

THE CORRELATION BETWEEN EFL STUDENTS' ONLINE LEARNING STRATEGIES AND DIGITAL LITERACY AND ENGLISH LANGUAGE PROFICIENCY AT ENGLISH STUDY PROGRAM FACULTY OF EDUCATION AND VOCATIONAL STUDIES UNIVERSITAS LANCANG KUNING

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ABSTRACT

This study is grounded in the growing integration of online learning in higher education, which requires students to possess effective online learning strategies and adequate digital literacy to enhance their English language proficiency. This research aims to investigate the correlation between online learning strategies and digital literacy and English language proficiency among students of the English Education Study Program, Faculty of Education and Vocational Studies, Universitas Lancang Kuning. A quantitative correlational design was employed, involving 94 undergraduate students selected through purposive sampling. Data were collected using the Online Self-Regulated Learning Questionnaire (OSLQ), a digital literacy questionnaire adapted from Ng (2012), and documented English achievement scores. The results of multiple regression analysis show that online learning strategies and digital literacy simultaneously have a statistically significant effect on English language proficiency ($F = 5.065$, $\text{Sig.} = 0.008 < 0.05$). The correlation between the independent variables and English proficiency is positive but weak ($R = 0.316$), with an R Square value of 0.100 and an Adjusted R Square of 0.080, indicating that only 8% of the variance in English proficiency is explained by the model. Partially, digital literacy shows a significant effect on English language proficiency ($\text{Sig.} = 0.003$), while online learning strategies do not have a significant partial effect ($\text{Sig.} = 0.591$). These findings suggest that although both variables jointly predict English proficiency significantly, digital literacy plays a more dominant role than online learning strategies when examined individually. Therefore, this study highlights the importance of integrating digital literacy development alongside training in online learning strategies in English language instruction in higher education.

Keywords: Online Learning Strategies; Digital Literacy; English Language Proficiency; EFL Student

1. INTRODUCTION

In recent years, the integration of digital technology into higher education has significantly transformed teaching and learning practices, particularly in English as a Foreign Language (EFL) contexts. Online learning environments provide students with greater flexibility, access to authentic materials, and opportunities for interactive communication. However, the effectiveness of online learning is not solely determined by technological availability, but also by students' ability to manage their learning processes and utilize digital tools effectively. In this regard, online learning strategies and digital literacy have emerged as two critical factors that may influence students' English language proficiency. As noted by Almahasees and

Qassem (2021), the success of online learning among EFL students is strongly influenced by their digital competence and strategic approach to learning tasks.

Building on this perspective, online learning strategies play an essential role in helping students regulate their learning in digital environments. These strategies refer to students' self-regulated efforts in planning, monitoring, and evaluating their learning processes, including time management, goal setting, task strategies, and active participation in online platforms. In online settings where independent learning is emphasized, students are required to take greater responsibility for their academic progress. Previous studies have shown that students who apply effective online learning strategies tend to demonstrate higher engagement and better academic performance in virtual learning settings. For instance, Sun and Chen (2023) found that students who actively applied self-regulated learning strategies achieved higher academic outcomes and engagement in online classes. Similarly, Dhawan (2022) emphasized that structured learning strategies help students maintain motivation and persistence in digital learning environments. These findings indicate that the ability to regulate one's learning process plays an important role in achieving successful outcomes, especially in language learning contexts that require continuous practice.

While online learning strategies focus on how students manage their learning processes, another equally important factor is digital literacy, which determines how effectively students utilize digital tools and resources. Digital literacy is defined as the ability to access, evaluate, and utilize digital information effectively and critically. In EFL learning, students are required to engage with various digital resources such as online dictionaries, learning platforms, videos, and communication tools. Students with higher levels of digital literacy are more likely to benefit from these resources, as they can navigate digital environments efficiently and use technology to enhance their language skills. Supporting this view, Listiani and Sari (2021) revealed that students with higher digital literacy demonstrated better performance in online English learning due to their ability to adapt to digital environments. Furthermore, Rahman and Widiastuti (2022) found that digital literacy enhances students' confidence and participation in online communication, which contributes to improved language fluency.

