

ASSOCIATIONS AMONG READING-LOG-BASED DIGITAL READING FREQUENCY, ACADEMIC ORIENTATION, AND EFL STUDENTS' READING COMPREHENSION

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Article Info	Abstract
Article History Received: June 2026 Revised: July 2026 Accepted: September 2026 Published: October 2026	<i>Frequent access to digital texts does not reveal how often EFL students sustain English reading or whether their reading serves academic purposes. This study examined two reading-log indicators of Digital Reading Frequency (DRF) and Academic Digital Reading Orientation (ADRO) in relation to Reading Comprehension (RC) among EFL students. Using a quantitative correlational design, 116 of 122 initial participants were retained after recording at least three valid English digital reading sessions during a four-week self-reported log; a valid session lasted at least 10 minutes. ADRO was calculated as each student's proportion of valid sessions classified as academically oriented based on text type, stated reading purpose, and title or brief description. RC was measured using a researcher-developed 30-item test that was pilot-tested with 37 students outside the main sample and showed high reliability ($\alpha = .923$). Descriptive statistics, Spearman's rho, and multiple linear regression were used. Students recorded a mean of 6.50 valid sessions over four weeks, while the mean student-level ADRO score was .3794. DRF ($p = .455$, $p < .001$) and ADRO ($p = .377$, $p < .001$) were both positively associated with RC. The regression model explained 35.4% of the observed variance ($R^2 = .354$), with both DRF ($\beta = .430$, $p < .001$) and ADRO ($\beta = .392$, $p < .001$) remaining independently significant. These relationships are associative rather than causal. The findings suggest that both regular English digital reading and academically purposeful text selection may deserve instructional attention, but neither should be interpreted as a tested intervention.</i>
Keywords Academic digital reading orientation; Digital reading frequency; Reading comprehension; Reading logs;	
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INTRODUCTION

Reading comprehension is a fundamental competence in English as a Foreign Language (EFL) learning because it enables learners to understand written information, develop vocabulary knowledge, recognize discourse patterns, and engage with academic texts (Gonzalez-Torres & Vargas-Saritamá, 2025; Habók et al., 2024). In school-based EFL contexts, students are expected to process English texts for classroom learning, assessment, and broader academic development (Azwar et al., 2024; Dinda et al., 2025). As students increasingly encounter English through smartphones, websites, e-books, learning platforms, and other digital resources, digital reading has become an important component of their

exposure to English beyond conventional print-based classroom materials (Fitriani & Sunarti, 2024; Pratiwi et al., 2026; Reiber-Kuijpers et al., 2021; Setyoningsih et al., 2025).

Digital reading provides access to diverse texts and creates opportunities for language exposure and reading engagement, but successful comprehension depends on more than access to digital devices or texts (Habók et al., 2025; Kaban, 2021; Norberg et al., 2025). From the perspective of second language acquisition, repeated exposure to meaningful English input may provide learners with opportunities to encounter vocabulary, sentence structures, discourse features, and textual meanings (Krashen, 1985). Reading Engagement Theory similarly emphasizes behavioral engagement, including learners' participation and sustained involvement in reading activities (Guthrie & Wigfield, 2000). However, digital-reading outcomes may vary according to reading purpose, task demands, strategies, medium, and patterns of engagement (Altamura et al., 2025; Mañá et al., 2026; Peras et al., 2023; Salmerón et al., 2023). Research has also shown that digital reading habits should not automatically be interpreted as beneficial for comprehension, particularly when the quality and purpose of reading differ (Salmerón et al., 2025; Vargas et al., 2024). Digital reading should therefore be viewed as a multidimensional practice rather than represented simply by digital access or a single general measure of reading habits. In particular, how often students read and the extent to which their reading is academically oriented represent conceptually different aspects of digital reading behavior.

