

EXPLORING THE IMPACT OF ASSESSMENT AS LEARNING ON EFL LEARNERS' WRITING PERFORMANCE: A STUDY OF VARYING LEVELS OF WRITING ENGAGEMENT

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Abstract

In English as a Foreign Language (EFL) higher education, writing ability requires effective assessment. This study investigates the effect of Assessment as Learning (AaL) on students' argumentative writing performance. While AaL has been recognized for improving writing, limited research has explored its effects in relation to students' writing engagement (WE). This study examines (a) whether students taught through AaL perform better in writing than those given teacher feedback, (b) whether different WE level lead to different performance outcomes, and (c) whether there is an interaction between assessment type and WE level. Using a quasi-experimental 2x2 factorial design, the study involved two fourth-semester classes at an Islamic university in Kediri, Indonesia. One class (15 students) received AaL, while the other (13 students) received teacher feedback over 12 sessions. The AaL group followed Lee's (2016) framework, incorporating personal goals, writing criteria, descriptive feedback, self- and peer assessment, and learning logs. Writing performance was measured through pre- and post-tests assessed by two raters, and WE levels were determined using a 27-item Writing Engagement Scale. Results from a two-way ANOVA showed a significant effect of AaL on students' writing performance. However, WE level and their interaction with the assessment method did not significantly affect outcomes. The findings suggest that AaL, particularly when adapted through Lee's principles, enhances writing performance regardless of WE level. While engagement may not be the primary determinant of the success of AaL, EFL instruction could utilize AaL to enhance students writing outcomes and engagement in the classroom.

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INTRODUCTION

Writing not only serves as a fundamental means of communication but also plays a pivotal role in academic success especially for English as a Foreign Language (EFL) students. Recognizing the paramount importance of writing, educational institutions have increasingly emphasized the need to teach and assess writing skills effectively (Arrafii, 2021; Lee, 2016; Nurdianingsih, 2018). Central to this endeavour is the evolving landscape of assessment, a

key determinant influencing students' performance in writing. Moreover, due to the significance of writing in language acquisition, the process of assessing writing performance is equally crucial. Since growing language competence inevitably necessitates assessment (Lee, 2017), examining the methods employed by teachers to assess students' writing in the classroom is crucial. On the other hand, Hidayat et al. (2023) define assessment as a self-developing learning instruction and requires a broader focus on feedback interventions, especial students' responses to feedback and the learning environments in which feedback works. It is further stated that assessment is an intergral component in the daily practice of students, teachers, and peers that aims to collect, reflect, and respond to information through dialogue, demonstration, and observation with the goal of encouraging continuous learnign. Moreover, to ensure that assessment is intergrated into the learning process, a student-centered approach that reflects a student-oriented curriculum is required.

In higher education, students are expected to develop proficiency in argumentative writing. Argumentative writing is a key component of academic integrity and is essential for students to succeed in higher education. It requires students to formulate a clear thesis, support their arguments with evidence, and critically analyze opposing viewpoints. This form of writing is essential for academic success across disciplines, enabling students to construct well-reasoned, evidence-based arguments that are crucial for participation in scholarly and professional contexts (Noroozi, 2023). Consequently, in this study, student performance in writing argumentative essays is a critical focus, and the assessment of this performance through proper assessment methods will decide the students' outcomes.

In assessing writing, the traditional product-oriented approach to assessment has given way to a more dynamic one offered by the process-oriented approach as well as the learning-oriented approach to teaching writing (Cahyono et al., 2021; Mamad & Vigh, 2023). Research on the assessment of writing has revealed that an appropriate assessment approach would lead to improvements in students' writing ability (Chong, 2018; Yan & Pastore, 2022). For example, an assessment approach that emphasizes the learning process, rather than results, is more effective for improving student writing (Lam, 2018; Xiang et al., 2022). In addition, a great deal of research (Chong, 2018; Tayyebi et al., 2022; Wang & Lee, 2021) and educational policy (Arrafii, 2021) emphasize the significance of learner-centred language assessment in writing courses. In this vein, assessment as learning (AaL) is one of the most influential theories linked to classroom writing learning that have been established in this recent decade (Dann, 2014; Fitriyah et al., 2022; Lee et al., 2019).