Considering the importance of both online learning strategies and digital literacy, a number of studies have attempted to examine their relationship with English language proficiency. In general, research indicates that online learning strategies contribute positively to students' academic achievement and engagement, while digital literacy significantly affects students' ability to perform in online English learning environments. For example, Tawalbeh (2020) reported that students with higher levels of digital literacy and self-regulated learning strategies performed better in English proficiency tests. In addition, Hafiz and Sutopo (2021) found that students who demonstrated strong digital literacy and autonomous learning behaviors achieved higher scores across the four English skills. These findings suggest that both variables play important roles in supporting EFL learning in digital contexts.

Nevertheless, despite these promising findings, previous studies tend to examine online learning strategies and digital literacy separately rather than as interconnected factors. As a result, the combined effect of these variables on English language proficiency remains underexplored, particularly in the context of undergraduate EFL students in Indonesia. Moreover, many studies have focused more on students' perceptions or general online learning experiences rather than investigating the statistical relationship between these variables and language proficiency. For instance, Hidayati and Husna (2022) found that

although online learning increased students' exposure to English materials, inconsistent strategy use and unequal digital competence limited its overall effectiveness. This indicates that the interaction between learning strategies and digital literacy has not been sufficiently examined.

Given this gap, it is important to conduct a more comprehensive investigation that integrates both variables within a single analytical framework. Understanding how online learning strategies and digital literacy interact can provide deeper insights into students' learning behaviors and help identify which factor has a more dominant influence on English language proficiency. As suggested by Sari and Wahyuni (2022), the combination of digital literacy and well-structured learning strategies leads to more effective engagement and higher achievement in online English learning. Therefore, examining these variables simultaneously offers a more holistic understanding of students' learning processes in digital environments and contributes to the development of more effective instructional practices.

Therefore, this study aims to investigate the correlation between EFL students' online learning strategies and digital literacy and their English language proficiency at the English Study Program, Faculty of Education and Vocational Studies, Universitas Lancang Kuning. Specifically, this study seeks to (1) determine whether there is a significant correlation between online learning strategies and English language proficiency, (2) examine the correlation between digital literacy and English language proficiency, and (3) analyze the simultaneous relationship between online learning strategies and digital literacy on English language proficiency.

2. METHODOLOGY

This study employed a quantitative correlational research design to investigate the relationship between online learning strategies, digital literacy, and English language proficiency among EFL students. A correlational approach was considered appropriate as the study aimed to examine the degree of association among variables without manipulating them.

The research was conducted at the English Study Program, Faculty of Education and Vocational Studies, Universitas Lancang Kuning. The participants of this study were undergraduate students enrolled in the program. A total of 94 students were selected as the sample using purposive sampling technique. The selection criteria included students who had experienced online learning and were actively engaged in English learning activities through digital platforms.

This study involved three variables: online learning strategies as the first independent variable (X_1), digital literacy as the second independent variable (X_2), and English language proficiency as the dependent variable (Y). Online learning strategies refer to students' self-regulated behaviors in managing their learning activities in online environments, while digital literacy refers to students' ability to effectively use digital tools and evaluate online information. English language proficiency in this study was measured based on students' academic performance in English courses.

The data were collected using questionnaires and documentation. Online learning strategies were measured using the Online Self-Regulated Learning Questionnaire (OSLQ) developed by Barnard et al. (2009), which includes several components such as goal setting, time management, environment structuring, task strategies, help-seeking, and self-evaluation.

Meanwhile, digital literacy was measured using a questionnaire adapted from Ng (2012), covering aspects of technical, cognitive, and social-emotional skills in using digital technologies. In addition, students' English language proficiency was obtained from their documented academic scores.

Before the data collection, the instruments were tested for validity and reliability. The validity test was conducted to ensure that each item in the questionnaire accurately measured the intended variables, while the reliability test was used to determine the consistency of the instruments. The results indicated that all items were valid and reliable, making them appropriate for data collection.

The data analysis was conducted using statistical procedures. Descriptive statistics were used to describe the characteristics of the data. Prior to hypothesis testing, assumption tests including normality and linearity tests were performed to ensure that the data met the requirements for further analysis. The relationships among variables were analyzed using Spearman Rho correlation and multiple linear regression analysis. The regression analysis was used to determine both the partial and simultaneous effects of online learning strategies and digital literacy on English language proficiency. The level of significance used in this study was 0.05.

3. RESULTS

Descriptive Statistics

Table 1. *Descriptive Statistics of All Variables*

Variable	N	Min	Max	Mean	Std. Dev
Online Learning Strategies (X_1)	94	2	5	3.80	0.840
Digital Literacy (X_2)	94	1	5	3.90	0.830
English Language Proficiency (Y)	94	3.00	4.00	3.68	0.204

Note. Mean values represent the average across all items within each variable. X_1 measured across 10 items; X_2 across 13 items; Y based on cumulative GPA scores.