Previous research has examined digital reading activity, online reading strategies, digital literacy, and their relationships with reading comprehension (Habók et al., 2024, 2025; Pratiwi et al., 2026; Salmerón et al., 2023; Wijayanti et al., 2026). Indonesian research has likewise documented technology-related reading practices and the changing role of digital media in students' reading experiences (Wiranatha & Santosa, 2024). Nevertheless, two related limitations remain relevant to the present study. First, much previous research has examined relatively broad constructs such as digital reading activity, digital literacy, online-reading strategy use, or general reading habits, leaving the distinction between the quantity of reading and its academic orientation less explicit. Second, questionnaire-based measures provide useful information about general tendencies but offer less detail about specific reading activities occurring within a defined period. Consequently, the relationship between the frequency of individual digital reading sessions and the academic orientation of those sessions warrants more specific examination.

Reading logs provide one possible means of examining reading activity within a defined period. In school and EFL contexts, reading logs or journals have been used to record reading activity, support reflection, and accompany extensive or comprehension-focused reading (Gonzalez-Torres & Vargas-Saritama, 2025; Kalsum et al., 2022). Related work in postsecondary EFL contexts has also used reading logs to document reading activity and support extensive reading practices (Intasuk, 2024; Lien, 2025; Madjdi et al., 2024; Zur et al., 2025). These postsecondary studies are used here primarily as methodological precedents rather than population-equivalent evidence for Grade XI learners. Compared with a broad retrospective habit questionnaire, a time-bounded reading log can provide more session-specific self-reported information about what participants report reading during the data-collection period. Nevertheless, logs remain self-reported records that depend on accurate and consistent reporting and should not be interpreted as objective behavioral traces.

The novelty of the present study lies not in the use of reading logs per se, but in operationalizing two distinct quantitative indicators from the same four-week self-reported reading log: Digital Reading Frequency (DRF) and Academic Digital Reading Orientation (ADRO). DRF represents the number of valid English digital reading sessions recorded during the logging period, whereas ADRO represents the proportion of valid sessions classified as academically oriented according to text type, stated reading purpose, and title or

brief description. This operational distinction separates the quantity of recorded digital reading from its academic direction rather than combining both dimensions into a single general-habit score. It also permits examination of whether students who record reading more frequently are necessarily those whose reading is more academically oriented and how each indicator is statistically associated with Reading Comprehension (RC).

Accordingly, this study examines the statistical relationships among DRF, ADRO, and RC among Grade XI Indonesian EFL students. The study is associational rather than causal and addresses the following research questions: *RQ1: Is DRF significantly associated with RC? RQ2: Is ADRO significantly associated with RC? RQ3: Is DRF significantly associated with ADRO? RQ4: To what extent do DRF and ADRO jointly account for variance in RC?*

RESEARCH METHOD

Research Design

This study employed a quantitative correlational research design to examine the statistical relationships among Digital Reading Frequency (DRF), Academic Digital Reading Orientation (ADRO), and Reading Comprehension (RC) without introducing any treatment, intervention, or experimental manipulation. This design was considered appropriate because the study sought to determine the extent to which naturally occurring variations in students' digital reading practices were associated with differences in their reading comprehension performance. DRF and ADRO were treated as statistical predictors or correlates, whereas RC served as the outcome variable within the analytical model. Importantly, the study was associational rather than causal; therefore, the observed relationships cannot be interpreted as evidence that DRF or ADRO directly causes changes in RC. Multiple regression analysis was employed to estimate the direction and magnitude of the in-sample associations and to determine the proportion of variance in RC explained jointly by the predictor variables. The model was not designed or validated for out-of-sample forecasting or predictive generalization.

Population and Sample

The study was conducted at MAN 3 Makassar, South Sulawesi, Indonesia, during the second semester of the 2025/2026 academic year. The Grade XI population comprised 361 students in 13 classes. The initial sample included 122 students from four intact classes: XI A.1 ($n = 37$), XI A.2 ($n = 36$), XI A.4 ($n = 26$), and XI A.5 ($n = 23$). The classes were selected through non-probability convenience sampling using intact classes, based on school permission, scheduling, classroom availability, and coordination with the English teacher. Because only four of the 13 Grade XI classes participated and selection was not random, generalization beyond the participating classes should be made cautiously.

