



Measuring the Influence of Self- Directed Learning on Argumentative Writing Outcomes: An Experiment Study

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Abstract

The current study measured the effect of self- directed learning (SDL) on writing argumentative essay. One hundred twenty-seven students were recruited as the participants of the investigation. The participants were classified to an experimental class (n =63) and a control class (n= 64) with cluster sampling technique. The experiment class were taught to implement SDL as a method for planning, designing, monitoring, and writing essays. The t test was employed to work with the data. The analysis confirmed that there were significant differences ($t(125) = 5.965, p = 0.000$) in the scores with mean score for [Self-Directed learners] ($M = 74.206, SD = 11.651$) was higher than and [Non-Self-Directed Learners] ($M = 62.046, SD = 11.321$). The mean differences ($Md = 12.160, 95\% CI: 8.125$ to 16.194) was claimed to be significant. It indicated that SDL gave positive significant effect on learners' argumentative writing skills. Participants who underwent SDL showed a significant improvement in their writing skills ($p < 0.05$).

Keywords: *argumentative writing, effect, outcomes, SDL.*

Introduction

In today's rapidly evolving educational landscape, the teaching method of SDL(SDL) has garnered considerable issue as a valuable approach to foster independent thinking and skill development among students. As educators seek to empower students with the skills necessary to thrive in the digital era, SDL has

emerged as a powerful pedagogical approach. SDL places the students at the center of classroom activities, allowing them to set goals, and actively engage in acquiring knowledge and skills. Moreover, the implementation of SDL gives contribution to the learning method. That appropriate with today's learners needs (Khat, 2017; Moradi, 2018; Morris, 2019). While SDL has been widely recognized for its positive effects on various educational outcomes, its specific influence on argumentative writing performance remains an area of significant interest and exploration. The central question that arises is whether SDL can positively impact argumentative writing performance. To address this question, some studies have conducted investigations measuring the effect of SDL on argumentative writing outcomes. By examining the potential benefits and challenges of SDL in the context of writing instruction, educators can gain valuable insights into how to effectively integrate SDL principles into their pedagogical practices.

While the effect of SDL on various educational outcomes has been extensively explored, there remains a notable research gap concerning the specific impact of SDL on argumentative writing performance. Despite the facts that the growing interest in SDL as an alternative pedagogical approach, its implications for enhancing students' argumentative writing abilities have not been thoroughly investigated. The following research gap highlights the need for further inquiry in this area. First, Limited Empirical Studies. Though some studies have examined the general effects of SDL on writing skills, there is a scarcity of empirical research focused specifically on argumentative writing. Few studies have directly measured the influence of SDL on the quality, coherence, and persuasiveness of argumentative essays produced by students. Consequently, the extent to which SDL can truly contribute to improved argumentative writing performance remains inadequately addressed. Second, student perspectives on SDL in Argumentative Writing. While much research has been conducted on educators' perceptions of SDL and its implementation, there is a lack of comprehensive investigations into students' perspectives. Understanding how learners perceive and experience SDL in the context of argumentative writing can provide valuable insights into their motivations, challenges, and overall attitudes toward this approach. Such insights could inform educators on how to better scaffold and support SDL practices to optimize its impact on students' writing performance. Third, varied application of SDL principles: SDL is a flexible concept that can be implemented in diverse ways, and its integration into writing instruction might vary across different educational settings and contexts. As a result, there is a need to explore how the application of SDL principles and influences argumentative writing outcomes. Examining the specific SDL strategies that yield the most significant improvements in writing

performance can aid educators in designing effective writing curricula. Fourth, diverse student populations. Existing research on SDL and writing performance has often focused on specific age groups, academic levels, or cultural backgrounds. However, considering the diverse student population in educational institutions, it is important to elaborate how SDL impacts argumentative writing in higher education level.

In both professional and educational settings, SDL is recognized as a valued talent (Rees & Bary, 2006). The ability of pupils to mix "external management (contextual control), internal monitoring (cognitive responsibility), and motivational (entering and task) factors associated with learning in an educational context" (Garrison, 1997, p. 20)./1Self-driven individuals who can use any learning resource to complete learning assignments are those who have a good range of SDL skills (Brockett & Hiemstra, 1991; Candy, 1991). A good SDL student can solve problems of knowledge management and acquisition regardless of the type of learning environment (Merriam & Caffarella, 1991; Gibbons, 2002). Previous research has demonstrated the benefits of SDL (Long, 1991). Meanwhile, the current literature, it is claimed that there are a few evidences explaining how learners' SDL skills connected to writing achievements.