AaL emphasizes the importance of the learner as a link between assessments and student growth (Earl, 2013). Here, AaL encourages students to reflect on their own performance and take responsibility for their own learning by engaging in self-reflection and regulation so that they can identify and address the gaps between their current and desired levels of knowledge and skill (Vygotsky, 1978). Similarly, Lam (2018) states that AaL emphasizes students active participation in evaluating reconstructing knowledge of EFL with or without teacher guidance and it supports learning with a focus on reflection it encourages interactive pedagogical approaches that inform teaching and learning with useful assessment information including both internal and external feedback.

Numerous studies have also highlighted the positive impact of AaL on students' writing abilities, showcasing its potential for substantial improvement (Lam, 2018; Sun & Zhang, 2023; Xiang et al., 2022). AaL can foster the development of metacognitive skills in EFL writing, as noted by Sun and Zhang (2023) and Xiang et al. (2022). Reflection on the writing process, peer review, and self-assessment as the main features of AaL can enhance students' awareness of their writing strategies and techniques, playing a role in enhancing learners' motivation in EFL writing classes. In AaL, the self-assessment approach can contribute to increasing engagement and enthusiasm for writing tasks (Dann, 2014). AaL is different from

other assessments approaches in EFL contexts in a way that it encourages students to think independently as a resource to be more active in connecting learning abilities (Schellekens et al., 2021). The study has compared AaL with AoL and AFL as a way to indicate how it differs from other assessments. It shows that AoL refers to using assessment to judge students' learning near the end of an instructional unit while AfL is a learning-oriented process, facilitating students to receive, generate, and act upon feedback to improve learning (Clark, 2012). This process, planned or unplanned, chiefly takes place in the classroom, triggered by a range of contingent pedagogical moments, which in turn inform effective teaching and learning (William, 2011). Likewise, Bennett and Gitomer (2009) and Clark (2012) concur that AaL capitalizes on students' ability to self-assess, self-monitor, and self-regulate with reference to the students' set goals in order to close their learning gaps. AaL further allows the students to reflect on the outcomes of each assessment and its impact.

Given its significance, this research focuses on the effect of the AaL approach on students' performance in argumentative writing. While various forms of writing are important, argumentative writing stands out due to its requirement for students to engage deeply with content, construct well-reasoned arguments, and communicate their ideas effectively. The absence of AaL in a writing class can potentially lead to various risks and negative effects. For example, without AaL, students may receive limited feedback and guidance during the writing process (Xiang et al., 2022). Regular assessments often focus on the final product, leaving students with minimal input on how to improve their writing. By implementing AaL, which emphasizes student involvement in the assessment process through setting personal goals, establishing success criteria, providing descriptive feedback, and enabling self- and peer assessment (Lee, 2016), this study aims to investigate how these principles impact students' argumentative writing.

The AaL principles in this study follow Lee's (2016) AaL framework. The approach encompasses several key components: (1) motivating students to establish individual objectives, (2) enabling students to collaboratively determine criteria for success with their peers and teacher, (3) delivering descriptive feedback to students, (4) empowering students to engage in self- and peer assessment, and (5) fostering students' sense of ownership over their writing through the use of learning logs (Lee, 2016, 2017). Yan and Yang (2021) had similar framework that includes three components of AaL: sharing and analysing exemplars, peer review, and self-reflection based on peers' performance. These have been included in Lee's framework.

In addition, studies have consistently shown that the effectiveness of AaL, is closely intertwined with metacognitive factors. For instance, student motivation (Jafarigohar, 2020; Lam, 2018), autonomy (Gholami, 2016; Ismail et al., 2023), and Self-regulation (Panadero et al., 2018). Moreover, engagement (Shen & Chong, 2022; Xu & Zheng, 2024) emerges as predominant variable frequently discussed in conjunction with assessment. Student's self-assessment ability and writing engagement (WE) determine how best to use writing criteria, feedback from teachers, peers, or automated feedback to improve their writing (Lee, 2016; Xiang et al., 2022). Interest in how students engage in the assessment process has grown significantly in recent years (e.g., Dang et al., 2022; Zhang & Hyland, 2022). The critical factor for learning is the students' active engagement with feedback in the assessment process, rather than the feedback itself (Zhang & Hyland, 2022). Several studies have revealed the contribution of assessment to students' engagement (Pourdana & Tavassoli, 2022; Zhou & Hiver, 2022); however, limited studies have investigated the role of engagement on the students' writing ability (Jin et al., 2022). As feedback is a crucial part of AaL, the impact of AaL as seen from their engagement level is still understudied.