Participants were 16–17 years old and initially comprised 49 male and 73 female students. The primary analytic sample included 116 students (43 male, 73 female): XI A.1 ($n = 37$), XI A.2 ($n = 36$), XI A.4 ($n = 23$), and XI A.5 ($n = 20$). Inclusion required a valid RC score and at least three valid English digital reading sessions during the four-week logging period. Six male students were excluded because they recorded only one or two valid sessions, although they had valid RC scores. The three-session threshold was an analytic criterion intended to avoid calculating a student-level ADRO proportion from only one or two isolated sessions; it should not be interpreted as the natural minimum of students' digital reading behavior. A sensitivity analysis retaining all 122 students was therefore conducted.

No standardized English-proficiency measure was administered. Students followed the same school-level English curriculum, but routine teacher-administered English scores were not used as research data. Individual device ownership, home internet access, and prior digital-reading experience were also not formally measured; consequently, equivalent levels of digital access or prior reading experience cannot be assumed.

Instruments and Data Collection

Three instruments were used: a four-week self-reported digital reading log, an ADRO coding rubric, and a researcher-developed 30-item RC test. The digital reading log was administered through Google Forms. Students were instructed to submit one entry after completing an English reading session on a digital device and were encouraged to record it as soon as possible after reading. A valid session involved continuous English digital reading for at least 10 minutes. If reading was interrupted by another activity for 10 minutes or longer, subsequent reading was recorded as a new session; reading the same text on different occasions was also treated as separate sessions. The 10-minute criterion was researcher-defined for operational purposes and was not independently validated.

Table 1
Structure of the Digital Reading Log and Principal ADRO Coding Rules

Component	Information/Rule
Student identification	Name and class, later replaced with anonymous codes in the analytic dataset
Reading record	Date, duration, and title or brief description
Text type	Digital textbook/module/worksheet; teacher-provided material; school-related educational article/website; test-preparation material; school-assigned literary text; general news/blog/information; fiction/entertainment; social media; language-learning website/app; other
Reading purpose	Assignment/homework; test preparation; lesson review; learning a school subject; English for school performance; general English/vocabulary; enjoyment; passing time; social interaction/trends; other
Valid session	English-language digital reading lasting ≥ 10 minutes with interpretable information
Academic coding	Each valid session was coded 1 (academically oriented) or 0 (non-academically oriented) using the combined evidence from text type, stated purpose, and title/description
Ambiguous/other responses	Recoded when sufficiently interpretable; excluded when classification remained unclear
Invalid entries	Non-English, < 10 minutes, vague/uninterpretable, unresolved implausible, or internally inconsistent records were excluded

ADRO was calculated for each student as the number of academically oriented valid sessions divided by the total number of valid sessions, yielding a score from 0 to 1. Coding was based on the combination of text type, reading purpose, and title or brief description rather than on a single response. The complete coding manual provides the original T1–T10 and P1–P10 categories and the detailed decision matrix.

Reading-log data were systematically cleaned before analysis. Completely identical duplicate entries were reduced to one record. Implausible or internally inconsistent entries, including unrealistic durations, were cross-checked against the available log information and corrected when the inconsistency could be resolved; unresolved or uninterpretable entries were excluded. Because text-type and reading-purpose categories were visible on the form, students knew that reading purpose was relevant to the task. Thus, repeated logging may have increased awareness of reading choices or temporarily influenced behavior, creating possible measurement reactivity.

The RC test consisted of five passages (137–169 words each), including three expository and two argumentative texts, followed by 30 multiple-choice items. The test assessed literal (15 items), inferential (10 items), and evaluative comprehension (5 items), with six items assigned to each passage. Students had 60 minutes, and scores were calculated as the number of correct responses divided by 30 and multiplied by 100.

Table 2
Reading Comprehension Test Blueprint and Representative Items

Text	Text Type	Topic	Literal	Inferential	Evaluative	Total
1	Expository	The Impact of Social Media on Mental Health	3	2	1	6
2	Argumentative	The Importance of Learning Coding in High School	3	2	1	6
3	Expository	Global Warming and Polar Bears	3	2	1	6
4	Argumentative	Should Homework be Abolished?	3	2	1	6
5	Expository	Artificial Intelligence (AI) in Daily Life	3	2	1	6
Total			15	10	5	30

Representative items: Literal—"According to the text, what is one major negative effect of heavy social media use on teens?" (A); Inferential—"What can be inferred about why edited photos may lower teens' self-esteem?" (C); Evaluative—"Which statement best describes the author's view on social media?" (C).