Addressing these research gaps is essential for gaining a complete information of the potential benefits of SDL in improving argumentative writing performance. By bridging these knowledge deficits, educators can better harness the power of SDL to nurture students' critical thinking, communication skills, and overall writing proficiency, preparing them to succeed in academia and beyond. This investigation attempted to enrich to the growing body of knowledge on SDL and its effects on argumentative writing performance. By examining relevant literature and conducting an empirical investigation, we seek to identify the potential benefits of SDL on students' writing abilities. Moreover, the study aims to provide practical implications for educators, offering evidence-based method to foster SDL in the realm of argumentative writing instruction. There are several reasons to measure the influence SDL on Argumentative Writing Performance. First, Educational Improvement. As education continues to evolve, understanding the effect of SDL on argumentative writing accuracy can lead to improved teaching methodologies. Discovering effective ways to enhance students' writing skills through SDL can contribute to more efficient and student-centered learning environments, ultimately leading to better academic outcomes. Second, 21st Century Skills Development. Logical reasoning is a critical skill for success nowadays. It fosters critical thinking, research abilities, and effective communication – all of which are highly needed in this modern era. Investigating how SDL can bolster these skills can better prepare students to tackle future

challenges and thrive in their future careers. Third, Personalized Learning. SDL places learners at the center of their educational journey, allowing them to set goals and explore topics of interest. Researching the effect of SDL on argumentative writing performance can provide insights into how personalized learning experiences impact motivation, engagement, and the overall writing proficiency of students. First, intrinsic motivation. When students have the autonomy to follow the process of learning, they are eager to become intrinsically motivated. Examining the effect of SDL on argumentative writing can shed light on how intrinsic motivation influences the quality and depth of students' writing, as well as their willingness to persist and improve. Second, writing across disciplines. Effective argumentative writing is not limited to language arts or humanities classes; it extends across various academic disciplines. Investigating the effect of SDL on argumentative writing performance can reveal its potential to enhance writing skills across different subjects, contributing to a well-rounded education.

Third, teaching adaptations. The findings on the effect of SDL on argumentative writing can guide educators in adapting their teaching methods to better support students' individual learning styles and preferences. This adaptability can lead to more effective writing instruction tailored to the diverse needs of learners. Fourth, policy implications. Research on the effect of SDL on argumentative writing performance can inform educational policies and curriculum development. Evidence-based insights can lead to the integration of SDL principles into official guidelines, promoting progressive and student-centered educational practices on a larger scale. Fifth, continuous improvement. Education is a dynamic field, and ongoing research is crucial to improving instructional practices. Studying the effect of SDL on argumentative writing performance fosters a culture of continuous improvement in writing instruction, leading to better learning outcomes for students. By examining the effect of SDL on argumentative writing performance, researchers, educators, and policymakers can work collaboratively to harness the potential of SDL in nurturing students' writing skills, logical reasoning abilities, and overall successful learning. Therefore, the problem of the study: Is SDL effective for teaching argumentative writing? The investigation proposes to measure the effect of SDL on argumentative accuracy among students. The findings will have implications for educational practices, helping educators develop strategies to foster SDL to enhance argumentative writing performance. The study's outcomes can contribute to curriculum design, teacher training programs, and the promotion of student-centered learning approaches.

Self- Directed Learning (SDL)

Knowles (1975, p. 18) confirms that SDL is a learning model that students initiate to evaluate their own learning requirements, set goals, select instructional devices, employ effective learning strategies, and conduct assessments. When students set the objectives, SDL is a learning model (Fisher et al., 2001). Teachers offer guidance, mentorship, and scaffolding. The majority of SDL research shows that SDL can boost learners' motivation and self-evaluation (Schmenk, 2005; Dynan et al., 2008). Prior investigation (Fox, 2011; Sarmasoglu & Görgülü, 2014; Acar, 2014) have established that SDL pertains to graduate education. The results demonstrated that learning environments must be created to enhance students' self-control abilities. In the view of Edmondson et al. (2012), learners that use SDL efficiently gain greater advantages than other students. Ilhan- Beyaztaş (2014) claimed that the students becoming successful students by establishing the study purposes, setting up a conducive environment, and monitoring and evaluating the progress.

