

Information Literacy and Argumentative Writing Performance among EFL Vocational High School Students: A Correlational Study

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Abstract

This study investigated the correlation between information literacy and argumentative writing performance among 11th-grade vocational high school students in Bojonegoro, East Java, Indonesia. Employing a quantitative correlational design, a purposive sample of 52 students was selected from a population of 129. The primary instruments were a 16-item information literacy questionnaire adapted from Regina et al. (2023) and a timed argumentative writing test scored with an analytical rubric adapted from Bean et al. (2021). A Shapiro-Wilk normality test revealed a significant deviation from normality in the writing scores ($p = 0.027$), which necessitated the use of Spearman's rho as the non-parametric alternative. The linearity assumption was subsequently confirmed (Deviation from Linearity $p = 0.701$). The Spearman's rho analysis yielded a correlation coefficient of $r_s = -0.109$ ($p = 0.443$), indicating a non-significant relationship between the two variables. Consequently, the null hypothesis failed to be rejected. These findings suggest that information literacy alone is an insufficient predictor of argumentative writing performance in this context, and that integrating information literacy instruction alongside explicit writing instruction may be necessary to meaningfully improve students' writing outcomes.

INTRODUCTION

Vocational high schools in Indonesia possess the main purpose of preparing students with the practical skills on directly entering the workforce upon graduation. However, recent data from the Federasi Serikat Guru Indonesia (FSGI), supported by regional Badan Pusat Statistik (BPS) reports, revealed a contradictory truth where the graduates of vocational high school consistently represent the highest contributor to the national unemployment rate, reaching approximately 14.63% (Kompas, 2022). One of the majoring factors of this gap is the lack of English productive skills, specifically in argumentative writing, which is a competency that is increasingly demanded in professional environments. As evidenced in the research by Bashir et al. (2020), the significance of English in the purpose of finding employment and advancing careers is well established, as it is closely correlated with the growth of global connectivity as the result of globalization, thus making the absence of strong writing skills among graduates a contributing factor to their employment struggles.

Information literacy has emerged as a promising academic framework to address the acknowledged inadequacies in the vocational students' writing performance. By general definition, information literacy is the aptitude of finding, assessing, and utilizing the required information in an effective way (Snaveley & Cooper, 1997). In the more specific context of writing, information literacy is needed as it aids the learners in locating reliable sources, evaluating the relevance and authority of information, and utilizing the information in an effective way for their writings. The American Library Association (ALA, 2000) described information literacy as the foundation of lifelong education that is universal across every field of study, while the Association of College and Research Libraries (ACRL, 2015) further defines it as a set of interconnected skills that includes the ability to find information in a logical approach and ethically partake in learning communities.

However, within the context of vocational high school, the development of information literacy and its relationship with writing performance presents a distinct challenge that have not been sufficiently addressed in the

previous studies. In educational setting, specifically in the context of vocational education, information literacy inescapably serves as the well-established state of sustainable development of technical and vocational education and training (TVET), which is where vocational high school falls under its category (Dai et al., 2024). Regardless of its established importance, a study by Kadir et al. (2016) established that the Indonesian vocational curriculum tends to emphasize its focus on practical and technical skills over academic literacy competencies, which unavoidably results in the vocational students having less exposure to the kind of academic writing tasks where information literacy would typically function as a meaningful support. This curricular underemphasis is further worsened by the systemic challenges that is found in Indonesian high schools, where there exist insufficient technological infrastructure, limited access to devices, and varying levels of digital competency among educators and learners, which was evidenced in the study by Sulyati and Kuswara (2025). Collectively, these conditions is distinct from the institutional settings under which prior positive-correlation studies were conducted, where participants typically had broader access to academic resources and explicit literacy instruction, thus making the generalization of those findings to the current vocational context is highly possible to be misleading.