Before the main study, the RC test underwent expert judgment, blueprint alignment, and pilot testing with 37 students outside the main sample. Item difficulty indices ranged from .541 to .892, and corrected item-total correlations ranged from .283 to .853. Q02 produced the lowest corrected item-total correlation (.283) but was retained because it was close to the .30 criterion, its deletion would have changed Cronbach's α only from .923 to .924, and expert review supported its relevance to the blueprint. The final test showed high internal consistency ($\alpha = .923$). This coefficient was interpreted as reliability evidence, whereas content representation was supported through blueprint alignment and expert judgment.

Data collection proceeded chronologically. After institutional permission and coordination with the English teacher, students received an orientation on the study and on completing the reading log. They logged reading activities from April 1 to April 28, 2026, with brief administrative reminders sent weekly through class WhatsApp groups. The reminders supported completion but did not prescribe text type, reading purpose, or frequency, and no reading intervention was provided. The RC test was administered under supervised classroom conditions between May 4 and May 8, 2026. Names and classes collected through the form were used only to link repeated submissions and were replaced with anonymous student codes before the log and RC data were merged for analysis.

Data Analysis

Data were analyzed using descriptive statistics, Spearman's rho correlation, and multiple linear regression in SPSS. DRF was calculated as the number of valid sessions recorded by each student during the four-week period, ADRO as the student-level proportion of academically oriented valid sessions, and RC as the percentage of correct answers on the 30-item test. Descriptive statistics included minimum, maximum, mean, standard deviation, median, and interquartile range. Because the raw variables were non-normally distributed and

the bivariate analyses concerned monotonic associations, Spearman's rho was used for DRF–RC, ADRO–RC, and DRF–ADRO relationships.

Multiple linear regression was used to examine how much variance in RC was jointly accounted for by DRF and ADRO. OLS was considered appropriate because normality of predictor variables is not itself an OLS requirement; model adequacy depends more directly on functional form and residual behavior. Accordingly, the count nature of DRF and bounded-proportion nature of ADRO were evaluated through diagnostic and robustness checks rather than treated as reasons to use count- or proportion-outcome models. Regression diagnostics included residual normality, linearity, homoscedasticity, multicollinearity, independence of errors, and influential observations. Standardized residual-versus-predicted plots and a normal P–P plot were inspected; tolerance and VIF assessed multicollinearity, Durbin–Watson assessed residual independence, and standardized residuals, Cook's distance, leverage, and Mahalanobis distance were used to examine influential cases.

Two additional robustness procedures were conducted. First, mean-centered quadratic DRF and ADRO terms were entered hierarchically to assess whether nonlinear specifications improved the linear model. Second, bias-corrected and accelerated (BCa) 95% confidence intervals based on 5,000 bootstrap resamples were obtained for the regression coefficients. Finally, the primary analyses were repeated with all 122 initial participants to evaluate the sensitivity of the findings to the three-session inclusion criterion. All inferential findings were interpreted as statistical associations and in-sample explained variance rather than causal effects or out-of-sample predictive accuracy.

RESEARCH FINDINGS AND DISCUSSION

Findings

The 116 retained participants recorded a mean of 6.50 valid English digital reading sessions during the four-week logging period. The mean student-level Academic Digital Reading Orientation (ADRO) score was .3794, indicating that academically oriented reading represented less than half of valid logged sessions on average at the student level. Digital Reading Frequency (DRF) and ADRO were both positively associated with Reading Comprehension (RC), whereas DRF and ADRO were virtually unrelated. In the joint regression model, both indicators remained significant and accounted for 35.4% of the observed variance in RC.

Descriptive Statistics

Table 3
Descriptive Statistics of the Main Variables

Variable	N	Min.	Max.	Mean	SD	Median	IQR
Digital Reading Frequency	116	3.00	14.00	6.50	2.79	6.00	4.00
Academic Digital Reading Orientation	116	.00	.80	.3794	.20995	.4000	.30
Reading Comprehension	116	16.67	100.00	70.72	21.46	70.00	33.33

Note. DRF includes only valid logged English digital reading sessions lasting at least 10 minutes. The observed minimum of three sessions reflects the analytic inclusion criterion rather than the natural minimum reading frequency of all initially participating students.

