 Conceptual Framework

Figure 2 provides an overview of the current study that focuses on the concept of self-regulated learning-based instruction, self-regulated learning strategies, and activity theory. These concepts are integrated in writing instruction to assist students in composing well-structured essays as their writing performance.

Figure 2

Conceptual Framework of the Study



2.5 Related Studies

In the EFL context, many studies focus on applying self-regulated learning in writing instruction due to its advantages. Teng (2021) did a mixed-method research design to investigate self-regulated learning intervention effectiveness in writing performance, SRL strategies, self-efficacy, and motivational beliefs. The results showed that the intervention improved students' writing performance, increased their willingness to utilize various self-regulated learning strategies, and enhanced test scores, idea generation, peer mediation, and overall writing performance. Fitriati et al. (2023) employed developmental research concerning a self-regulated strategies model in project-based learning in a blended synchronous learning environment. The findings showed that the developed model

impacted students' creativity, critical thinking, problem solving, and self-regulated learning, and improved students' writing skills.

Other previous studies have explored how SRL strategies impacted digital literacy, persuasive writing skills, lesson planning effectiveness, and online English academic writing courses. Anthonysamy et al. (2020) conducted a cross-sectional study to explore SRL strategies' impacts on digital literacy within blended learning environments. The results showed that three domains of SRL significantly influenced digital literacy. Hughes et al. (2019) conducted a study to explore various technology-based SRL writing strategies involving a computer-based graphic organizer (CBGO). The findings showed that the CBGO improved the quantity and quality of persuasive writing. Khairi and Alhafidh (2020) investigated the effectiveness of lesson planning for university classes that incorporated SRL strategies. The results showed that SRL for EFL students could be optimized when emphasizing certain activities, and capitalizing on others would lead to more effective, individualized, and critically planned lessons. Mahmud and German (2021) examined EFL university students' SRL levels in online English academic writing courses to explore the problems encountered and strategies developed in the online learning context. The findings revealed that the benefits of SRL may include optimizing students' autonomous learning and helping students cope with their learning setbacks.

Tomak and Seferoğlu (2021) investigated students' self-regulation processes in English preparation programs in Turkey. The findings showed that highly self-regulated students could have self-study time and evaluate their development in terms of linguistic competence. Ha et al. (2024) conducted a study exploring the conflicting and facilitating factors of non-native speaker business major students in achieving a learning goal (an accepted curriculum vitae) by implementing SRL strategies with activity theory. The findings suggested that conflicting factors emerged in the tools, rules, objects, community, and division of labor, while the facilitating factors were related to the tools. The interaction

between facilitating and conflicting factors was pivotal in attaining the outcome, offering hope that challenges can be overcome with the right approach.

Various studies have explored the benefits of utilizing and integrating SRL-BI and SRL strategies. However, there is limited research investigating SRL-BI and SRL strategies through an activity theory lens. Hence, the present study aims to discover how the interplay between subject, object, tools, rules, community, and division of labor influences the use of SRL-BI and SRL strategies and ultimately shapes students' writing performance.

3. Methodology

3.1 Research Design

This study used an exploratory case study for an in-depth investigation of a specific case, providing rich, contextualized data. Yin (2018) describes a case study as an empirical design that focuses on a current phenomenon and explores it in a real-world context. By conducting a case study, the researchers could delve into the nuances and complexities of the implementation process of SRL-BI and SRL strategies through the lens of activity theory and its impact on student learning

3.2 Research Context and Participants

The study took place in an essay writing class in an Indonesian university's English Education Department in the first semester of the 2023/2024 academic year. In the curriculum structure, the essay writing course was in the fifth semester of the undergraduate program for the English Education Department. Essay Writing is a required course in the English Education Department that helps students develop essay writing skills by considering writing conventions. The researchers selected lecturers as participants based on their teaching experience in essay writing courses and their completion of instructional skills development training. With the students as the research participants, the inclusion criteria were their enrollment in the Essay Writing course, their age range between 19 and 22

years old, their experience of learning English for 9 to 14 years, their completion of a prerequisite writing course, and their willingness to provide written research consent and participate in all study activities.

The study involved two lecturers and 40 students. The class had two lecturers (one male and one female) due to the university's policy of a team-teaching system. Furthermore, there were 31 female students and nine male students. They had been learning English for a period ranging from 9 to 14 years. Before enrolling in Essay Writing, the students completed the Introduction to Essay Writing prerequisite course. Before data collection, the researchers obtained written research consent from the participants, signifying their agreement to join the study.

3.3 Data Collection

In collecting the data, the researchers used classroom observation, students' artifacts (My SRL Diary), and semi-structured interviews as the data collection instruments. Three validators from Indonesia, experts in teaching writing, teaching methodology, and writing research, meticulously validated the research instruments. Their thorough validation ensured that the results were valid and could be used to collect the data. Furthermore, this study employed a pilot study to check the feasibility of the instruments. The pilot study was conducted on students who had the same inclusion criteria for this study. The pilot study resulted in several parts of the instruments being revised to avoid misconceptions by the participants, as well as to help them be more likely to succeed and to produce valid results.

Classroom observation, as the first research instrument, focused on how the lecturers implemented SRL-BI, and how the students used the SRL strategies through the lens of activity theory. Concerning the classroom observation, three cameras were utilized for video recording: a front camera on the lecturer's laptop desk, a mobile phone camera at the front of the class, and another mobile phone

camera at the back of the class to capture the teaching and learning situation in the essay writing course. In addition, it was crucial to consider the teaching administration. In the teaching administration, the essay writing lecturers taught the course for 14 sessions from August to December 2023. Each week, they had one session. Each session consisted of 100 minutes of instruction. Additionally, the classroom observations were carried out 14 times using observation protocols and video recordings. The observation protocol focused on SRL-BI stages. Moreover, the observation guidelines also concerned the steps of SRL strategies that were applied by the students involving the phases of forethought, performance, and self-reflection.