Wang and Lee (2021) stated that students who high level of engagement have high interest in learning. Interest in learning means the degree to which students participate in a

task for enjoyment, challenges or mastery. Students who are highly interested in language learning are more likely to engage in learning and obtain better achievements (Fletcher, 2016). They who have high level of engagement are always high achievers (Fletcher, 2018). Whereas, low achievers tend to have little interest, which lead to low engagement and which may inhibit their progress in language learning. For this study, students' engagement was measured using questionnaire adapted from Elmaadaway (2018) and Wang and Lee (2021) that cover four components of engagement, cognitive, behavior, affective and agentic engagement.

Therefore, due to the essential role of WE, there is still a need for further research to completely understand the prognostic effects of engagement on students writing performance. To gain a holistic understanding of the factors influencing writing proficiency, the current study included WE characteristics in the investigation. This research endeavours to redress this scholarly gap by systematically incorporating considerations of WE within the implementation of AaL regarding the students' writing performance. Hence, an experimental factorial design was adopted in this study, comparing the effects of various AaL components across perceived level of WE, against a control group relying solely on teacher feedback. In so doing, the following are the research questions: Do the students who were taught by using AaL have better writing performance than those who were taught by using teacher feedback? Do the students of experimental and control group who have different levels of engagement in writing have different writing performance? And is there any interaction between the assessment method (AaL and teacher feedback) provided and the level of engagement on students' writing performance?

RESEARCH METHOD

Research Design

To answer the research problems, an experimental design was adopted. The quasi experimental was done since the intervention was implemented without initial randomization. It was not feasible to randomly assign students to different groups because the existing groups were already in place. Quasi-experiments allow researchers to study the effects of interventions without random assignment. It also enhances the external validity of the study, meaning the findings are more likely to generalize to real-world settings (Creswell, 2012). The quasi experimental research seeks to reveal the causal relationship between the variables, where treatment in the form of implementing AaL was administered in the writing instruction while any other relevant variables were being controlled in order to observe the effects of the treatment on the students' writing performance (Ary et al., 2010). This study mainly explored the effects of AaL across the use of meta-cognitive strategies of engagement on the students writing performance.

This study was then a factorial experimental design. A factorial experiment design is a statistical method used to investigate the effects of multiple independent variables (factors) on a dependent variable. It involves manipulating the levels of each factor and measuring the resulting impact on the dependent variable to identify the unique contributions of each factor and their interactions (Montgomery, 2017). The study employed a 2x2 factorial design (Creswell, 2012). This study examined several variables: (1) two independent variables: AaL and teacher feedback, (2) one dependent variable: students' argumentative writing performance, and (3) one moderating variable: WE. The assessment strategy variables were represented by AaL (experimental group) and teacher feedback (control group). WE had two levels: high and low level of WE.

In conducting the treatment, the researcher was the teacher for both experimental and control groups. All participants in the experimental group used self-assessment checklist for argumentative writing adopted from Nimehchisalem et al. (2014). The checklist was given before the writing process for the assessment training together with writing criteria in order be

used as the control in their writing. The students were instructed to use this checklist during their writing process. At the end, the checklist was submitted to teacher as the tool for teacher to assess the students' writing. The assessment process in the experimental class followed Lee' (2016) AaL framework: (1) setting personal goals, (2) writing criteria, (3) descriptive feedback, (4) self- and peer assessment, and (5) implementing learning logs. On the other hand, students in control group were taught without explicitly directing them to set learning goals, have self-assessments, and use learning logs. The rest activities, the model, the writing criteria, and the number of drafts were the same.

Population and Sample

This research was conducted to undergraduates at the English language education program in one of Islamic university in Kediri, East Java, Indonesia. The population in this research was the fourth semester students who took three-credit academic writing course, namely Academic Writing: Research Reviews. The classes have already been set by the department. The researcher could not randomize the participants. There were 142 students of the fourth semester students that were divided into 10 EFL skills classes including writing class. In each class of language skills, there were typically 12 to 15 students. These classes were specifically designed to enhance language skills, and therefore, the student count was intentionally kept low to optimize the teaching and learning experience.

