

EXPLORING THE IMPACT OF ACADEMIC READING AND RESEARCH COMPETENCE ON ACADEMIC WRITING: A MULTI-REGRESSION ANALYSIS AMONG EFL UNDERGRADUATES

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Article Info	Abstract
Article History Received: October 2023 Revised: November 2023 Published: January 2024	<i>In today's academic landscape, enhancing the academic writing proficiency of undergraduate students studying English as a Foreign Language (EFL), particularly in the context of thesis writing, is a paramount concern. This research aims to shed light on the influence of Academic Reading (AR) and Research Competence (RC) on Academic Writing (AW) through a comprehensive analysis employing a multi-regression approach. To achieve this goal, the researcher was conducted a rigorous investigation involving 162 students enrolled in English Literature and English Education departments. The researcher was distributed a structured online questionnaire to gather relevant data, which the researcher subsequently analyzed using SmartPLS 4. The analysis result unveiled a substantial statistical relationship between AR, RC, and AW, with an impressive R-square value of 0.580. This finding underscores the pivotal role played by AR and RC in explaining approximately 58% of the variance in AW. This study represents a critical step forward in comprehending the intricate interplay between AR, RC, and AW. It offers valuable insights into the substantial connections between academic reading, research competence, and academic writing. Importantly, this research provides guidance for educational efforts aimed at enhancing the academic writing capabilities of EFL undergraduates, with a specific focus on the realm of thesis writing.</i>
Keywords Academic reading; Research competence; Academic writing; Multi-regression analysis;	
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INTRODUCTION

Embarking on the academic journey, especially for English as a Foreign Language (EFL) undergraduate students, necessitates mastery of a range of skills, with academic writing being a cornerstone. Within the context of thesis writing, students navigate a complex landscape that demands the seamless integration of cognitive and metacognitive skills encompassed by academic literacy (Mežek et al., 2021). Despite two decades of scholarly recognition, the precise definition and scope of academic literacy remain elusive, hindering a comprehensive understanding of its multi-dimensional nature. The evolution of academic literacy research from 2002 to 2019 underscores this field's dynamic nature, particularly evident in the rise of mixed-method intervention studies, especially in ESL and EFL contexts (Li, 2022).

Thesis writing poses a multifaceted challenge for EFL undergraduate students, requiring a harmonious blend of language, structure, and purpose (Tamimi & Shuib, 2009). This complexity is further compounded by the diverse linguistic and cultural backgrounds of these students, which intersect with the intricate demands of constructing academic narratives (Cooley & Lewkowicz, 2011). Challenges such as selecting a research topic, mastering academic vocabulary, crafting literature reviews, and overcoming internal hurdles like self-doubt and external hurdles like communication barriers with supervisors are common (Mali,

2023). Furthermore, the interrelationship between academic reading and writing reveals a milieu fraught with language socialization challenges, resource allocation dilemmas, and power dynamics within a broad sociocultural context. Proposed strategies include delving into relevant materials, seeking guidance, and creating conducive learning environments, all of which can serve as catalysts in overcoming these challenges.

At the core of academic literacy lies research competence, a blend of motivational, operational, and personal elements meticulously honed to transition from theoretical understanding to practical application application (Santos et al., 2022). This integration forms the essence of a proficient researcher capable of navigating research-oriented pursuits, thereby translating academic inquiry into practical tasks (Saunders & Jamieson, 2020). However, while the existing literature provides insights into the challenges faced by EFL undergraduate students in thesis writing and the role of academic reading and research competence, there is a notable absence of empirical studies investigating the direct influence of academic reading and research competence on academic writing. The intricate dynamics between these elements and their collective impact on academic writing remain largely unexplored.