The second instrument was the students' writing diary. The diary was provided in a printed form that consisted of 92 pages. In collecting the data, the researchers gave My SRL Diary to 40 student research participants. The students had to complete the diary in English for 14 meetings in alignment with the essay writing instruction consisting of 14 meetings from August to December 2023. There was one meeting per week. A sample of My SRL Diary has been included in the Appendix. My SRL Diary was structured like a book containing the owner's identity, the preface, information on how to use the diary, the grid of topics and learning goals in the essay writing course, the example of learning sharing in the diary, and the diary forms that were to be filled in for meetings 1 to 14.

Moreover, the students were asked to complete the diary to document their SRL strategies. During the performance phase, students discussed their self-control and self-observation. During the self-reflection phase, students reflected on their self-judgment and self-reaction. The students brought the diary to the classroom for each meeting. They wrote their diary of SRL strategies (forethought, performance, and self-reflection phases) in the pre-teaching (for writing the forethought phase), whilst-teaching (for writing the forethought phase), and post-teaching (for writing the forethought phase) stages of SRL-BI implementation. After the class, the students submitted the diary to the lecturers. The lecturers

checked the students' diaries to provide feedback and guidance. Then, a day before the next meeting, the students took the diary and brought the diary to the next meeting. Writing, submitting, and checking the diary were continuous activities until meeting 14.

The third instrument was a semi-structured interview. Twenty out of 40 students were interviewed. The 20 students who did not follow the classroom rules in the learning contract and/or exhibited numerous writing difficulties were purposefully chosen as the representative participants. The interview sessions were conducted after the last meeting of the course in the second week of December 2023 as a focus group interview. The focus group interview was employed to explore the students' voices on the contradictions of implementing SRL-BI and SRL strategies through the lens of activity theory. The term *student's voice* encompasses the idea that students have active roles in shaping educational practices and fostering their agency within the learning process (Cook-Sather, 2019). Johnston et al. (2021) examined how students' expression of their views on educational experiences influences their academic achievements. Parr and Hawe (2020) identified five essential characteristics in research on students' voices, which cover purposeful and functional elicitation to promote voice, active student engagement in learning, mutual communication recognizing the message, evidence of meaningful changes in practice, and evaluation of changes concerning promoting learning, including student feedback.

3.4 Data Analysis

The researchers used a thematic analysis integrated with an activity theory framework as an analysis tool for analyzing classroom observation, writing diaries, and semi-structured interview data. The thematic analysis involved familiarization with the data, creating initial codes, identifying themes, reviewing themes, defining and naming the themes, and producing the final report (Braun & Clarke, 2006). The activity theory framework was used to analyze the interactions among the

primary components of the activity system, aiming to provide a vivid and comprehensive depiction of the utilization (Holen et al., 2017).

To understand the utilization of SRL-BI and SRL strategies through the lens of activity theory, the researchers familiarized themselves with the 14 video-recorded classroom observations by watching all the videos. They analyzed 40 students' writing diaries to understand the interaction among the activity system components in the writing instruction. Then, the researchers created the initial codes based on the subject's key concepts. This object was related to the outcome, rule, tools/mediating artifacts, community, and division of labor. The identified themes were then reviewed for coherence and relevance to the research questions. After that, the themes were defined and named to provide novel insights into the data. The final step was to write a detailed description of the themes including supporting evidence and interpretations of findings.

Concerning contradictions, the researchers transcribed the semi-structured interviews to explore the contradictions within and among the activity system components. Then, the researchers read the interview transcripts multiple times for a holistic grasp. The researchers identified key ideas and concepts through initial codes, systematically searching data for recurring themes. These were refined and defined for coherence and relevance. The transcripts revealed contradictions and tensions within the activity system and the participants' experiences.

4. Findings

4.1 Implementation of SRL-BI and SRL Strategies through the Lens of an Activity System

The following table presents an overview of the writing instruction using self-regulated learning-based instruction (SRL-BI) and self-regulated learning (SRL) strategies to elucidate how SRL-BI and SRL strategies were integrated with the activity system in 14 meetings of essay writing instruction.

Table 3

Overview of SRL-BI, SRL Strategies, and Activity System in the Essay Writing Instruction

Course Meeting(s)	Topics	SRL-BI, SRL strategies, and key elements of an activity system (subject, object that relates to outcome, rule, tools/mediating artifacts, community, and division of labor)
1	Learning contract, essay writing concept	The lecturers (community) implemented six steps of SRL-BI to explain the learning contract and essay writing concept (objects). The students agreed on the learning contract (outcome) and committed to following it in the Essay Writing course (rule). The students used SRL strategies to learn the learning contract and essay writing concept (object) in the SRL-BI utilization. The lecturers encouraged students to engage in classroom discussion and create meaningful learning (division of labor) using educational platforms (tools). The students actively participated in classroom discussions, answering questions, doing the given tasks, or asking questions (division of labor). Their profound understanding of the concept of essay writing and their ability to review the discussed material (outcome) demonstrated the potency of the SRL-BI and the satisfaction of the educators with the learning outcomes.
2–4	Contextualizing/ navigating skills, summarizing, paraphrasing, synthesizing skills; sourcing	The lecturers (community) implemented six steps of SRL-BI to guide the students to be able to understand skills in academic writing by using educational platforms and a learning management system (tools). The students (subject) used SRL strategies to learn those academic writing skills

	skills (citation and reference writing)	(object). They also considered the rules written in the learning contract (rule). The lecturers used educational platforms and a learning management system (tools) to assign tasks related to the materials discussed. The students performed the tasks using their critical thinking (division of labor). To further enhance their learning, students may have utilized AI tools to aid in brainstorming, drafting, and comparing different approaches to paraphrasing and synthesizing (division of labor). This technology integration empowered students to work more efficiently and effectively. The students could analyze and practice academic writing skills correctly (outcome).
5–14	Comparison and contrast essay, cause and effect essay, argumentative essay	The lecturers (community) implemented six steps of SRL-BI to guide the students (subject, community) to explore the concepts of comparison and contrast, cause and effect, and argumentative essays. The students practiced writing academic comparison and contrast, cause and effect, and argumentative essays (object). The students (subject) used SRL strategies to explore the material and compose their essays. The students submitted the introduction, body, conclusion, and references parts by the assigned deadline (division of labor). They submitted it in the classroom Google Drive (tool). In each meeting, the lecturers used lecturers and peer feedback activities to evaluate the students' writing so that the students could revise their writing (division of labor). The students submitted revised, well-crafted academic essays (outcomes). To maintain academic integrity, the

	lecturers monitored the similarity reports of submitted assignments (division of labor) using Turnitin, Quillbot AI detector, and Grammarly plagiarism and AI text check (tools).