As shown in Table 3, DRF ranged from 3 to 14 valid sessions. The observed minimum resulted from the inclusion criterion and should not be interpreted as students' natural minimum reading frequency. Moreover, the values refer only to valid recorded sessions and do not represent shorter, unrecorded, offline, or otherwise invalid reading activities. ADRO ranged from .00 to .80. Because ADRO was calculated separately for each student, the mean of .3794 represents the average student-level proportion of academically oriented sessions and should not be interpreted as the aggregate percentage of all sessions in the sample. RC scores ranged from 16.67 to 100.00.

Regression Diagnostics

OLS diagnostic assessment indicated acceptable residual normality, linearity, and homoscedasticity. Multicollinearity was negligible (tolerance = .998; VIF = 1.002), the Durbin–Watson statistic was 2.263, and standardized residuals ranged from approximately –2.518 to 2.461, with no severe influential observations identified. Visual inspection of the normal P–P plot showed that observed probabilities followed the expected diagonal reasonably closely, while the standardized residual-versus-predicted plot showed no clear systematic or funnel-shaped pattern.

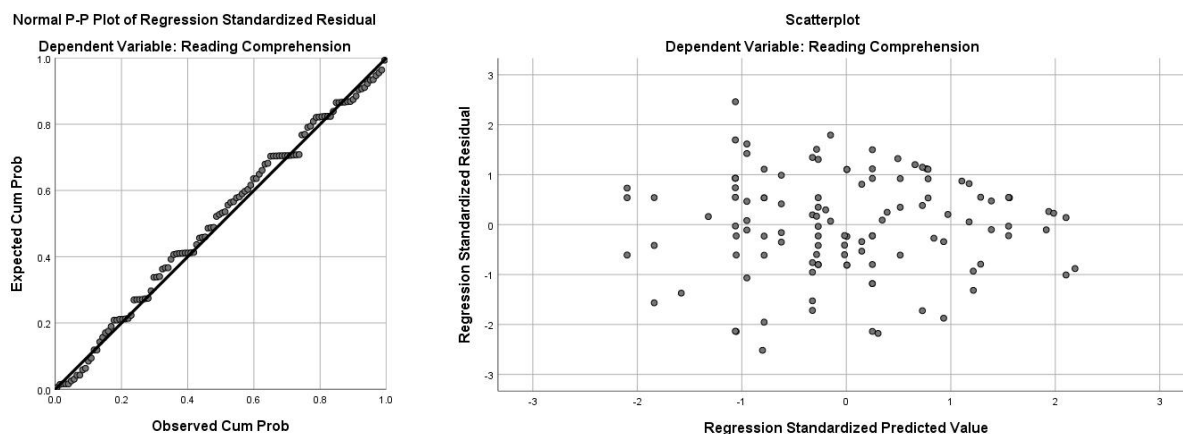


Figure 1
Regression Diagnostic Plots for the Primary OLS Model

Correlation Analysis

Table 4

Spearman's Rho Correlations among DRF, ADRO, and RC

Relationship	Spearman's rho	p-value
DRF–RC	.455	< .001
ADRO–RC	.377	< .001
DRF–ADRO	.007	.943

DRF was positively associated with RC, $\rho = .455$, $p < .001$, as was ADRO, $\rho = .377$, $p < .001$. In contrast, DRF and ADRO were virtually unrelated, $\rho = .007$, $p = .943$, indicating that students who recorded more valid sessions did not necessarily have a higher proportion of academically oriented sessions. The near-zero intercorrelation supports treating the two indicators as distinct dimensions of recorded digital reading behavior.

Multiple Linear Regression

Table 5

Multiple Linear Regression Predicting Reading Comprehension

Predictor	B	SE	β	t	p-value	95% CI for B
Constant	34.020	4.956	—	6.865	< .001	[24.203, 43.838]
DRF	3.307	.583	.430	5.674	< .001	[2.152, 4.462]
ADRO	40.064	7.738	.392	5.178	< .001	[24.734, 55.393]

Model statistics: $R = .595$, $R^2 = .354$, adjusted $R^2 = .342$, $F(2, 113) = 30.925$, $p < .001$.