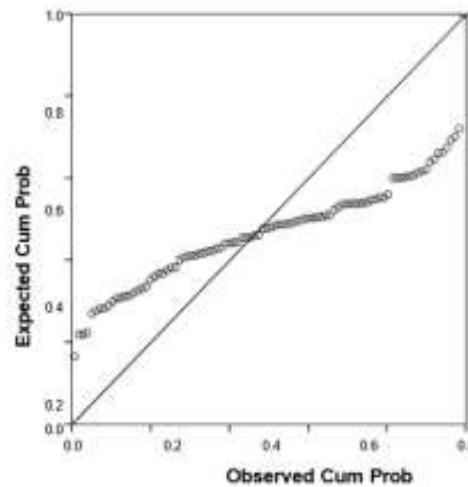
Table 1 presents an overview of all three study variables. Online learning strategies (X_1) yielded a mean of 3.80 (SD = 0.840), and digital literacy (X_2) a mean of 3.90 (SD = 0.830), both indicating moderate to high levels among participants. Individual item analysis revealed that environment structuring behaviors were most frequently reported in X_1 (Q6: M = 3.91), while time management was the least consistent (Q5: M = 3.64). For X_2 , socio-emotional awareness scored highest (Q12: M = 4.18), whereas technical platform operation skills were comparatively lower (Q1: M = 3.70). English language proficiency (Y), measured by cumulative GPA, yielded a mean of 3.68 (SD = 0.204), reflecting consistently high academic performance with a negatively skewed distribution (skewness = -0.881). The narrow score

range and low standard deviation indicate restricted variability in Y, which should be considered when interpreting the magnitude of subsequent correlations.

Assumption Tests

Prior to inferential analysis, normality and linearity tests were conducted. The Kolmogorov-Smirnov test indicated non-normal residual distribution ($p = 0.000$), which was further confirmed by the Normal P-Plot (Figure 1), where data points deviated systematically from the diagonal reference line.

Figure 1. *Normal P-Plot of Regression Standardized Residuals*



The linearity test was conducted to examine whether the relationship between each independent variable and the dependent variable follows a linear pattern. The results are presented in Table 2.

Table 2. *Linearity Test Results*

Variable Pair	F	Sig.	Decision
$X_1 - Y$	1.158	0.312	Linear
$X_2 - Y$	2.134	0.007	Non-linear

Note. F values derived from Deviation from Linearity row. Sig. > 0.05 indicates a linear relationship.

As shown in Table 2, the relationship between online learning strategies (X_1) and English language proficiency (Y) was confirmed as linear ($F = 1.158$, $p = 0.312 > 0.05$), meaning that changes in strategy use correspond proportionally to changes in proficiency. In contrast, the relationship between digital literacy (X_2) and English language proficiency (Y) was non-linear

($F = 2.134$, $p = 0.007 < 0.05$), suggesting that the benefit of digital literacy for language achievement is conditional on how students apply their digital skills rather than simply how much digital competence they possess. Given these violations of normality and linearity, Spearman's Rho was employed for bivariate correlation analysis.

Table 3. *Spearman's Rho Correlation Results*

Variable Pair	ρ	Sig.
$X_1 - Y$	0.280	0.006* *
$X_2 - Y$	-0.053	0.615
$X_1 - X_2$	0.085	0.418

Note. ** $p < 0.01$. $N = 94$.

Online learning strategies showed a statistically significant positive correlation with English language proficiency ($\rho = 0.280$, $p = 0.006$), indicating that students who applied more self-regulated learning behaviors tended to achieve higher proficiency. The correlation is low in magnitude, partly attributable to the restricted variance in GPA scores. Digital literacy showed no significant correlation with English language proficiency ($\rho = -0.053$, $p = 0.615$), suggesting that digital competence alone does not directly predict language achievement. The two predictors were also not significantly correlated with each other ($\rho = 0.085$, $p = 0.418$), confirming their independence as constructs