Based on the classroom observation, the lecturers applied all components of SRL-BI. Additionally, the students monitored their learning using SRL strategies. Through the activity theory framework lens, the findings revealed the six stages of SRL-BI and three essential components of SRL strategies interconnected with the activity system.

4.1.1 Activity System in the Knowledge Activation and Forethought Phases

The first stage of implementing SRL-BI was knowledge activation, which included the pre-teaching activity. In the knowledge activation stage of essay writing instruction, the lecturer guided the students to remember what they already knew about writing an academic essay, academic writing skills, and the notion of comparison and contrast, cause and effect, and argumentative essays. The lecturers used knowledge elicitation strategies such as brainstorming, mind mapping, or a quick quiz to assess prior knowledge. One example was implementing a quick quiz using educational platforms like Kahoot, Mentimeter, Quizziz, and Socrative to support the knowledge activation stage. The lecturers uploaded all supported materials in PowerPoint files and supported learning videos to the learning management system. Along with activating students' prior knowledge, the lecturers encouraged them to optimize their self-regulated learning strategies, particularly in the forethought phase. The students reported these aspects of the forethought phase in their diaries.

In the activity system, the subject was the students who regulated their learning to achieve the learning goals. The object related to students' prior knowledge of the discussed materials referred to the outcome where the students

could activate and share their prior knowledge about the discussed materials. The rules in the activity system covered all the rules written in the course learning contract. In this case, the classroom rules required students to actively engage in discussions and use English when communicating with lecturers and peers. The tools implemented in the knowledge activation and forethought phase were My SRL Diary, educational platforms, course modules, PowerPoint files for each meeting, and the learning management system.

The community in this stage consisted of lecturers and students who had frequent and meaningful interactions, fostering a collaborative learning environment. The division of labor covered the lecturers' roles in facilitating the students to activate their prior knowledge, asking probing questions, and connecting new information to prior knowledge. Moreover, the students' roles included activating their prior knowledge, regulating their learning in the forethought phase, and sharing their thoughts respectfully. This finding suggests the importance of student agency, prior knowledge, technological integration, collaborative learning, and clear roles in facilitating the practical knowledge activation stage and forethought phase of self-regulated learning. Figures 3 and 4 below present documentation of the knowledge activation stage and a forethought phase activity.

Figure 3

Knowledge Activation: Guiding the Students and Using the Educational Platform to Explore Students' Prior Knowledge

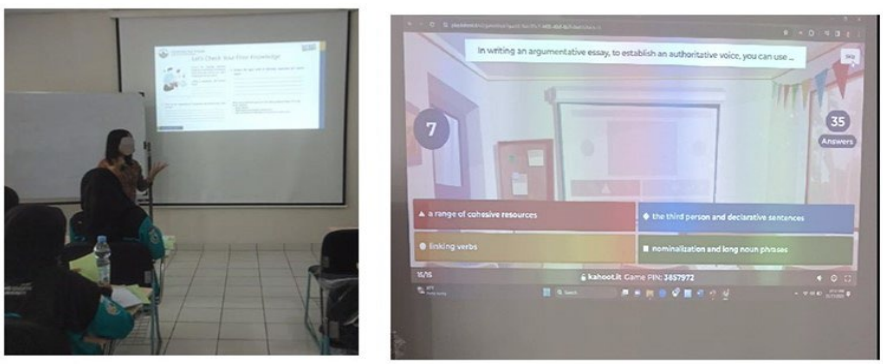


Figure 4

Forethought Phase: Guiding the Students to Monitor their Forethought Phase, and Students Report their Forethought Phase by Completing My SRL Diary

4.1.2 Activity System in the Teacher-Led Discussion and Performance Phases

The second stage implemented was teacher-led discussion, which was part of the whilst-teaching process. In this stage, the lecturers and students discussed tips and techniques for writing and self-regulated learning strategies. The lecturer, in the role of a guide, posed thought-provoking questions to assess students' understanding and implementation of these strategies. This guidance was crucial in the SRL process. Regarding the performance phase, the lecturers prompted the students to explore their performance. In this phase, the students regulated themselves through self-control (task strategies, self-instruction, self-imagery, environmental structuring, help-seeking, and self-consequences) and optimizing self-observation (metacognitive monitoring and self-recording). They regularly reported these domains in My SRL Diary.

Viewed as an activity system, the students (subject, community) followed and engaged in the teacher-led discussion to share their thoughts, ideas, and interpretations of the material (outcome). The students were motivated to think critically, analyze information, and form well-reasoned arguments. Therefore, the students could deepen their understanding of the subject matter, develop their critical thinking skills, and improve their communication abilities. In the

performance phase of My SRL Diary, most students wrote that they used a laptop, mobile phone, course module, online dictionary, and ChatGPT (tools) as environmental structuring to achieve the outcome. The students always considered the learning contract as guidance in the teacher-led discussion and performance phases (rule). The community (lecturers and students) collaborated in the teacher-led discussion. The lecturers had a role in facilitating the discussion, and the students joined actively in the discussion (division of labor). Figures 5 and 6 show the teacher-led discussion and performance phases.

Figure 5

Teacher-Led Discussion: Encouraging the Students to be Actively Engaged in the Discussion

Figure 6

Performance Phase: Guiding the Students to Monitor their Performance, and Students Use My SRL Diary to Report their Performance

4.1.3 Activity System in the Modeling and Performance Phases

The third stage implemented was modeling, which included the whilst-teaching stage. In this stage, the lecturers showed students engaging ways to write and learn independently. Then, the lecturers assisted the students and practiced these methods. In the classroom observation, the lecturer demonstrated the use of mind mapping to brainstorm ideas for an essay and then guided students in creating their mind maps for their assigned topics. The lecturer also introduced time management techniques like the Pomodoro technique to help students break down their writing tasks into smaller, manageable chunks. During the performance phase, students monitored their progress in self-control and self-observation by utilizing their My SRL Diary.