A review of the existing literature reveals a diverging pattern of findings that collectively suggest the relationship between information literacy and writing performance is heavily influenced by contextual and methodological factors. As apparent in the studies conducted in well-resourced institutional settings, a significant positive correlation has been consistently reported between information literacy competency and writing performance, with the first one is documented in the study by Kim and Dolan (2018) at an American community college, and similarly in the study by Shao and Purpur (2016) which reported that information literacy instruction yielded measurable gains in writing scores. Notwithstanding the significance of these findings, it is important to note that these studies were conducted within the context of English-dominant environment where participants are native or near-native speakers composing in their L1, with a well-established access to library instruction and academic writing support. This condition is fundamentally different from the EFL vocational setting of the current study. In contrast, national studies that are closer to this study's context have consistently produced weaker results. As it is found in the study by Lustyantje et al. (2022), digital literacy, a construct closely related to information

literacy, only accounted for 10.6% of variance in argumentative writing performance, while Hidayati et al. (2023) also reported a negligible correlation of $r = 0.103$ between information literacy and scientific argumentation skills among university students in Surabaya. Together, these findings established that it is apparent that the positive relationship presented in the international studies cannot be straightforwardly generalized to the Indonesian vocational context, as the mediating conditions of language proficiency, curriculum structure, and institutional support differ substantially. Based on a preliminary review of the literature, no prior study appears to have specifically examined this correlation within Indonesian vocational high school students, which represents both a population and a contextual gap that necessitates a dedicated investigation. Therefore, this study aims to empirically test whether the hypothesized correlation between information literacy and argumentative writing performance holds under EFL vocational conditions, where the mediating variables differ substantially from the previous contexts where previous positive correlations were documented.

Within the national context, the specific challenges occur in the selected vocational high school where this study was conducted. Preliminary classroom observations found that 11th-grade students at the selected vocational high school face significant difficulties with argumentative writing, specifically a weak claim-evidence coherence. Students were struggling on formulating a clear stance and were often unable to effectively locate and evaluate supporting information for their claims. This initial problem in expressing ideas and gathering evidence suggests that students are lacking in core information literacy competencies, which consequently hinders their ability to structure a coherent and persuasive argument. Thus, this study aimed to empirically assess whether a significant correlation exists between information literacy and argumentative writing performance among EFL vocational high school students in Indonesia.

METHODS

This study employed a quantitative correlational design, with the goal of examining any possible correlation between two variables: students' information literacy ability and their argumentative writing performance. This method was employed to investigate the possible correlation between the two variables as they naturally occur among 11th-grade students at a vocational high school in Bojonegoro, East Java. The population of 11th-grade students from the selected vocational high school consisted of 129 students. From this population, a

purposive sample of 52 students was selected from two classes based on preliminary observations which indicated that these two classes face a particular writing challenge related to the pre-writing stage, specifically in the idea-gathering process.

The primary instruments were a 16-item information literacy questionnaire adapted from Regina et al. (2023) and a timed argumentative writing test scored with an analytical rubric adapted from Bean et al. (2021). The questionnaire was adapted by translating the items into the participants' L1, which is Indonesian, to ensure comprehension. It adopted a four-point forced-choice Likert scale (1 = Strongly Disagree to 4 = Strongly Agree), with the neutral midpoint omitted to reduce social desirability bias and produce more decisive data regarding learners' information literacy competencies. The questionnaire measures five core competencies: (1) recognizing keywords, (2) leveraging search engines, (3) distinguishing between primary and secondary sources, (4) utilizing a variety of sources, and (5) avoiding plagiarism. A pilot test conducted on 20 students from a separate class yielded a Cronbach's Alpha of $\alpha = 0.808$, which is above the minimum acceptable threshold of 0.70, indicating acceptable internal consistency reliability.

For the writing assessment, a time-limited argumentative writing test was administered immediately following the questionnaire. The researcher provided a writing prompt that was created from a discussion with the school teacher and subsequently validated: "Do you agree that the modification of 'brong' exhaust should be legalized?" Students were given 45 minutes to finish writing an essay which consist of three paragraphs that includes an introduction containing the thesis statement, a body paragraph that elaborates the supporting arguments and evidence, and a conclusion that restates the writer's stance. This timed condition was designed to obtain a sample of the students' authentic writing capabilities under typical classroom constraints. To ensure the objectivity and consistency in the scoring, all essays were assessed using a detailed analytical rubric adapted from Bean et al. (2021) which evaluates seven dimensions: thesis quality, exigence, supporting arguments, audience appropriateness, source quality, source integration, and citation. To establish inter-rater reliability, all essays were scored independently by two trained raters. The level of agreement between their scoring yielded a Single Measures Intraclass Correlation Coefficient (ICC) of .948 (95% CI: 0.911–0.970), which implies an excellent level of agreement between the raters, confirming that the scoring process was consistently done and free from any form of substantial individual bias.