Of the population, two classes were taken as the sample of the study. Class A1 which consisted of 15 students was the experimental group and class C1 which consisted of 15 students was the control group. Purposive sampling was used in the research. A total of 28 participants from two groups participated in the study, 15 students from experimental and 13 students in control class. To see the homogeneity level of both group, homogeneity test was conducted after the pre-test was done. The result showed that the participants were considered as homogenous seen from the result of homogeneity test of the pre-test score.

Instruments

This quasi-experimental study employed writing tests and questionnaires to collect quantitative data. The primary data—students' writing scores—were obtained through pre- and post-tests in the form of argumentative essays. The prompts for both tests were selected based on student interests. In the pre-test, students wrote essays from a single prompt, while in the post-test, they chose one of three topics. Each test lasted 100 minutes and was conducted with paper and pen, with students' gadgets collected to prevent AI-based plagiarism.

Essays were assessed using a rubric adapted from the structure of argumentative essay organization, covering five components: (1) introduction and thesis, (2) content and supporting details, (3) counter-argument, (4) organization, and (5) vocabulary/ style/ mechanics. Each component was scored from 1 to 20, with equal weight (20%), resulting in a total score ranging from 5 to 100. Two experienced writing lecturers independently rated the essays. Raters underwent training to ensure consistent understanding of the rubric and scoring criteria. Inter-rater reliability was established using Intraclass Correlation Coefficient (ICC), which showed excellent reliability: 0.957 for pre-test and 0.919 for post-test. To ensure content validity, the test prompts were reviewed by two essay writing lecturers to confirm appropriateness for students' levels and alignment with writing performance goals.

All participants in the AaL group took the writing engagement (WE) questionnaire adapted from Elmaadaway (2018) and Wang and Lee (2021). It has four aspects; cognitive, behavioural, affective, agentic engagement in writing the essay which consists of 27 items. The adaptation was made because the questionnaire was customized to the context of the study and the participants situation. The items were modified to reflect activities on argumentative writing. The participants were asked to think about their experiences before,

during, and after creating composition. The aim was to measure the students' efforts in organizing and managing their L2 writing and learning processes.

Table 1

Blueprint of WE Questionnaire Adapted from Elmaadaway (2018) and Wang and Lee (2021)

Writing engagement	Categories	Items
	Behavioural engagement	7
	Cognitive engagement	7
	Affective / emotional engagement	7
	Agentic engagement	6

The tryout results showed that all questionnaire items were valid and reliable, with a Cronbach's Alpha of 0.964—well above the *r*-table value (0.349), indicating high reliability. Students were classified as having high or low WE based on the empirical mean of their group. If their score was above the mean, they were considered highly engaged; if equal to or below, they were classified as having low engagement. This empirical approach was chosen over hypothetical statistics, as the questionnaire was specifically developed for this study. Following Montgomery (2017), using empirical means allows a more accurate classification based on actual participant data.

Data Analysis

The study began by assigning two selected classes into control and experimental groups. The control group received conventional assessment, while the experimental group was assessed using the Assessment as Learning (AaL) approach. Students first completed a questionnaire measuring their writing engagement, followed by a pre-test. Both groups were taught argumentative writing involving instructional stages such as building knowledge, modeling, joint construction, and independent construction. Instruction was delivered by the first researcher, and all writing tasks were completed manually to prevent plagiarism through AI-generated content. The experimental group engaged in AaL activities, including setting learning goals, developing rubrics with peers and the teacher, conducting self- and peer assessments using checklists, receiving descriptive feedback, and maintaining reflective learning logs (Lee, 2016). The control group followed the same timeline but received only conventional teacher feedback.

After data collection, the analysis addressed the research questions by examining students' writing performance scores, writing engagement (WE) scale, and conducting a two-way analysis of variance (ANOVA). In relation with the characteristics of the study, ANOVA was used because factorial designs to show interactions (e.g., one treatment works only under certain conditions). It is designed to test those interaction effects, which *t*-tests cannot do. In analysing the data, the first phase assessed students' writing performance. Interrater reliability was checked using scores from two lecturers—the researcher and another writing instructor. The students' essays, scored with an argumentative writing rubric, were averaged to obtain final scores. The second phase involved descriptive statistics (mean, standard deviation, minimum, maximum, and range) for writing performance and WE. Before inferential analysis, normality (Shapiro-Wilk test) and homogeneity (Levene's test) were tested. The third phase used a two-way ANOVA via SPSS to test the effects and interaction of AaL and WE on writing performance. The results were interpreted at the .05 significance level.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

In AaL group, pre-test score was 43.13. After being given the AaL, the average score increased to 84.60 with a standard deviation of 4.36. In the teacher feedback group, the total score also increased from the previous 29 to 65.38 and the standard deviation was 16.12. The next statistical analysis is to test the normality of the data from the scores for each component.