SDL also means as a student's capacity to innovate studying and responsibility for the process of learning, making decisions on what, how, and when to learn. It reflects a proactive approach to gaining knowledge and skills beyond traditional classroom instruction. In Candy's view (1990), SDL is a method to transfer learners into lifelong learners. People are better prepared for lifetime learning thanks to it (Spencer and Jordan, 1999). Individuals are in control of organizing, sustaining, and assessing their learning experiences during this process (Merriam et al. 2007). In SDL class, the duty to learn changes from teachers to the learners (Grover, 2015). The conceptualization, planning, execution, and assessment of learning process supervised by learners are all included in SDL (Brookfield, 2009). It may be described as an instructional strategy where students are responsible for the process of learning. In addition to this, SDL is regarded as a learning goal that students work. Individuals must embrace their own individuality and preferences to take initiation (Kaufman, 2003).

Additionally, SDL helps people develop their autonomy, motivation, and lifelong learning skills (O'Shea, 2003). According to studies on SDL (Adnan et al., 2020; Hashim et al., 2020), SDL has some benefits for both students and teachers. By empowering students to create their learning goals, find materials, and evaluate their work This proactive approach to education promotes both academic excellence and personal development. Numerous experimental and descriptive research have looked into the significance of SDL for raising student performance in language classes. According to the findings of these studies, SDL abilities improve students' success in any subject area and at all academic levels (Claro & Loeb, 2019; Duckworth et al., 2019). Previous studies have revealed that various writing

processes and techniques are viewed as SDL techniques (Oxford, 2017). Because of this, students must pay closer to the methods employed to enhance their writing abilities and satisfy the requirements. SDL is crucial for pupils to use when learning how to write essays. SDL, according to Hardianti (2013), is a successful method of instruction for students because college needs independent learning. According to Ramdhani (2019), the use of SDL is often successful in enhancing students' academic writing abilities. Students are challenged to communicate their ideas cogently and convincingly in argumentative writing while using proof and logical reasoning. The mix of critical thinking, organizational, and rhetorical skills required for effective argumentative writing makes it a prime domain for investigating how SDL affects academic writing performance. Their study's conclusions demonstrated that SDL enhances the writing abilities of EFL students. In a different study, Olivier (2016) mentions the urgency of SDL on participants' writing abilities was highlighted in their questionnaire responses. Additionally, Rivera and Pinilla (2017) discovered that the use of SDL helped EFL learners while structuring ideas for creative writing. More recently, the findings of Sriwichai and Inpin's investigation (2018) showed that SDL increased the writing skills of EFL higher education.

Argumentative Writing

Argumentative writing, combining writing skills and critical thinking, is the highest degree of writing for college learners. According to Setyowati et al. (2017), teachers commonly asked students to take a stand on a topic and support it with arguments from sources in their writing. In a democracy, it is assumed that people will be able to defend their views while taking into account those of others. In the scientific community, students also should have the ability to interpret, elaborate, organize, and integrate information (List & Alexander, 2019). People can develop in both their intellectual and personal lives by learning to argue (Andrews, 2000). Argumentative writing is a vital skill in academic, professional, and personal contexts. It involves presenting well-structured, persuasive arguments supported by evidences, claim, counterclaim and critical analysis. Mastering this skill not only enhances a student's ability to communicate effectively but also nurtures critical thinking, problem-solving, and self-expression. With the increasing demand for effective communication. The value of mastering effective argumentative writing skills cannot be overstated. According to Ferretti et al. (2009), it is the textual act of presenting and debating arguments. The most well-known theoretical framework for the fundamental components of an argument to date is the argumentation model (Toulmin, 2003). Learners were inspired to create

arguments by conducting independent research on a topic to develop a logical reasoning. An argument is a collection of statements, and critical thinking is closely tied to this idea. Claims and conclusions were supported by some arguments (Indrilla & Ciptaningrum, 2018). To come to a convincing conclusion, a writer must provide the data in a logical, well-organized manner (Fisher, 2013).