In the lens of the activity system, the students, as the subject, participated in the modeling to help them brainstorm a writing idea (object). Therefore, the students could compose a cohesive and coherent essay (outcome). In the performance phase using My SRL Diary, most students wrote that they used a laptop, mobile phone, course module, online dictionary, and ChatGPT (tools) as the environmental structuring to achieve the outcome. The students always considered the learning contract as guidance in the teacher-led discussion and performance phases (rule). The community (lecturers and students) collaborated to implement the modeling stage. The lecturers had a role in demonstrating anengaging way of implementing writing strategies, and the students joined actively in the activity (division of labor). Figures 7 and 8 show the modeling and performance phases.

Figure 7

Modeling: Assisting the Students to Find Engaging Ways to Write

Figure 8

Performance Phase: Students Participate in the Performance Phase by Using Laptops, Mobile Phones, Peer Discussion / Help-Seeking

4.1.4 Activity System in Memorizing and Performance Phases

The fourth stage applied was memorizing, which was done in the whilst-teaching stage. The lecturers designed classroom activities to help students learn, practice, and apply specific writing strategies effectively, motivating them to integrate these techniques into their regular writing. As evidenced by classroom observation, the lecturer asked the students to practice key writing strategies individually or in pairs. Additionally, the students practiced the key writing strategies. In the performance phase, the students made significant progress in monitoring their learning in self-control and self-observation in My SRL Diary, a testament to their growth and the effectiveness of the teaching methods.

Within the activity theory framework, the students (subject, community) practiced key writing strategies (object) such as brainstorming, outlining, thesis statement development, paragraph writing, coherence and cohesion checking, self-editing, peer-review, and proofreading through guided practice exercises. The students were able to do brainstorming, outlining, thesis statement development, paragraph writing, coherence and cohesion checking, self-editing, peer review, feedback practice, and proofreading (outcomes). In using the key writing strategies, the students used their knowledge, which could be integrated with generative artificial intelligence while considering the ethical aspect (division of

labor). The lecturers provided constructive feedback using feedback rubrics, worksheets, and other tools to help students improve their writing (division of labor). Figure 9 shows the memorizing phase.

Figure 9

Memorizing: Practicing Key Writing Strategies

4.1.5 Activity System in Supporting and Performance Phases

The fifth stage applied was supporting, which occurred during the whilst-teaching stage. In the supporting stage, the lecturers adjusted the different support levels based on the needs of students. The students were responsible for taking ownership of their learning and implementing the writing strategies they learned. The lecturer gradually reduced support and encouraged the students to work more independently. This condition assisted students to develop their self-regulated learning skills and become more confident in writing. During the performance phase, students kept track of their progress in self-control and self-observation by recording their experiences in My SRL Diary.

From the activity theory perspective, the lecturers (community) mediated the learning process by providing guidance, feedback, and support (division of labor). They used various tools, such as rubrics, checklists, and technology, to facilitate learning (tools). The classroom community they fostered was a collaborative learning environment where students (subject) not only shared ideas

and provided feedback but also took responsibility for their learning (division of labor). The students used supportive artificial intelligence tools such as Grammarly (tool) to help them revise their writing. By actively engaging in the learning process, students developed their writing skills and became more self-regulated learners. Figures 10–12 show the supporting stage.

Figure 10

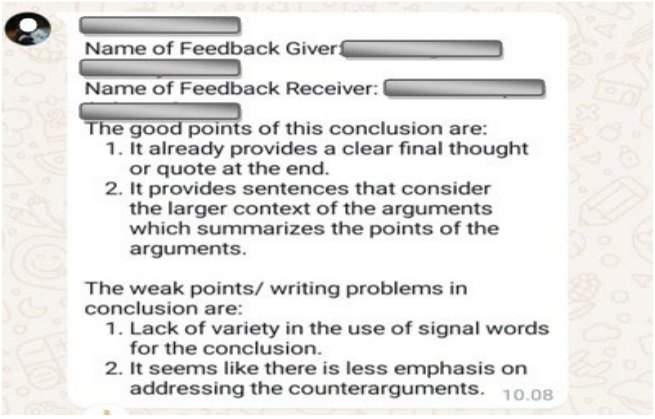
Supporting: The Lecturer Provides Feedback Directly

Figure 11

Supporting: The Lecturer Provides Feedback in Student's Google Docs

Figure 12

Supporting: Peer Feedback via WhatsApp Group of Essay Writing



4.1.5 Activity System in Independent Performance, Performance and Self-Reflection Phases

The sixth stage was independent performance, which occurred in the while-teaching and post-teaching phases. In the independent performance stage, the lecturers provided additional sessions to help students maintain and expand their use of SRL strategies. The students implemented the strategies to complete another writing assignment in which they engaged in writing processes. This stage also included SRL strategies from the performance and self-reflection phases. In the performance phase, the students regulated their learning by monitoring their self-control and self-observation during the writing process. In the self-reflection phase, the students reflected on what they had already learned by reporting their self-judgment (self-evaluation and causal attribution) and self-reaction (self-satisfaction/affect and adaptive/defensive). Their regulated learning was documented in My SRL Diary.

From the activity system perspective, the students (subject, community) were assigned writing assignments (object) that they were required to complete independently. The students performed prewriting, drafting, revising, editing, proofreading, and publishing (division of labor) to compose well-structured academic essays (outcomes). In the writing process, the students followed the

writing conventions, checked the writing scoring rubric and assignment guidelines, adhered to academic integrity standards, and submitted work on time (rules). Additionally, the students used generative artificial intelligence such as ChatGPT or Gemini (tools) to help them brainstorm ideas, Mendeley Reference Manager (tool) to write the references, and Grammarly (tool) to check their grammar. The lecturers (community) monitored students' writing progress in the classroom Google Drive and provided feedback (division of labor). Figures 13 and 14 show the independent performance and self-reflection phases, respectively.