Data follows a normal distribution pattern if the significance value (sig) is greater than 0.05 (5%). Based on the results of data normality testing using the Shapiro Wilk test, it is known that there is some data that does not follow a normal distribution pattern.

Analysis of the Score of the Post-test between Experimental Group and Control Group

After the descriptive statistics results for the pre-test and post-test was revealed, the next step is revealing the interaction between all the independent variables with the dependent variable. Therefore, a two-way ANOVA was applied. The analysis revealed the impact of assessment strategies, the impact of engagement level on students' writing performance, and the interaction among the variables. The results of test are displayed in Table 2.

Table 2

The results of a two-way ANOVA Examining the Impact of AaL Approach on Students' Writing Performance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4851.190 ^a	6	808.532	5.616	.001
Intercept	89851.206	1	89851.206	624.065	.000
Groups	3233.052	1	3233.052	22.455	.000*

*significant at 5%

Table 2 answers the first research question is to investigate the impact of implementing assessment approaches (AaL and teacher feedback) on students' writing proficiency. The two-way ANOVA test yielded a significant value of 0.000 as shown in Table 2. The value is less than 0.05, indicating a significant effect of delivering AaL on students' argumentative writing performance. There is significant difference in writing performance between the students with AaL and the students who have teacher feedback. The results revealed that students in the AaL group significantly outperformed those in the teacher feedback group in their post-test scores of argumentative writing. While both groups improved from pre-test to post-test, the gains were much greater in the AaL group. This indicates that the AaL approach had a stronger impact on writing performance than traditional teacher feedback.

The Effect of the Students' Level of WE on Writing Performance

Another descriptive statistical analysis on writing scores, categorized by group, was students' WE level. The finding shows students who received AaL treatment and had low level of engagement achieved an average writing score of 82.83 with standard deviation 4.05. Conversely, students who demonstrated significant engagement achieved an average writing score of 85.77, accompanied by a standard deviation 3.47. Students that were provided with the teacher feedback approach and had a lower level of engagement. The average writing score for highly engaged students is 69.62. To test the effect of WE level on the students' writing performance, two-way ANOVA examining the impact of WE on students' writing performance was used (see Table 3).

Table 3

The Results of a two-way ANOVA Examining the Interaction between both Assessment Approaches, Different Level of WE and Writing Performance

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	4851.190 ^a	6	808.532	5.616	.001
Intercept	89851.206	1	89851.206	624.065	.000
Groups	3233.052	1	3233.052	22.455	.000*
Level of Engagement	126.684	1	126.684	.880	.359
Groups * Level of engagement	263.511	1	263.511	1.830	.190

The obtained p-value from the two-way ANOVA test on Table 3 shows significant value 0.359. Since the result is more than 0.05, it is concluded that there is no statistically significant impact of WE level on students' writing performance. Thus, there was no significant different writing ability between students who had high level of WE and they who had low level of WE in both groups (see Figure 1).