Method

This investigation aims to measure the influence of SDL on writing argumentative essay. In addition, the study adopted a quasi-experiment design method to gain a comprehensive understanding of the topic discussed. The study recruited 127 students as participants of the study. They were the ongoing argumentative writing class during the odd semester. The purposive sampling techniques was employed. The participants were divided into experiment group (n=63) and control group (n=64). The data were collected through the following methods. First, the participants completed self-report questionnaires to assess their SDL abilities. Here, SDL was assessed using standardized scales like the SDL Readiness Scale. The number of the questionnaire items was 40 statements. Meanwhile, the argumentative writing performance was evaluated based on standardized rubrics, analyzing coherence, organization, logical reasoning, evidence presentation, and overall writing argumentative quality. The procedure to collect the data were as follows. Week 1: The first-class session included a pre-test. Following that, the experiment class participated in a program called learner training that helped student's get ready to perform SDL outside of the class. Its objective is to methodologically and mentally prepare learners. According to the kids' interests, the teacher in this example incorporated several SDL tasks. He offered pupils many incentive exercises to encourage participation, critical thinking, and individual choice. The teacher also gave students the option to choose which task to complete at any time, and he exhorted them to take charge of their education and the class's activities. They were tasked with self-reflection, self-evaluation, and metacognitive use. The entire program was a practice in learning how to learn. The psychological training aims to introduce the idea of SDL and cultivate a supportive attitude toward those who get it. Students must respect one other's willingness, self-assurance, and desire to learn.

Every student in the experiment class took on the role of an independent learner practicing SDL outside of the class from week two to week four. Each week, they selected what to write about and pick topics for argumentative essays that they were interested in. In this instance, the professor acted as a counselor. Every week, the instructor provided criticism and suggestions on several elements of the students' SDL in the Work Notes criticism section. Each student and the teacher

have a one-on-one discussion about their SDL during class. They received verbal guidance regarding their SDL. Beginning in week four and continuing through week ten, both groups received the materials for argumentative writing. The psychological training aims to instill the idea of SDL and cultivate a favorable attitude toward others. On the other hand, SDL was not used to treat the control group. However, they received standard class treatment. At the conclusion of the course, all students received the writing argumentative post-test. Their task was to compose a 450–500 word argumentative essay. The following themes should be their selection: A. Indonesia must be free from corruption; B. IAIN Palangka Raya lecturers should be nice with their students; C. Public smoking is dangerous; and D. Pornographic media should be outlawed. The study used two variables: an independent variable (SDL) and a dependent variable (argumentative writing score). Quantitative data analysis was done to examine the data. Due to the comparison of the mean scores of argumentative essays across two groups (self-directed learners vs. non-self-directed learners), the study used an independent t-test.

Results

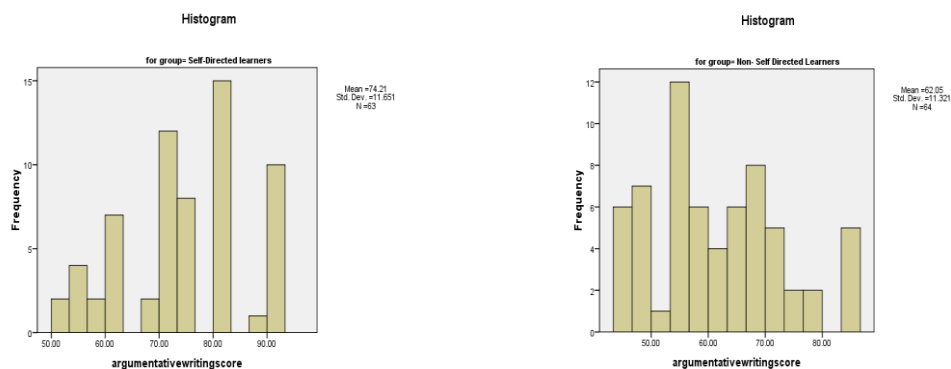
The subjects of the study consisted 127 EFL learners consisting of SDL learners (n= 63) and Non- SDL (n= 64) as follows.

Table 1. Participants

	Group	N	Mean	Std. Deviation	Std. Error Mean
Argumentative writing score	Self-Directed learners	63	74.206	11.651	1.468
	Non-Self-Directed Learners	64	62.047	11.321	1.415

The mean scores of both groups were shown in the figure below.