The regression model was statistically significant and accounted for 35.4% of the observed variance in RC. DRF showed a significant positive conditional association with RC ($B = 3.307$, $\beta = .430$, $p < .001$). Holding ADRO constant, students who differed by one additional valid logged session differed by an estimated 3.307 points in fitted RC scores. This

estimate represents an association and does not imply that assigning one additional session would cause a 3.307-point increase in comprehension.

ADRO also showed a significant positive conditional association with RC ($B = 40.064$, $\beta = .392$, $p < .001$). Because ADRO ranged from 0 to 1, a .10 difference in ADRO corresponded to an estimated 4.006-point difference in fitted RC scores, holding DRF constant. This estimate likewise represents a conditional association rather than a causal effect.

Robustness Analyses

Bootstrap, nonlinear, and sensitivity analyses supported the robustness of the primary findings. BCa confidence intervals based on 5,000 bootstrap resamples remained above zero for both DRF ($B = 3.307$, bootstrap $SE = .502$, 95% CI [2.317, 4.379]) and ADRO ($B = 40.064$, bootstrap $SE = 8.401$, 95% CI [24.036, 55.963]). Adding mean-centered quadratic terms produced only a trivial increase in explained variance ($R^2 = .354$ to $.358$; $\Delta R^2 = .004$, $\Delta F(2, 111) = .379$, $p = .685$), and neither quadratic term was significant (DRF²: $p = .563$; ADRO²: $p = .507$), providing no evidence that a quadratic model improved the linear specification. Finally, the sensitivity analysis including all 122 initial participants produced substantively consistent results: DRF–RC $\rho = .456$, $p < .001$, ADRO–RC $\rho = .386$, $p < .001$, DRF–ADRO $\rho = .107$, $p = .242$, and the regression remained significant ($R^2 = .326$, $F(2, 119) = 28.787$, $p < .001$), with both DRF ($\beta = .398$) and ADRO ($\beta = .355$) remaining significant at $p < .001$.

Discussion

The present study found that Digital Reading Frequency (DRF) and Academic Digital Reading Orientation (ADRO) were both positively associated with Reading Comprehension (RC), whereas DRF and ADRO were virtually unrelated. Both indicators remained statistically significant when entered jointly in the regression model, suggesting that the frequency of valid logged English digital reading and the academic orientation of those sessions represent distinguishable but complementary dimensions of students' self-reported digital reading practices. This interpretation is consistent with research showing that digital reading cannot be reduced to access or a single general-habit construct because comprehension may depend on reading activity, strategy use, task characteristics, and the nature of engagement with digital texts (Habók et al., 2024; Pratiwi et al., 2026; Reiber-Kuijpers et al., 2021; Rinantanti et al., 2024). Nevertheless, the present relationships remain associational rather than causal.

The positive DRF–RC association is broadly compatible with previous school-level research indicating that structured interaction with digital English texts can be associated with or contribute to stronger comprehension under particular instructional conditions. Studies involving secondary or senior-high-school EFL learners have reported improved comprehension in digital-reading environments using ReadWorks, e-reading activities, Webtoon, and active online-reading strategies (Dinda et al., 2025; Fitriani & Sunarti, 2024; Kaban, 2021; Putri et al., 2023; Quinonez-Beltran et al., 2023). Research in high-school digital environments likewise emphasizes navigation, self-regulation, and strategic processing rather than mere screen exposure (Mañá et al., 2026; Norberg et al., 2025; Setyoningsih et al., 2025). Putri and Damayanti (2025) further illustrate how digital extensive reading may provide meaningful English exposure for a younger EFL learner. These studies differ from the present correlational design and therefore do not establish that increasing DRF alone would improve comprehension.

From a theoretical perspective, the DRF–RC association can be viewed through Reading Engagement Theory and the Input Hypothesis. Reading Engagement Theory treats behavioral participation as one component of engagement (Guthrie & Wigfield, 2000), whereas the Input Hypothesis emphasizes exposure to comprehensible language input in

second-language development (Krashen, 1985). Repeated digital reading may therefore create opportunities for contact with vocabulary, grammatical structures, discourse patterns, and textual meanings. However, the present logs did not directly measure attention, cognitive effort, reading strategies, depth of processing, input comprehensibility, or vocabulary uptake. These theories should therefore be treated as possible explanatory lenses rather than mechanisms demonstrated by the present data.