This research aims to fill this gap by conducting a multi-regression analysis to quantify the impact of academic reading and research competence on academic writing. This study will provide a more nuanced understanding of the interplay between these variables and their collective influence on the quality of academic writing among EFL undergraduate students in Indonesian context. The findings of this research could have significant implications for curriculum design and pedagogical practices in EFL contexts. They could inform the development of targeted interventions to enhance academic reading and research competence, thereby improving academic writing skills. Furthermore, the results could provide valuable insights for educators, enabling them to better support EFL students in their academic writing endeavors. Ultimately, this research could contribute to fostering a more supportive academic narrative crafting ecosystem for EFL undergraduates.

Academic reading is paramount in bolstering EFL students' language acquisition, acting as a conduit to higher-order linguistic and cognitive skills vital for comprehending academic texts. A myriad of studies have delved into diverse facets of academic reading among EFL learners; for instance, one study illuminated the preeminence of problem-solving strategies, albeit with a pronounced disparity between male and female students concerning strategy preferences (Mardiningrum & Salsabilla, 2022). An innovative model dubbed Reading-Based Writing was probed for its efficacy in augmenting academic writing skills, unveiling a significant positive impact, thereby aligning with another study that corroborated the potent role of extensive reading in significantly enhancing students' academic writing prowess (Rozimela et al., 2022). On a different tangent, examining the affective dimension of academic reading engagement among EFL student teachers unearthed a predominant external drive, marked by a tepid enthusiasm and confidence toward academic reading (Yulia et al., 2020). Lastly, the intricate interplay between critical and logical thinking skills and intertextual connections emerged as a catalyst for promoting critical analysis among EFL readers, underscoring the holistic nature of academic reading which melds word recognition, comprehension, vocabulary, and fluency with an active reading engagement being the linchpin for fostering a deeper assimilation of textual ideas and prior knowledge (Abahussain et al., 2022).

Research competence entails a mix of skills such as motivation, information gathering, critical thinking, and the ability to work independently or within groups (Gonzalez et al., 2022). These competencies are vital for students to navigate through a continuously evolving academic and professional landscape. Studies suggest that research competence is important for university students, with factors such as intrinsic motivation, course competence, and scientific interest playing significant roles in shaping their attitudes toward research (Rodríguez et al.,

2021). The assemblage of papers underscores a pronounced necessity for augmenting research competences among university scholars, delineating specific areas of strengths and weaknesses in current pedagogical frameworks. While students in virtual learning domains exhibited prowess in cognitive and teamwork competences, they were found wanting in technological, methodological, and project management (Garay-Argandona et al., 2021). Delving into nuanced facets, the amalgamation of motivational, gnoseological, operational, and personal components constituting research competency, advocating for interactive methodologies and social media utilizations to bolster research competences (Prosekov et al., 2020). On the other hand, notable lacunae in communicative and state-of-the-art reviewing skills among Education Sciences undergraduates, thereby highlighting an exigent call for curricula and training modules meticulously crafted to prioritize the nurturing of research competences, ensuring a well-rounded, adept scholarly populace capable of navigating the complex, ever-evolving academic and professional landscapes (Ciraso-Calí et al., 2022).

Academic writing, emblematic of evidence-based discourse and logical coherence, serves as a formal conduit of expression pivotal in the scholarly arena, necessitating an array of cognitive and metacognitive capacities for a well-orchestrated, clear, and precise articulation of ideas (Teng et al., 2022). The pedagogical interventions such as genre-based instruction revealed to significantly augment students' writing prowess and genre cognizance in a Thai undergraduate milieu, alongside peer feedback and collaborative learning strategies, embody critical avenues to ameliorate the hurdles faced by these learners, especially in the facets of language, structure, and content (Zhang et al., 2023). Notably, the pragmatic application of the Writing Circles strategy has demonstrated a substantial promise in reinforcing writing acumen, fostering interaction, and nurturing communicative skills, thereby underlining the essence of a well-rounded, interactive, and feedback-driven pedagogical framework in mitigating the academic writing challenges confronted by EFL undergraduates (Alhazmi & Elamin, 2023). Collectively, these findings proffer nuanced insights into genre-based instruction, collaborative learning imperatives, strategic underpinnings, and feedback criteria instrumental in amplifying academic writing prowess among EFL students.