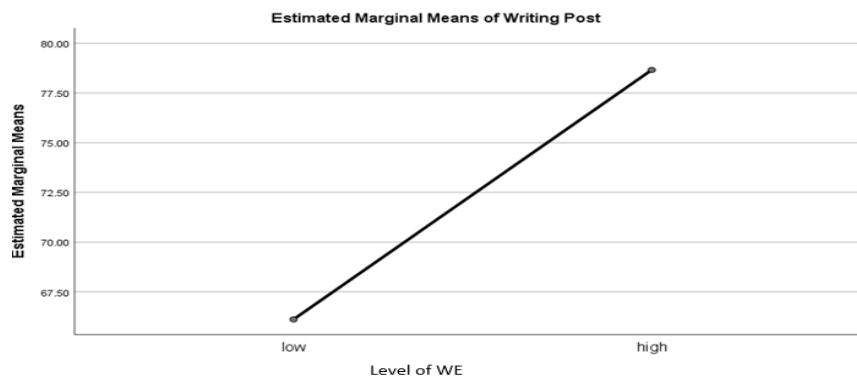


Figure 1. Marginal Means of Writing Score Based on WE Level

Figure 1 shows that the students who had a low level of WE had lower marginal mean writing performance scores compared to students who had high level of WE. Students who had low WE have a marginal mean writing score of 67, while the students who had a high level of WE had an average writing score of 78. However, since the significant value is more than 0.05, the different effect is not significant. Therefore, based on the statistical test, there was no significant difference of the estimated marginal mean score of writing post-test between the students with high and low level of WE in both groups. A particularly interesting finding emerged when writing engagement levels were considered. Although descriptive statistics suggested that students with higher engagement achieved slightly better scores than those with lower engagement, the inferential tests showed that these differences were not statistically significant. More strikingly, even students with lower self-reported engagement in the AaL group achieved higher average scores than highly engaged students in the teacher-feedback group.

The Interaction between AaL and Teacher Feedback Given to Different Level of Students WE on Their writing performance

The results of statistical analysis in Table 3 provide information that the significance value is 0.190. This value is greater than 0.05, so the conclusion obtained is that there was no interaction between the assessment method provided and WE level on students' writing performance. This implies that regardless the students' level of WE, AaL provide the biggest impact on students writing performance. The description of the interaction between the assessment and WE can be seen in Figure 2.

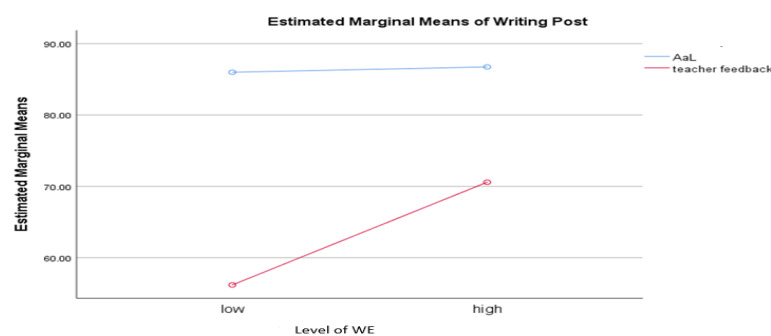


Figure 2. Interaction between AaL, Teacher Feedback and the Level of WE

Figure 3 presents the marginal mean values and interaction between the AaL method and teacher feedback with the level of writing engagement. Based on this image, it can be seen that there is no change in the pattern. This figure provides information that the writing scores of AaL group students are higher than those of control group at all levels of engagement. No significant interaction was found between the assessment method and students' level of engagement. The AaL approach consistently produced better outcomes across both high- and low-engagement groups. This finding highlights AaL's strength in creating equitable learning benefits, as it supports students at different levels of engagement to improve their writing performance.

Discussion

The Effect of the AaL on Students' Writing Performance

This study makes a novel contribution to EFL writing research due to the scarcity of studies on the effect of AaL and students' level of WE on their argumentative writing performance in the literature and provides valuable information to enhance the practice of assessment in similar contexts. The findings suggest that students who were taught and assessed using the AaL-based instruction had a higher level of writing performance compared to those who received regular assessment. In addition, while both groups had notable improvements in the post-test, the experimental group demonstrated a substantial and lasting beneficial effect. The post-test results indicate a notable disparity between the two groups, signifying that the treatment had a longer-lasting impact on students' writing progress. This finding is in line with Xiang et al. (2022) who found that students benefited from the AaL-oriented instruction in terms of writing efficiency and quality, enhanced assessment and feedback literacy, as well as sense of ownership and resilience.

AaL has a beneficial power on improving students' argumentative writing performance, especially vocabulary, content and organization. For example, the treatment group's vocabulary showed a notable enhancement, which further supports the effectiveness of AaL in addressing lexical problems. Providing feedback at the process level during the treatment is more effective for identifying and correcting lexical mistakes compared to feedback at the task level. The study underscores the potential of process-level feedback in enhancing lexical accuracy and complexity, supporting long-term retention and mastery over mere task completion (Lam, 2018). This aligns with findings from recent study (Buckingham & Aktug-Ekinci, 2017) which suggests that traditional adjustments by teachers may not sufficiently address lexical complexity, whereas process feedback encourages students to independently evaluate and improve their language ability. This approach improves both academic achievements and writing proficiency in L2 contexts (Hinduja et al., 2021; Lam, 2018, 2020; Lee et al., 2019; Yan, et al., 2023).