Alternative explanations must also be considered. Students with stronger prior comprehension may have been more confident in approaching English digital texts, more willing to read frequently, and better able to select or persist with academically oriented materials. Reading motivation, prior English achievement, vocabulary knowledge, home learning support, device and internet access, and academic conscientiousness or study habits could also influence both reading behavior and comprehension. School-level research indicates that digital literacy, engagement, strategy use, and navigation characteristics can be related to reading performance (Habók et al., 2025; Norberg et al., 2025; Pratiwi et al., 2026; Wijayanti et al., 2026), while broader evidence shows that socioeconomic and access-related conditions can shape digital-reading opportunities (Peras et al., 2023). Consequently, the regression coefficients should be interpreted as conditional associations after adjustment for the other reading-log indicator, not as independent causal effects.

The positive ADRO–RC association suggests that the purpose and contextual direction of digital reading may matter alongside frequency. Digital-reading research indicates that comprehension depends on what readers do with texts, including their purposes, strategies, task demands, and information-processing requirements (Habók et al., 2024; Reiber-Kuijpers et al., 2021; Salmerón et al., 2023). Academically oriented sessions may expose students to informational, argumentative, examination-related, or lesson-related materials resembling formal school-reading demands. However, the present study measured orientation rather than reading quality. Academic reading may be superficial or poorly understood, whereas non-academic reading can involve sustained attention, complex language, inferential processing, enjoyment, and meaningful exposure. This distinction is consistent with evidence showing that the relationship between digital reading habits and comprehension varies according to reading type, purpose, and context rather than following a uniformly positive pattern (Altamura et al., 2025; Salmerón et al., 2025; Vargas et al., 2024). Leisure digital reading may also provide personally meaningful EFL exposure (Putri & Damayanti, 2025). The positive ADRO–RC relationship should therefore not be interpreted as evidence that academic reading is inherently superior to leisure reading.

The near-zero relationship between DRF and ADRO further supports distinguishing reading quantity from reading orientation. Students who recorded more digital-reading sessions did not necessarily devote a greater proportion of those sessions to academic purposes. This is important because prior research has often examined broader constructs such as digital reading activity, digital literacy, reading habits, or online-reading strategies (Habók et al., 2025; Pratiwi et al., 2026; Wijayanti et al., 2026; Wiranatha & Santosa, 2024). Such constructs remain useful, but they do not necessarily distinguish how often reading occurs from the purposes guiding it. By deriving DRF and ADRO separately from the same four-week log, the present study provides a more differentiated description of students' reported digital-reading activity.

The four-week reading-log approach also provides a methodological contribution by producing time-bounded, session-specific self-reported information rather than relying solely on broad retrospective judgments. Importantly, reading-log research is not limited to university populations. Gonzalez-Torres and Vargas-Saritama (2025) used reading journals with senior-high-school EFL students, while Kalsum et al. (2022) examined the implementation of reading logs in a madrasah-based Islamic boarding school literacy context.

Reading logs have also been examined in postsecondary EFL settings (Intasuk, 2024; Lien, 2025; Madjdi et al., 2024; Zur et al., 2025), which are used here as methodological precedents rather than direct population equivalents. At the same time, logs remain self-reports and may be affected by incomplete or delayed recall, inaccurate duration estimates, social-desirability responding, fabrication, inconsistent recording, and measurement reactivity.

These qualifications also shape the pedagogical interpretation. The findings do not show that requiring students to complete more reading sessions or directing them toward more academic texts will necessarily improve comprehension. Rather, teachers may consider supporting regular and purposeful digital reading together with strategy instruction, comprehension monitoring, vocabulary development, and careful interaction with online information. School-level studies demonstrate that digitally supported reading can be productive when accompanied by structured tasks, strategies, or instructional support (Dinda et al., 2025; Mañá et al., 2026; Quinonez-Beltran et al., 2023; Setyoningsih et al., 2025). However, these findings should not be reduced to a simple “more digital reading is better” conclusion, particularly because digital-reading outcomes vary across reading conditions and purposes (Salmerón et al., 2023). A more defensible instructional aim is to support sustained, strategic, and purposeful reading across both academic and personally meaningful digital contexts.