Figure 13

Independent Performance: Writing Essays Independently

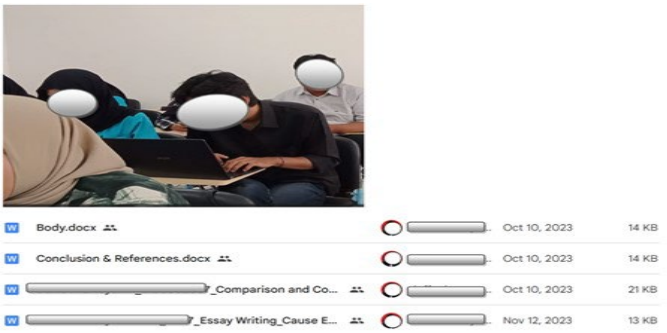


Figure 14

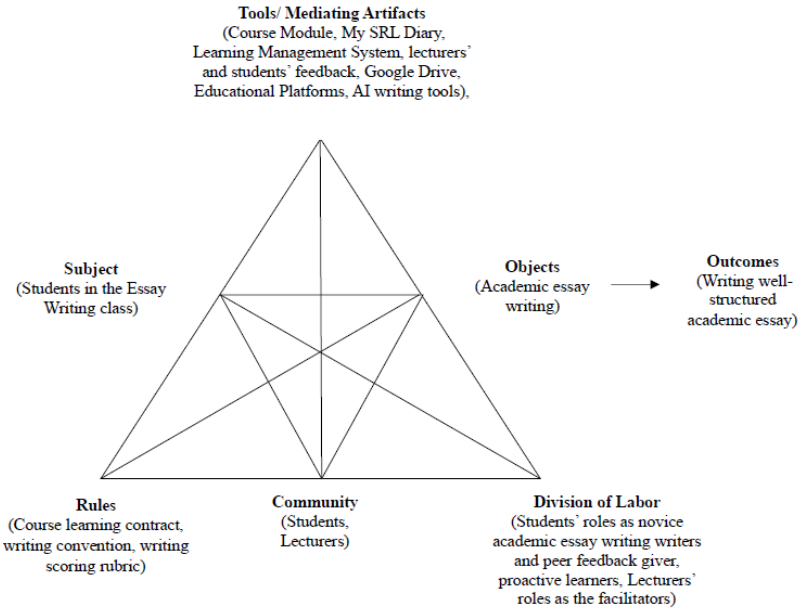
Self-Reflection Phase

Furthermore, an overview of SRL-BI and SRL strategies from the activity theory perspective is given in Figure 15, which shows the activity system of SRL implementation. It has six pivotal aspects, which cover subjects, tools, and objects,

which intertwine with the outcome, rules, community, and division of labor. The subject is the students in the Essay Writing class. The object is enhancement of the students' academic essay writing skills, such as contextualizing, summarizing, and sourcing. The object is related to the outcome of writing a well-structured academic essay.

Figure 15

Activity System in Self-Regulated Learning Implementation



4.2 Contradictions Within the Activity System of Essay Writing Instruction with SRL-BI and SRL Strategies

In implementing SRL-BI and SRL strategies, activity system domains are interrelated. Lecturers and students must consider these aspects to create a meaningful classroom ecology. However, there were contradictions in the utilization of SRL-BI and SRL strategies in the present study. The contradictions were between subject-rules, subject-tool, subject-community-division of labor-object, and subject-rule-tool-object. The following table displays the activity system domains and the contradiction factors.

Table 4

Contradictions Between and Among Subject and Other Domains

Domains	Contradictions	Students' Code
1. Subject-Rule	Students were undisciplined in submitting the writing tasks for several reasons, such as time management, internet connection, writing problems, and student workload with other course tasks.	9, 14, 16 26, 33,38, 22, 31
2. Subject-Tool	In My SRL Diary, some students promised to submit the assignments before the informed deadline but did not submit the tasks on time.	1, 8, 19,
3. Subject-Tool-Community-Division of Labor-Object	In My SRL Diary, all students wrote in the forethought phase that they understood the explained materials. However, some still had academic writing problems that affected their writing performance despite the fact that the lecturers clearly explained the materials and gave academic writing skills exercises.	5, 12, 24, 40
4. Subject-Rule-Tool-Object	The issue of students' academic integrity in their writing appears to be one of the contradictions. Some students' essays have more than 10% of text that is likely AI-generated, and a few essays with 100% of text that is likely AI-generated. However, the lecturers	3, 7, 17 29

	needed to review the results of the AI detector to ensure accurate AI similarity results because of the limited accuracy of the AI detector.

The first contradiction was between the subject and the rule. The factor underlying the contradiction was the students' lack of discipline in submitting the assignments. Below is an interview excerpt sample as evidence.

Excerpt 1: Interview with Student 9: "I **did not submit my task on time** because I had to **find the sources supporting my writing** and then develop the essay, which usually **takes much time.**"

The second contradiction was between the subject and the tool. In this case, the tool referred to was My SRL Diary. Contributing to the contradiction was the students' commitment to finishing and submitting the assignment.

Excerpt 2: Interview with Student 1: "Sometimes I **forget to fill out** My SRL Diary. The space for answers is too small, so my writing gets messy and hard to read… and I'm **always late with my assignments** even though **I write the deadlines** in my diary."

The third contradiction was among the subject, tool, division of labor, community, and object. The conflicting factor in the contradiction was the students' inconsistency about what they wrote in the diary and the reality of doing the writing assignment. When asked about this conflicting factor, a student responded:

Excerpt 3: Interview with Student 12: "Well, it's true that **I understood the material when I reported it** in the SRL Diary. But when it came to **writing the assignment**, I realized I **still struggled with grammar, sentence structure, and**

organization. It's kind of like knowing the rules of a game but still messing up when I play it."

The fourth contradiction was among the subject, rule, tool, and object. The contributing factor to the contradiction was the students' lack of academic integrity. A student whose writing was marked as 100% likely to be AI-generated explained:

Excerpt 4: Interview with Student 29: "I was **pressed for time** and **used an AI tool to generate a draft quickly**. I know it was **a mistake**, and I will **be more careful** next time."

5. Discussion

The primary aims of this study were to explore the application of self-regulated learning-based instruction (SRL-BI) and self-regulated learning (SRL) strategies in essay writing instruction and provide insights into the contradictions present within an activity system. This study sheds light on the complex relationship between factors that impact SRL-BI and SRL strategies during essay writing instruction. The findings supported the activity theory framework, demonstrating how various elements contribute to the shaping of the process of SRL-BI and SRL strategies. It indicates an intricate relationship among SRL-BI, SRL strategies, and activity systems.