Data analysis was conducted using IBM SPSS Statistics. A structured and multi-stage process was employed in analyzing the collected data. The process was started by employing descriptive statistics, subsequently followed by a test of assumptions to verify whether the required statistical assumptions were met, and it then concluded with hypothesis testing to determine the possible correlation between the two variables. To verify the normality assumption, the Shapiro-Wilk normality test was employed, as it is considered suitable for the scope of this study's sample. If the p-value is greater than 0.05, the data would be considered normally distributed and Pearson correlation would be employed. If the assumption was not met ($p \leq 0.05$), Spearman's rho would be employed as the non-parametric alternative, as it does not require the data to be normally distributed.

RESULTS AND DISCUSSION

Before proceeding to the hypothesis testing, the researcher conducted a prerequisite analysis to decide on the most suitable statistical method. As shown in Table 1, the information literacy scores were normally distributed ($p = 0.651 > 0.05$); however, there was a significant deviation in the argumentative writing scores ($p = 0.027 < 0.05$). As the data was not normally distributed, the assumption of bivariate normality was violated. Subsequently, the non-parametric Spearman's rho was employed as the suitable alternative in analyzing the two variables' correlation.

Table 1
Normality Test Results (Shapiro-Wilk)

Variable	Statistic	df	Sig.
Information Literacy Score	.983	52	.651
Argumentative Writing Score	.949	52	.027*

*Significant at $p < 0.05$

Following the normality test, a linearity test was also conducted to determine the existence of a linear relationship between the two variables. The result revealed that the significance value for the Deviation from Linearity was 0.701, which is visibly higher than 0.05, indicating that the assumption of linearity is fulfilled. The researcher then proceeded to the hypothesis testing phase. As displayed in Table 2, the Spearman's rho analysis yielded a correlation coefficient of $r_s = -0.109$ with a significance value of $p = 0.443$. As the significance value is considerably greater than the standard alpha level of 0.05, the null hypothesis (H_0) failed to be rejected. It can be concluded that within this

sample of Indonesian vocational high school students, the level of self-reported information literacy did not significantly correlate with their argumentative writing performance scores as measured by the analytical rubric.

Table 2
Spearman's Rho Correlation Results

	InfoLit Score	Writing Score
Correlation Coefficient (r_s)	1.000	-.109
Sig. (2-tailed)	—	.443
N	52	52

The absence of a significant correlation between the two variables can be associated with a number of theoretical factors. In theory, students who are skilled in locating and assessing information should be more capable of formulating well-substantiated arguments. As it aligns with the theoretical point of view, information literacy should be reinforcing argumentative writing, as the way of writing an effective argumentation fundamentally depends on the learner's ability to locate reliable sources, assess the information's relevance and authority, and integrate them in a logical and ethical manner (ACRL, 2015). Empirically, as it is evident in the study by Shao and Purpur (2016), students who master higher information literacy skills have also been recorded to write in a higher quality, which suggests a functional correlation between the two variables. However, the statistical results of the current study fail to confirm this theoretical relationship, and it is in line with the finding of Hidayati et al. (2023) at one of the universities in Surabaya where it was found that there is only a minimal correlation ($r = 0.103$) between information literacy and scientific argumentation skills. In the similar fashion, as it is apparent in the study by Lustyantje et al. (2022), digital literacy, a construct closely related to information literacy, only accounted for 10.6% of the variance within the students' argumentative writing performance, thus concluding that it had no significant effect on the students' writing outcomes.

The first possible reasoning lies in the underlying difference between the instruments used to measure the two variables. The data for information literacy capability was gathered via a self-report questionnaire, which only measures students' self-perceived skills, while argumentative writing performance was assessed through a practical performance test. It is highly possible that this disparity of instruments caused the students to overestimate their theoretical information literacy knowledge, but then failed to employ those estimated skills during a practical writing test. This cognitive bias

poses a risk as the students' confidence does not always correlate with a formidable critical evaluation skill. This psychological phenomenon is popularly known in the cognitive and educational field as the Dunning-Kruger effect, whereas an individual with limited actual competence in a specific area may systematically overestimate their abilities due to a lack of metacognitive awareness (Kruger & Dunning, 1999). A systematic review has also reportedly documented this effect within information literacy self-assessments, which concluded that there is almost no statistical relationship between perceived and actual abilities (Mahmood, 2016).