The present study supports conceptualizing digital reading as a multidimensional self-reported practice rather than a single habit. DRF and ADRO were independently associated with RC and were almost unrelated to each other, but neither indicator captures the full quality of reading engagement, and the correlational design cannot determine temporal or causal direction. Future research should incorporate potential confounders such as prior achievement, vocabulary knowledge, motivation, home support, digital access, and academic conscientiousness. Longitudinal, controlled, and multisite studies, potentially combining self-reported logs with platform-generated or process-based measures, would help clarify temporal direction and distinguish reported reading activity from actual behavioral and cognitive engagement.

CONCLUSION

This study concludes that Digital Reading Frequency (DRF) and Academic Digital Reading Orientation (ADRO) represent two distinct but complementary dimensions of students’ self-reported digital reading practices that are both positively associated with Reading Comprehension (RC). The findings showed that DRF was moderately and positively related to RC ($\rho = .455, p < .001$), while ADRO was also positively related to RC ($\rho = .377, p < .001$). At the same time, DRF and ADRO were virtually unrelated to each other ($\rho = .007, p = .943$), indicating that students who recorded more frequent digital reading sessions did not necessarily devote a greater proportion of those sessions to academically oriented reading. This distinction is important because it suggests that reading quantity and reading orientation should not be treated as interchangeable indicators of digital reading behavior. The multiple regression model further showed that DRF and ADRO jointly accounted for 35.4% of the observed variance in RC, with both variables remaining independently significant when entered together. The robustness analyses, including bootstrapping, nonlinear specification checks, and sensitivity analysis using the full initial sample, produced substantively consistent results.

The study also concludes that the pedagogical value of digital reading lies not simply in increasing the number of reading sessions, but in supporting sustained, strategic, and purposeful engagement with digital texts across both academic and personally meaningful contexts. The findings do not justify a simplistic recommendation that “more digital reading is better,” nor do they demonstrate that academically oriented reading is inherently superior to leisure reading. Instead, the positive associations found for both DRF and ADRO suggest that

teachers may need to attend simultaneously to how often students read, why they read, what kinds of texts they select, and how they process those texts. In practice, digital reading activities may be more educationally meaningful when combined with strategy instruction, comprehension monitoring, vocabulary development, and careful engagement with online information. At the same time, the study's limitations require caution. The reading logs were self-reported and may have been influenced by recall error, social desirability, inconsistent recording, or measurement reactivity, while unmeasured factors such as prior achievement, vocabulary knowledge, motivation, home support, digital access, and academic conscientiousness may also have contributed to the observed relationships.

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INFORMED CONSENT AND INSTITUTIONAL PERMISSION STATEMENT

Formal research permission was obtained through the university (Letter No. 2871/DST/UN36.5/KM/2026), the South Sulawesi Provincial Investment and One-Stop Integrated Services Office (Letter No. 29461/S.01/PTSP/2026), the Makassar City Office of the Ministry of Religious Affairs (Letter No. B-83/Kk.21.12/1/TL/00/03/2026), and MAN 3 Makassar. Students were informed about the study, confidentiality, and the absence of academic consequences, and participation was voluntary. No separate formal parental or guardian consent procedure was implemented. Identifiers were replaced with anonymous codes, and reading-log titles and descriptions were treated confidentially.

DATA AVAILABILITY STATEMENT

Individual-level data are restricted to protect participant privacy. The study instruments, ADRO coding manual, and aggregated or synthetic data may be available from the corresponding author upon reasonable request, subject to ethical and institutional requirements.

DECLARATION OF GENERATIVE AI USE

ChatGPT (OpenAI), Gemini (Google), DeepL, and QuillBot were used for brainstorming, outlining, drafting, editing, and proofreading only. They were not used for data generation, classification, statistical analysis, or independent scientific interpretation. All AI-assisted content was reviewed and verified by the authors, who retain full responsibility for the final manuscript.

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