The intervention drew from Lee's (2016) AaL model including the emphasized of learning goals, students as learning resources, teacher feedback, and ownership of the task. Of the five principles in AaL, students' have done the setting learning goals, self-assessment and reflective practices well. Andrade, (2019) made critical review on self-assessment (main part of AaL) and explored the correlation between self-assessment and academic performance. Out of the 25 research, 20 of them specifically utilized the formative type. The results consistently showed a favorable correlation between self-assessment and learning. Yan et al.'s (2023) meta-analysis indicates that self-assessment treatments incorporating explicit feedback from others regarding students' performance had a significantly larger effect size compared to interventions without explicit feedback. Nevertheless, research indicates that the mere utilization of self-assessment does not ensure enhanced academic achievement; rather, its effectiveness relies on the way in which it is employed. In this fence, AaL did not only include self-assessment as the only practice, AaL includes some other factors to help students assessing themselves (ie., learning goal, self-reflection, feedback scaffolding). As Yan et al.

(2023) mentioned, the application of self-assessment is complex and influenced by other factors. Therefore, in order to optimize the beneficial influence of self-assessment, teachers should ponder these variables when including self-assessment into writing classes.

Nonetheless, the results of this study differ from those of Huang and Zhang (2022), who reported that AaL was less effective for students with lower English proficiency. These learners often required explicit, teacher-centered feedback to address their writing issues. Cultural factors also play a role; for instance, Wang and Lee (2021) noted that in some contexts, teacher authority may limit student engagement in self-directed assessment practices. However, in this study, AaL proved effective even for lower-proficiency learners. The individualized support provided through self- and peer-assessment during the course likely helped these students benefit more than they would have from traditional instruction alone. These findings support the position of Yan and Brown (2017), who argue that self-assessment should be viewed not merely as an evaluation tool but as a learning strategy. From a pedagogical standpoint, initiating self-assessment and goal-setting at the beginning of a writing task is more beneficial than applying it retrospectively (Yan, 2022).

Clear learning goals—another core component of AaL—also played a key role in improving writing performance. Students regularly engaged in goal-setting rituals before writing tasks increase their motivation and sense of ownership. Chung et al. (2021) found that structured revision involving planning, goal-setting, reflection, and self-assessment improved both writing outcomes and students' self-efficacy. Our findings echo this, demonstrating that students who set their own short- and long-term goals were more engaged and focused during writing activities. One student, for instance, noted that they previously lacked clarity on what they were expected to achieve in writing tasks. This shift in mindset reflects the benefits of structured goal-setting and aligns with findings by Lee (2017) and Chung et al. (2021), who emphasized the importance of clarity and direction in enhancing student focus and achievement. Ultimately, for AaL to be effective, teachers must provide explicit guidance on self-assessment and revision processes.

The Effect of Students' Level of WE on Their Writing Performance

The obtained p-value from the three-way ANOVA shows that there is no statistically significant impact of WE level on students' writing performance. It can be said that students who have high level of WE might not be a measurement that they also have good performance on writing. The finding shows that the self- perceived level of WE did not give impact on students writing performances. The students might have lack comprehension of self- and peer assessment in the beginning of the course. It was only through the implementation of AaL strategies that students began to comprehend the significance of setting clear objectives, devising comprehensive plans, and engaging in self-assessment.

In addition, during the treatment, the students had favourable views towards including AaL activities, but not WE concept. A significant recurring statement that arose was the acknowledgment by the students of the efficacy of goal-directed learning and self-reflection activities. They said that it was the first time for them to write learning objectives every time the lesson starts and reflected their work at the end of writing task. These activities facilitated the development of a clear comprehension of assessment criteria, the clarity of learning goals and how to achieve it, and the self-assessment of the performance. Consequently, the students became more engaged in their learning since they had a clear understanding of their objectives and felt assured in their ability to attain the targets established (Lee, 2016).