Each stage within SRL-BI when intertwined with SRL strategies in writing instruction, presents a complex human learning activity directed toward achieving the outcome and contributes to a multifaceted learning experience. This resonates with Lee (2022), who emphasizes that activity theory elucidates social phenomena, including human learning, through the interactions of social members via media, such as tools and symbols, highlighting the significance of social context in human activities.

The intricate interplay among the activity system components, SRL-BI stages, and SRL strategies empowers students to control their learning, fostering a deeper understanding of the writing process and developing their writing skills to produce a well-structured academic essay. The findings showed that each SRL-BI stage has six activity system domains. The finding indicates that SRL-BI constitutes a complex and multifaceted process, which may be of interest to educators, researchers, and students. It comprises various interrelated components, each stage involving multiple factors, encompassing cognitive, metacognitive, motivational, and social dimensions.

The finding is in line with Ha (2024), who revealed that self-regulated learning and various metacognitive strategies ought to be integrated into formal educational settings to equip students with the necessary processes and skills for their future professional endeavors. Fitriati et al. (2023) highlight that self-regulated learning involves goal-oriented learners systematically stimulating cognitive, action, and emotional aspects. Ultimately, integrating SRL-BI and SRL strategies in writing instruction is pivotal to cultivating students' writing skills and helping them become independent learners who can regulate their learning journey and achieve their academic goals.

The second finding concerns the contradictions that emerged within the activity system while incorporating SRL-BI, SRL strategies, and activity theory in the writing instruction. The emergence of contradictions across various dimensions of the activity system highlights the challenges inherent in fostering self-regulated learning practices. In this study, the contradictions were present in subject-rules, subject-tool, subject-community-division of labor-object, and subject-rule-tool-object in one activity system implementing SRL-BI and SRL strategies. The identified contradictions underscore the tensions between individual learners' autonomy and the structured learning environment. The tensions can manifest in various ways, such as lack of adherence to deadlines, discrepancies between stated intentions and actual behavior regarding task

submission, insufficient transfer of knowledge from theoretical understanding to practical application, and ethical concerns regarding the use of AI in writing.

These kinds of contradictions can be potential factors that the lecturers, students, university stakeholders, and policymakers can use to devise solutions to their respective problems by conducting academic writing workshops and training, creating meaningful classroom ecologies, revising the curriculum by considering the integration of AI assistance, and making and implementing policies for using AI writing tools in universities. These potential aspects can be used to develop a foundation for the successful implementation of SRL-BI and SRL strategies. Engeström (2001) emphasizes that contradictions drive change and development by creating tension within and between activity systems, often leading to disruption and conflict as new solutions and transformations emerge. As Gedera (2016) points out, contradictions may engender tensions, interruptions, and confrontations; nonetheless, conflict resolution can catalyze change or development.

6. Limitations and Recommendations

The findings highlighted the intricate relationships between SRL-BI, SRL strategies, and an activity system. However, it is crucial to consider the limitations of the current study. The first limitation is the findings' generalizability, which is limited to the specific context and may not be directly transferable to other educational settings. The second limitation is the sample size. This study used 40 student participants and two lecturer participants. It is suggested that a larger sample size be used to provide a more robust apprehension of the interactions between SRL-BI, SRL strategies, and activity systems. The third limitation is that this study only focused on the contradictions that emerged since it is necessary to explore the potential for contradictions to arise so that concrete solutions can be found to address the contradictions. However, this also opens exciting opportunities for future research to delve deeper into generalizability by conducting mixed-methods research in various study contexts. Future researchers

should investigate the potential for contradictions to drive innovation and transformational change in educational settings, particularly in EFL writing instruction.

7. Conclusion

This study has explored the complex interplay between self-regulated learning-based instruction (SRL-BI) and self-regulated learning (SRL) strategies in the context of essay writing. Through the lens of activity theory, the researchers have delved into the dynamic interactions between various elements within the learning environment, such as subjects, tools, objects, rules, community, and division of labor. The findings indicate that integrating SRL-BI and SRL strategies is essential for fostering effective self-regulated learning. Each stage of SRL-BI, when combined with the corresponding SRL strategies, contributes to a multifaceted learning experience. However, the implementation of these strategies has its challenges. The emergence of contradictions within the activity system, such as the tension between individual autonomy and structured learning environments, underscores the need for meticulous planning and execution, and careful consideration of various factors.

To address these challenges and optimize the implementation of SRL-BI and SRL strategies, it is essential to conduct academic writing workshops and training, create meaningful classroom ecologies, and revitalize the curriculum to incorporate artificial intelligence assistance. Equally important is the development and implementation of policies for AI tool usage. These policies will provide a framework for ethical and effective use of AI in education, ensuring the long-term sustainability of SRL-BI and SRL strategies. By addressing these aspects, educational institutions can create the necessary conditions for successful SRL-BI and SRL strategies implementation, ultimately leading to improved student outcomes and enhanced self-regulated learning abilities.

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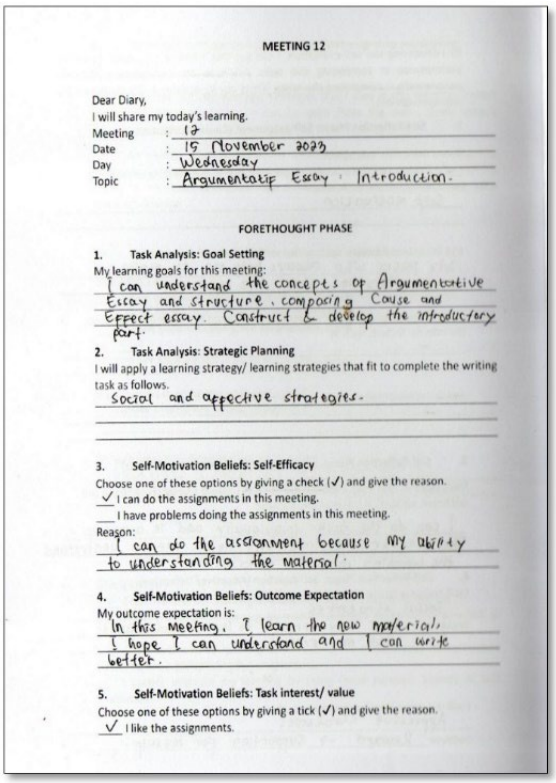
10. Appendix

This is an example of My SRL Diary, which was written by one of the research participants. My SRL Diary was developed based on a cyclical phase self-regulation model proposed by Zimmerman and Moylan (2009).