Additionally, argumentative writing is an intricate productive skill that involves multiple linguistic and cognitive factors. Even if the information literacy questionnaire was able to accurately measure the students' actual capabilities, there would still remain a formidable skill transfer problem. Understanding the way of searching and evaluating information is only a declarative and procedural ability which does not automatically translate into the ability of synthesizing the information into a well-formulated, persuasive argument within the context of a second language. As outlined by Bloom's Taxonomy (Bloom et al., 1956), the use of information to form a written argument demands higher-order cognitive operations, which includes analysis, evaluation, and creation, which goes beyond the basic ability to locate and manage information. Only mastering the basic level of information literacy does not automatically translate into a favorable writing quality. Furthermore, this observation is in line with Cognitive Load Theory, which proposes that simultaneously processing grammar, vocabulary, and integrating evidence can cause an overwhelming of the working memory capacities (Jiang & Kalyuga, 2022). For EFL learners, as the cognitive model matches up with the three phases of writing, which are planning, translating, and revising, this cognitive burden is further heightened as they need to translate ideas from their L1, thus consuming significant resources of working memory.

Lastly, the vocational high school context within this study is also worthy to be considered. As apparent in the study by Kadir et al. (2016), the Indonesian curriculum on this level of education tends to emphasize its focus on practical and technical skills over academic writing competencies. Additionally, the students in this cohort had not received any education of information literacy in an academic context. This limited exposure to academic writing as a genre likely serves as a stronger, more direct predictor of performance than information literacy, thus weakening information literacy's predictive validity. This finding also implies that prior research has demonstrated

that information literacy instruction only yields a meaningful academic advantage when it is integrated intentionally and systematically into a broad curriculum that also addresses higher-order thinking skills (Goodsett, 2020). Subsequently, in the scope of this study, information literacy appears as an essential, yet insufficient condition for argumentative writing quality among EFL vocational high school students. These factors collectively imply that despite the fact that in theory, information literacy will reinforce argumentative writing by providing the students a way to locate trustworthy sources and understand source correlation, this reinforcement cannot automatically translate into better writing outcomes unless it is accompanied by sufficient language proficiency, an understanding of argumentative writing rules, and the metacognitive capacity to integrate information literacy skills into the written argument.

CONCLUSION

In this study, it was aimed to empirically examine the correlation between information literacy and argumentative writing performance among 11th-grade students at one of a vocational high school in Bojonegoro, East Java, Indonesia. The prerequisite analysis determined that although information literacy scores were normally distributed (Shapiro-Wilk $p = 0.651$), the argumentative writing scores showed a significant deviation from normality ($p = 0.027$), which necessitated the use of Spearman's rho as the non-parametric correlation test. The linearity assumption was also confirmed with the Deviation from Linearity of $p = 0.701$. The result of the Spearman's rho analysis revealed a correlation coefficient of $r_s = -0.109$ with a significance value of $p = 0.443$, indicating an extremely weak, negative, and non-significant correlation between the two variables. Subsequently, the null hypothesis (H_0) failed to be rejected. Therefore, it is concluded that from this sample of Indonesian vocational high school students, the level of self-reported information literacy did not significantly correlate with argumentative writing performance scores as measured by the analytical rubric.

Many factors are influencing the absence of a significant correlation in the current study. The first one being the instrument difference between a self-report questionnaire and a timed performance-based writing test. Additionally, the disparity between self-perceived information literacy knowledge and the higher-order cognitive tasks required to synthesize information into a cohesive argument in a foreign language. The third being the existence of confounding factors that were not measured, such as students' grammar proficiency,

vocabulary range, and previous writing experience, which may have obscured the possible underlying correlation between the two variables. Lastly, the wider academic context of vocational education in Indonesia, where the curriculum focused primarily on technical skills over academic writing competencies, which hindered the students from effectively applying their information literacy skills in an academic context. Collectively, these multiple factors implied that although conceptually important, information literacy among the vocational high school students functions as a necessary but insufficient condition for developing argumentative writing.

For English educators at the vocational level, it is important to note that only possessing the information literacy skill is insufficient to produce an improved outcome in argumentative writing. The educators are encouraged to employ pedagogical approaches that integrate explicit writing instruction with information literacy competencies, such as claim-evidence-reasoning (CER) frameworks, guided annotation exercises, and collaborative source analysis, which can provide the students a bridge between information literacy competency and writing practice. For future researchers, it is highly suggested that subsequent studies employ objective, performance-based assessments of information literacy instead of the sole reliance on self-report instruments, as well as employing a larger and more diverse sample that could be drawn from different vocational high schools nationally to address the generalizability issue.

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