The results show that it is AaL that gives impact on students writing performance regardless their level of WE. The measures of students' level of WE were based on self-reports. Their measurements could not be controlled, thus; they might have overestimated or underestimated their engagement levels. A study by Kim et al. (2016) revealed that when the task was perceived more challenging and less diagnostic, participants were less inclined to

evaluate their ability based on their actual performance. Consequently, this led to less precise self-assessments. This might happen due motivational and cognitive bias. The result of the present study shows that students might have different motivation at the beginning of the study resulting on underestimating their WE level. While the current study found no significant effect of WE on students' writing performance, it is essential to recognize that other research has demonstrated a positive impact of engagement on writing skills. For instance, Zhang and Hyland (2022) found that students who were more engaged in writing tasks showed significant improvements in writing quality and coherence. Similarly, Wang and Lee (2021) highlighted that engaged students tend to produce more complex and thoughtful writing.

The Interaction between Assessment Approach Given to Different Levels of Students' WE on their Writing Performance

Answering the third question, the findings revealed that there was no significant interaction on students' writing performance. Hence, it can be concluded that only AaL provided significant impact on students' writing performance albeit the level of students' WE. While AaL is typically linked to the cognitive domain rather than the affective domain, it is worth noting that AaL activities are inherently motivating (Yan, 2022). As students engage in AaL, they enhance their metacognitive awareness, advance independency, take responsibility for learning, get satisfied with independent work and have chances to monitor their learning. In this study, the experimental group may have had better writing performance due to those factors and other factors that were not accounted for in the study.

Furthermore, looking at inherent nature of writing skill, the students writing ability might be influenced more by the nature of feedback rather than by metacognitive factors. Many scholars asserted that feedback in any kind of form have significantly impact on the students writing (Alharbi, 2022; Yu & Liu, 2021). AaL and WE may operate through distinct mechanisms when it comes to enhancing writing ability. AaL might directly impact skill acquisition, while the influence of WE on writing ability may be more multifaceted, resulting in a less direct relationship.

In addition, the treatment of AaL is temporary. The differential impact over time exists. Examining how AaL principles were implemented, there were some challenges in the implementation that have affected the outcomes. Beside asking the students to write the essay manually, it is possible that the positive effects of AaL become more apparent in the short term, while the impact of WE take longer to materialize. The study's timeframe may not have captured the full developmental trajectory of these metacognitive factor (Cheng & Liu, 2022). The AaL interventions implemented in the study have been highly specific and targeted, addressing key aspects of writing performance. In contrast, WE need a more tailored or intensive approach to show a statistically significant and long-lasting impact.

CONCLUSION

The study found that students taught using AaL, based on Lee's (2016) framework, significantly outperformed those who received teacher feedback in argumentative writing. AaL, which emphasized goal-setting, self-assessment, and reflection, led to higher post-test scores. Although descriptive data suggested students with higher WE performed better, inferential analysis showed no significant interaction between WE and writing performance. This indicates that AaL's effectiveness is consistent across different levels of engagement. The study found that the experimental group, assessed using AaL, outperformed the group relying solely on teacher feedback, however no significant interaction between variables was observed.

AaL improved writing performance regardless of students' engagement levels. EFL writing teachers are encouraged to adopt AaL strategies to promote autonomous and reflective

learning, which can enhance student writing outcomes. While WE did not significantly impact performance in this context, fostering engagement remains important for a supportive learning environment. Given the rarity of AaL implementation by writing teachers in Indonesian higher education, this study suggests adapting teaching strategies to incorporate AaL principles. EFL writing teachers are encouraged to design activities that promote goal setting, self- and peer assessment, and reflection. By adopting AaL, educators can foster a growth mindset, enhance critical thinking skills, and promote a sense of community and shared responsibility in the classroom. Finally, the relationship between AaL, WE and writing performance in EFL learners is multifaceted and influenced by various factors. This suggests that while AaL has high potential benefits, further research is needed to understand the contributing factors fully. Though the study had sufficient power, no significant interaction effects were found, possibly due to complex variable relationships and varying levels of WE. Future research should involve larger, more diverse samples and explore AaL's effects across different educational levels in Indonesia.

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INFORMED CONSENT STATEMENT

Participation in this study was fully voluntary. All participants were informed about the purpose, procedures, possible risks, and benefits of the research before taking part. They were assured that their identities would remain confidential and that the information provided would be used only for research purposes. Participants could withdraw at any time.

DATA AVAILABILITY STATEMENT

The data supporting this study are not publicly available because of privacy concerns and ethical obligations to protect participant confidentiality. However, the dataset may be made available upon reasonable request for validation or further analysis, subject to case-by-case consideration and prior approval from the relevant institutional ethics review board.

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