MEETING 12

Dear Diary,
I will share my today's learning.
Meeting : 12
Date : 15 November 2023
Day : Wednesday
Topic : Argumentatif Essay : Introduction.

FORETHOUGHT PHASE

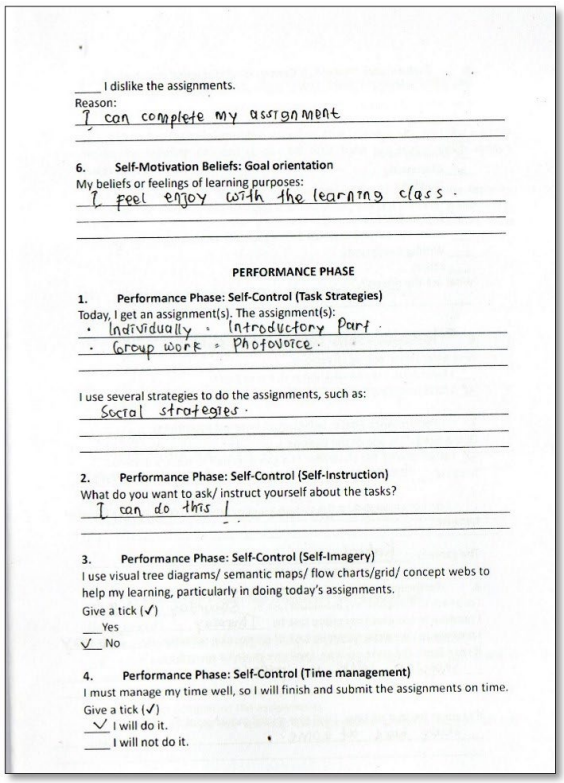
1. Task Analysis: Goal Setting
My learning goals for this meeting:
I can understand the concepts of Argumentative Essay and structure, composing Cause and Effect essay. Construct & develop the introductory part.

2. Task Analysis: Strategic Planning
I will apply a learning strategy/ learning strategies that fit to complete the writing task as follows.
Social and affective strategies.

3. Self-Motivation Beliefs: Self-Efficacy
Choose one of these options by giving a check (✓) and give the reason.
✓ I can do the assignments in this meeting.
___ I have problems doing the assignments in this meeting.
Reason:
I can do the assignment because my ability to understanding the material.

4. Self-Motivation Beliefs: Outcome Expectation
My outcome expectation is:
In this meeting, I learn the new material, I hope I can understand and I can write better.

5. Self-Motivation Beliefs: Task interest/ value
Choose one of these options by giving a tick (✓) and give the reason.
✓ I like the assignments.



___ I dislike the assignments.
Reason:
I can complete my assignment

6. Self-Motivation Beliefs: Goal orientation
My beliefs or feelings of learning purposes:
I feel enjoy with the learning class.

PERFORMANCE PHASE

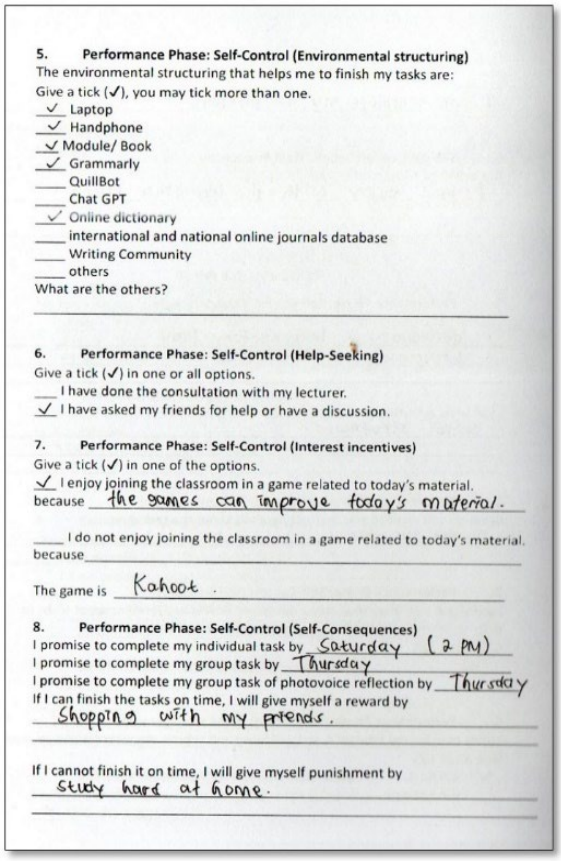
1. Performance Phase: Self-Control (Task Strategies)
Today, I get an assignment(s). The assignment(s):
• Individually : Introductory Part.
• Group work : Photovoice.

I use several strategies to do the assignments, such as:
Social strategies.

2. Performance Phase: Self-Control (Self-Instruction)
What do you want to ask/ instruct yourself about the tasks?
I can do this !

3. Performance Phase: Self-Control (Self-Imagery)
I use visual tree diagrams/ semantic maps/ flow charts/grid/ concept webs to help my learning, particularly in doing today's assignments.
Give a tick (✓)
___ Yes
✓ No

4. Performance Phase: Self-Control (Time management)
I must manage my time well, so I will finish and submit the assignments on time.
Give a tick (✓)
✓ I will do it.
___ I will not do it.



5. Performance Phase: Self-Control (Environmental structuring)
The environmental structuring that helps me to finish my tasks are:
Give a tick (✓), you may tick more than one.
✓ Laptop
✓ Handphone
✓ Module/ Book
✓ Grammarly
___ QuillBot
___ Chat GPT
✓ Online dictionary
___ international and national online journals database
___ Writing Community
___ others
What are the others?