Figure 1. The Means Score



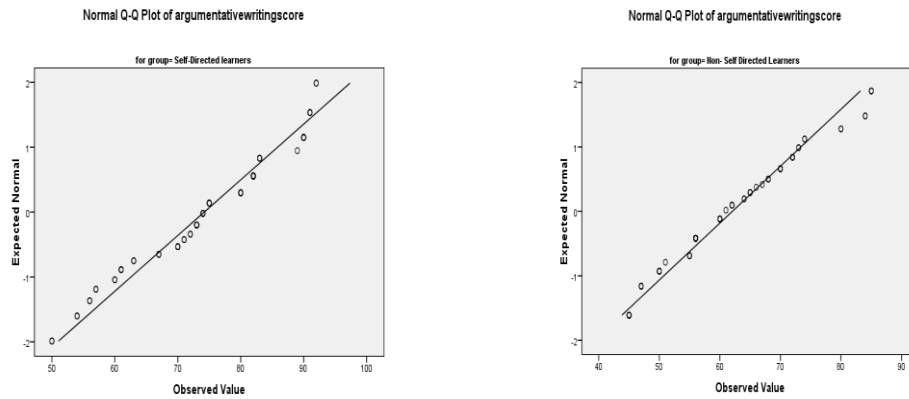
Before testing the hypothesis, the normality and homogeneity tests were performed to meet the assumption test. The result of Kolmogorov and Smirnov test was as follows:

Table 2. Normality

		Kolmogorov-Smirnov ^a		
	group	Statistic	df	Sig.
Argumentative writing score	SDL	0.103	63	0.093
	Non-SDL	0.110	64	0.054

Kolmogorov and Smirnov test of normality was conducted to determine whether SDL and Non-SDL data was normally distributed or not. The output evidenced that it should be rejected the null hypothesis for Self-Directed learner's data ($p = 0.093 > 0.050$). The finding also showed that the null hypothesis was rejected for Non- Self-Directed Learner data ($p = 0.054 > 0.050$) and concluded that data was normally distributed. The result of QQ plot can also be used to see the data represented a normal distribution, as seen below.

Figure 2. QQ Plot



The figure showed that the majority of points fall onto the line then it was claimed that the data represented a normal distribution. Then, the Levene’s test proof the data were not violated the homogeneity, as shown below.

Table 4. The Levene’s test

		Levene's Test for Equality of Variances	
		F	Sig.
Argumentative Writing score	Equal variances assumed	0.010	0.920
	Equal variances not assumed		

The table found that value of the Mean sig. was 0.920 > 0,050. It was claimed that the variance of SDL and Non-SDL data was not violated the homogeneity.

Testing Hypothesis

To test the research hypothesis stating that SDL did not give effect on argumentative writing, the t test was applied as shown below.

Table 5. Independent samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Upper Lower	
		F	Sig.	t	df					
Argumentative Writing score	Equal variances assumed	0.010	0.920	5.965	125	0.000	12.160	2.039	8.125	16.194
	Equal variances not assumed			5.964	124	.000	12.160	2.039	8.124	16.195

A t-test was performed to see the difference of means of the learners' argumentative writing performance for SDL learners and Non- SDL learners. There were differences ($t(125) = 5.965, p = 0.000$) in the scores with mean score for [Self-Directed learners] ($M = 74.206, SD = 11.651$) was higher than and [Non- Self-Directed Learners] ($M = 62.046, SD = 11.321$). The differences in the means ($Md = 12.160, 95\% CI: 8.125$ to 16.194) was significant. Hence, alternative hypothesis was accepted.

Conclusion

Learners' argumentative writing performance at ($t(125) = 5.965, p = 0.000$). The significant difference occurs in argumentative writing scores of the learners between the class underwent SDL ($M= 74.206$) and those who taught using Non-SDL ($M= 62.046$). The average argumentative essay scores increased after the intervention using self-directed learning. It meant that SDL gives effect on students' argumentative writing skills. Participants who underwent SDL showed significant improvement in writing ($p < 0.05$).

Discussion

The study's aim is to measure the effect of SDL on argumentative writing performance. Based on the research finding, it evidences a significant difference in argumentative writing scores of the learners between the classes underwent SDL and those who taught using Non-SDL. It means that SDL has a significant positive impact on students' argumentative writing skills. The outcome is consistent with earlier research from Akmilia et al. (2015), Olivier (2016), Rivera & Pinilla (2017), Sriwichai & Inpin (2018), Aghayani & Janfeshan (2020), and others. They claim that SDL plays an important role on effective learning. They claim that children should change from teacher-centered learning to student-centered learning. Additionally, according to these studies, using an SDL approach with students can be a useful strategy for helping them advance their language proficiency. The students who were instructed using the SDL technique performed higher on the posttest than other students. Based on the study's findings, it can be inferred that while each SDL element is crucial for successful self-directed learning, students require assistance in order to successfully plan, monitor, and assess their own learning. Instructors may help learners who engage in SDL and promoting autonomy as language students by openly exposing these parts and giving them chances to practice writing with them. Thus, the explicit teaching of SDL techniques considerably improves the writing skills of language learners. Higher education learners should also be permitted to determine their needs of learning needs to improve their SDL abilities. It is important to discuss different learning strategies in the classroom and to urge students to keep track of and assess their own learning. Finally, individuals should be assisted in becoming lifelong learners by using customized learning opportunities that enhance their SDL skills.