Multiple Linear Regression

Table 4. *Model Summary and ANOVA*

R	R^2	Adj. R^2	F	Sig.
0.316	0.100	0.080	5.065	0.008

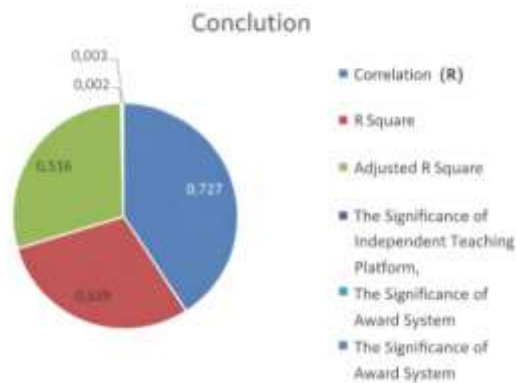
Table 5. Regression Coefficients

Predictor	B	β	t	Sig.
(Constant)	10.924	—	4.216	0.000
X_1	-0.270	-0.054	-0.539	0.591
X_2	-1.513	-0.307	-3.073	0.003

The regression model was statistically significant ($F = 5.065$, $p = 0.008$), indicating that online learning strategies and digital literacy jointly predicted English language proficiency. The model explained 8% of the variance in proficiency after adjustment ($\text{Adj. } R^2 = 0.080$), with the regression equation: $\hat{Y} = 10.924 - 0.270X_1 - 1.513X_2$.

Partially, digital literacy was the only significant predictor ($\beta = -0.307$, $p = 0.003$), while online learning strategies did not contribute significantly when controlling for digital literacy ($\beta = -0.054$, $p = 0.591$). The negative coefficient for X_2 warrants careful interpretation rather than indicating a direct inverse effect, it likely reflects a suppressor dynamic wherein students with high digital literacy but low strategic orientation may rely on technological shortcuts rather than engaging in deep language processing (Chapelle, 2021). Figure 2 visually summarizes the model fit.

Figure 2. Correlation Graph ($R = 0.316$, $R^2 = 0.100$, $\text{Adj. } R^2 = 0.080$)



Collectively, these findings indicate that while online learning strategies and digital literacy each relate to English language proficiency in distinct ways, neither variable alone serves as a strong predictor. The simultaneous model, though modest in explanatory power, confirms that both constructs together contribute meaningfully to language achievement. These results set the foundation for the interpretive discussion presented in the following section.

4. DISCUSSION

The Correlation Between Online Learning Strategies and English Language Proficiency

The study revealed a statistically significant positive correlation between online learning strategies and English language proficiency ($\rho = 0.280$, $p = 0.006$), indicating that students who more consistently applied self-regulated learning behaviors tended to achieve higher language proficiency. Although the correlation is low in magnitude, its statistical significance suggests a meaningful contribution of strategic learning to language development in online contexts.

This finding is consistent with Kirmizi (2015), who demonstrated that self-regulated behaviors including goal setting, time management, and help-seeking significantly influenced academic and language performance in online higher education. It also aligns with Sun and Chen (2023), whose study found that university students who actively monitored and planned their online learning activities showed stronger academic engagement and

improved linguistic outcomes. The convergence between these prior findings and the present study reinforces the understanding that strategic learning behavior remains a relevant and consequential factor in supporting English language development within digital environments, regardless of the institutional context in which it is studied.

The significance of this relationship is particularly meaningful in the Indonesian EFL context, where English is not commonly used as a medium of daily communication outside the classroom. Students therefore cannot rely on incidental exposure to the language and must instead compensate through deliberate, structured engagement with English learning materials. In this regard, effective strategies such as goal setting, self-regulated practice, active engagement with online English resources, and consistent self-evaluation enable learners to maximize the opportunities afforded by digital platforms. As Dörnyei (2020) argues, intentional strategic behaviors are indispensable for EFL learners seeking to develop proficiency in contexts where naturalistic acquisition is limited. The present finding thus underscores the importance of fostering strategic learning habits as a foundational component of online English instruction, and suggests that students who have not yet developed consistent strategic behaviors may benefit substantially from explicit strategy training embedded within their English courses.

It is also worth noting that while the correlation between online learning strategies and English proficiency was significant in the bivariate analysis, it did not emerge as a significant partial predictor in the regression model ($p = 0.591$). This discrepancy may reflect the influence of shared variance between online learning strategies and digital literacy when both are modeled simultaneously, reducing the unique statistical contribution of X_1 . This does not diminish the practical relevance of strategic learning; rather, it points to the complex interplay between these two constructs in predicting language outcomes.