6. Performance Phase: Self-Control (Help-Seeking)
Give a tick (✓) in one or all options.
___ I have done the consultation with my lecturer.
✓ I have asked my friends for help or have a discussion.

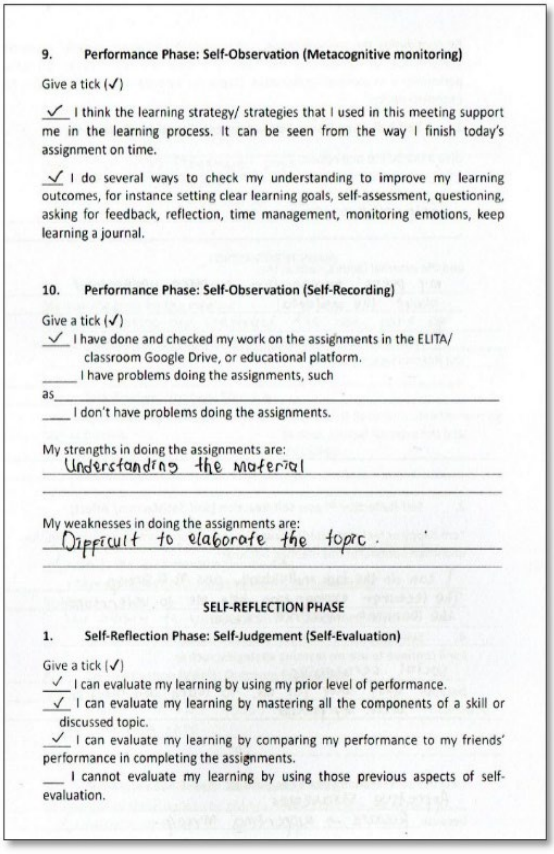
7. Performance Phase: Self-Control (Interest incentives)
Give a tick (✓) in one of the options.
✓ I enjoy joining the classroom in a game related to today's material.
because the games can improve today's material.

___ I do not enjoy joining the classroom in a game related to today's material.
because

The game is Kahoot.

8. Performance Phase: Self-Control (Self-Consequences)
I promise to complete my individual task by Saturday (2 PM)
I promise to complete my group task by Thursday
I promise to complete my group task of photovoice reflection by Thursday
If I can finish the tasks on time, I will give myself a reward by
Shopping with my friends.

If I cannot finish it on time, I will give myself punishment by
study hard at home.



9. Performance Phase: Self-Observation (Metacognitive monitoring)
Give a tick (✓)
✓ I think the learning strategy/ strategies that I used in this meeting support me in the learning process. It can be seen from the way I finish today's assignment on time.
✓ I do several ways to check my understanding to improve my learning outcomes, for instance setting clear learning goals, self-assessment, questioning, asking for feedback, reflection, time management, monitoring emotions, keep learning a journal.

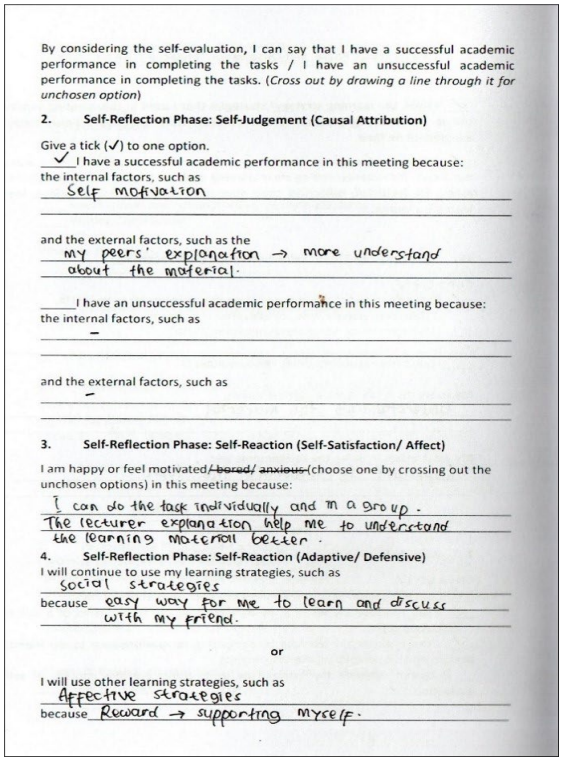
10. Performance Phase: Self-Observation (Self-Recording)
Give a tick (✓)
✓ I have done and checked my work on the assignments in the ELITA/ classroom Google Drive, or educational platform.
___ I have problems doing the assignments, such as
___ I don't have problems doing the assignments.

My strengths in doing the assignments are:
Understanding the material

My weaknesses in doing the assignments are:
Difficult to elaborate the topic.

SELF-REFLECTION PHASE

1. Self-Reflection Phase: Self-Judgement (Self-Evaluation)
Give a tick (✓)
✓ I can evaluate my learning by using my prior level of performance.
✓ I can evaluate my learning by mastering all the components of a skill or discussed topic.
✓ I can evaluate my learning by comparing my performance to my friends' performance in completing the assignments.
___ I cannot evaluate my learning by using those previous aspects of self-evaluation.



By considering the self-evaluation, I can say that I have a successful academic performance in completing the tasks / I have an unsuccessful academic performance in completing the tasks. (*Cross out by drawing a line through it for unchosen option*)

2. Self-Reflection Phase: Self-Judgement (Causal Attribution)

Give a tick (✓) to one option.

✓ I have a successful academic performance in this meeting because:
the internal factors, such as
Self motivation

and the external factors, such as the
my peers' explanation → more understand about the material.

____ I have an unsuccessful academic performance in this meeting because:
the internal factors, such as
–

and the external factors, such as
–

3. Self-Reflection Phase: Self-Reaction (Self-Satisfaction/ Affect)

I am happy or feel motivated/ ~~bored/~~ ~~anxious~~ (choose one by crossing out the unchosen options) in this meeting because:
I can do the task individually and in a group.
The lecturer explanation help me to understand the learning material better.

4. Self-Reflection Phase: Self-Reaction (Adaptive/ Defensive)

I will continue to use my learning strategies, such as
social strategies
because easy way for me to learn and discuss with my friend.

or

I will use other learning strategies, such as
Affective strategies
because Reward → supporting myself.