Pedagogical Implication

The finding concludes that there is a significant effect of SDL on writing argumentative essays. The study's outcomes can contribute to curriculum design related to SDL, teacher training programs, and the promotion of student-centered learning approaches. It is, therefore, there are some pedagogical implications as follows. First, as the study highlights the positive association between SDL and argumentative writing, educators can integrate SDL methodologies into the curriculum. Encouraging students to set the goals, explore diverse resources, and reflect on their achievement can foster critical thinking skills, enhancing their ability to construct compelling arguments in written form. In this sense, lecturers should promote SDL for students and provide resources to help students take more ownership of their learning process. Lecturers are advised to create an

environment that fosters students' autonomy, allowing them to choose topics and writing strategies that interest them and suit their learning styles. Providing resources, guidance, and autonomy may help learners to take charge in classrooms setting of their learning process and improve their argumentative writing skills. Second, our institution can integrate SDL modules into the curriculum, allowing students to work on argumentative writing projects independently, exploring diverse topics and viewpoints. It is suggested that the institution provides more teacher training programs for implementing SDL in language classes. Third, it is obvious that SDL encourages students to think critically, analyze information, and construct coherent arguments. Pedagogical approaches should prioritize critical thinking skills to enhance argumentative writing abilities. It is advisable that students set their learning goals, identify appropriate resources and explore diverse resources, and reflect on their progress can foster critical thinking skills, enhancing their ability to construct compelling arguments in written form. Fourth, with SDL playing a significant role in argumentative writing performance, integrating educational technologies that facilitate personalized learning can be beneficial. Adaptive learning platforms, online resources, and interactive argumentative writing tools can help students pursue SDL paths and improving their argumentative writing skills. Moreover, faculty members can get benefit from professional development workshops that focus on understanding the dynamics between SDL, and argumentative writing performance. Equipping educators with knowledge of these relationships can enhance their ability to create a supportive and engaging learning environment. By incorporating these pedagogical implications, educators and educational institutions can foster a more holistic and student-centered approach to learning. This, in turn, can lead to improved argumentative writing skills, critical thinking abilities, and overall academic performance among students.

Finally, the study on the influence of SDL on argumentative writing may have several limitations. First, it lies on sample size and representativeness. The size of the study's participant group may be limited (only 127 participants), and they might not be fully representative of the population. This can impact the generalizability of the findings to a broader audience. Therefore, it is suggested that other researchers recruit bigger samples to validate the finding. Second, participants who volunteer for SDL studies may have a different level of motivation or interest in the topic, which can bias the results. It is; therefore, the further investigation needs to add more variables such as motivation, interest, self-efficacy, anxiety and so on. Third, the duration of the study might be limited, making it challenging to observe long-term effects of SDL on argumentative writing

performance. Therefore, it is recommended to conduct further investigation with longer duration of the study to gain long term effects of SDL on argumentative writing performance. Fourth, in some cases in experimental study, it might be difficult to establish a proper control group for comparison, especially in educational settings where the learning environment can vary significantly. Therefore, a suitable control group should be established for the next study's comparison. Future qualitative research may also be done to thoroughly examine the settings in which university students learn SDL skills and/or how they develop these skills. The self-regulation abilities of learners can be made a comparison based on level of education stratified (those in junior high school versus senior high school; bachelor's versus master's students, vocational school versus high school, private versus public schools and so forth). Additionally, the SDL abilities of academics, teachers, and students from various educational levels may be investigated further using various approach.

Despite these potential limitations, research on the effect of SDL on argumentative writing performance is valuable and can still provide valuable insights and implications for educational practices. It is advisable that other researchers should be aware of these limitations and strive to address or mitigate them to enhance the validity and reliability of their findings.

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