The Correlation Between Digital Literacy and English Language Proficiency

In contrast to online learning strategies, digital literacy showed no statistically significant bivariate correlation with English language proficiency ($\rho = -0.053$, $p = 0.615$). This result suggests that students' level of digital competence encompassing technical skills, information literacy, media use, communication, and socio-emotional awareness does not directly co-vary with their English language achievement as measured by GPA.

This finding stands in contrast to Rahman and Widiastuti (2020), who reported that digitally literate EFL learners performed better in listening and reading tasks due to greater access to authentic English input, and to Sari and Wahyuni (2022), who found that digital literacy positively influenced speaking and writing performance through effective use of digital platforms. The divergence between these studies and the present findings may be explained by the qualitative nature of digital tool use in this population. While students demonstrated moderate to high digital literacy scores overall, their application of these skills appears to be directed primarily toward social communication or general academic tasks rather than toward purposeful English language development. Students may be proficient in using platforms, evaluating online information, and engaging in digital communication, yet seldom apply these competencies specifically to enhance their English reading, writing, listening, or speaking skills. As Chapelle (2021) argues, technology contributes to language learning only when it is meaningfully embedded in pedagogically intentional activities. Without such integration, digital competence alone does not translate into measurable proficiency gains.

The non-linear relationship between digital literacy and English proficiency identified in the linearity test further supports this interpretation. The absence of a proportional, linear trajectory suggests that the benefit of digital literacy for language achievement is conditional likely dependent on how, rather than how much, students engage with digital tools in the context of language learning. Beyond a certain threshold of digital competence, additional technical proficiency without corresponding pedagogical guidance may yield diminishing returns for language development.

The Simultaneous Effect of Online Learning Strategies and Digital Literacy on English Language Proficiency

Despite the limited individual contributions of each variable, the multiple regression analysis confirmed that online learning strategies and digital literacy together significantly predicted English language proficiency ($F = 5.065$, $p = 0.008$). The combined presence of both constructs produces a meaningful, if modest, effect on language achievement one that neither variable generates independently with equal clarity in the bivariate analyses.

This finding is consistent with Tawalbeh (2020), who demonstrated that the integration of digital literacy and self-regulated learning strategies produced significantly better English proficiency outcomes among EFL students compared to either factor in isolation. Similarly, Sari and Wahyuni (2022) emphasized that combining digital literacy with well-structured learning strategies leads to more effective engagement and higher achievement in online English courses. The present study adds empirical support to these claims within the specific context of Indonesian EFL higher education, where the interplay between technology use and strategic learning is increasingly relevant given the growing adoption of blended and online instructional models.

The limited explanatory power of the model ($\text{Adj. } R^2 = 0.080$) indicates that a substantial portion of variance in English language proficiency is attributable to factors beyond the scope of this study. Variables such as learning motivation, self-efficacy, language exposure outside the classroom, peer interaction, and instructional quality are likely to contribute significantly to proficiency outcomes and warrant inclusion in future investigations. Additionally, the use of GPA as the sole proficiency measure, while contextually appropriate, introduces a degree of construct narrowness that may have attenuated the observed relationships. A more differentiated proficiency instrument such as a standardized language test could yield stronger and more nuanced correlations in subsequent research.

Overall, the findings highlight that online learning strategies play a more direct role in supporting English language proficiency than digital literacy in this EFL context. Instructional efforts should therefore prioritize the explicit development of self-regulated learning strategies within online English courses, while digital literacy training should be purposefully integrated with language-specific applications guiding students to use digital tools not merely for access or communication, but as active instruments of language learning and practice. As Richards (2022) asserts, it is the strategic and intentional use of learning opportunities, rather than technological access alone, that ultimately drives measurable gains in English language proficiency.

5. CONCLUSION

This study examined the relationship between online learning strategies, digital literacy, and English language proficiency among EFL students. The results indicate that neither online

learning strategies nor digital literacy show a significant bivariate correlation with English language proficiency. However, when analyzed simultaneously, both variables significantly influence English proficiency, with digital literacy emerging as the only significant predictor in the regression model, while online learning strategies remain non-significant. These findings suggest that digital literacy plays a more meaningful role when combined with other variables rather than as a standalone factor. Nevertheless, the overall contribution of both variables is relatively weak, indicating that other factors may have a greater influence on students' English proficiency. This study advances the existing literature by providing empirical evidence that the relationship between digital competence and language achievement is complex and context-dependent, emphasizing the importance of examining multiple variables simultaneously in EFL learning research.

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