The complex relationship between academic reading, research competence, and academic writing is fundamental to the academic success of EFL undergraduate students. Previous studies have investigated this intricate relationship, revealing a positive correlation between academic reading and writing (Graham et al., 2018). Proficient reading skills enhance writing capabilities by exposing students to various writing styles, argument structures, and vocabulary. Additionally, with its critical thinking and information evaluation components, research competence significantly boosts academic writing skills (Martínez & Montoya, 2021). Despite extensive existing literature, certain gaps remain. One notable gap is the lack of clarity on operationalizing academic writing and its correlation with academic reading and research competence, especially in the EFL context. Additionally, the variance in research competence acquisition across different courses and its impact on academic writing remains underexplored. Moreover, the literature does not adequately address EFL undergraduate students' diverse challenges in developing these key academic skills.

This research aims to bridge these identified gaps by conducting a multi-regression analysis to quantify the impact of academic reading and research competence on academic writing. This study tries to answer of how do academic reading and research competence collectively impact academic writing skills among EFL undergraduate students. This study will provide a more nuanced understanding of the interplay between these variables and their collective influence on the quality of academic writing among EFL undergraduate students in the Indonesian context. The findings of this research could have significant implications for curriculum design and pedagogical practices in EFL contexts, potentially informing the development of targeted interventions to enhance academic reading and research competence,

thereby improving academic writing skills. Furthermore, the results could offer valuable insights for educators, enabling them to better support EFL students in their academic writing endeavors. Ultimately, this research aims to contribute to fostering a more supportive academic narrative crafting ecosystem for EFL undergraduates. Through robust data collection and analysis, this study contributes to the broader academic discourse surrounding EFL undergraduate students' literacy and research skills.

RESEARCH METHOD

Research Design

The research design for this study is quantitative, employing a survey method for data collection and a multi-regression analysis for data interpretation. The focus of the research is to investigate the relationship between the independent variables, Academic Reading (AR) and Research Competence (RC), and the dependent variable, Academic Writing (AW), among EFL undergraduate students in Indonesia. The multi-regression analysis is used to quantify the relationship between the independent and dependent variables. This analysis ensures the validity and reliability of the results, providing a robust and comprehensive exploration of the research question. However, the researcher acknowledge potential limitations related to self-reported survey data, which he mitigated through confidentiality measures to encourage honest responses and by acknowledging the demographic specificity of the study's sample.

Population and Sample

The study involved a total of 162 students from the English Literature and English Education department across three public universities in Java, Indonesia. These students were selected using a purposive sampling strategy, a non-probability sampling method where participants are chosen based on their characteristics and the study's objectives. In this case, the students selected had already passed the seminar proposal subject, indicating their readiness and capability to undertake research-related tasks. The demographic information of these respondents is provided in Table 1.

Table 1
Respondents Demographic Information

	Frequency	Percent
Major		
English Education	116	71.6
English Literature	46	28.4
Gender		
Male	38	23.5
Female	124	76.5
Semester		
Six	2	1.2
Seven	65	40.1
Eight	16	9.9
> Eight	79	48.8

Instruments

The study employed a close-ended questionnaire to measure three variables: academic reading (AR), research competence (RC), and academic writing (AW). These instruments were adapted from previous studies (Mendoza et al., 2022; Song & Zhou, 2022), comprising various items for each variable. Specifically, AR was evaluated with 11 items, RC with six items, and AW with 15 items. The questionnaire underwent rigorous validity and reliability tests. The researcher employed face validity, which involved experts from English education contributing

to the analysis of the questionnaire. Additionally, pilot testing was conducted with a sample of 50 respondents. Based on the feedback, revisions were made to improve clarity and avoid redundancy. Specifically, three question items in AR (1,5,6) and two question items in AW (3,5) were revised. The reliability and validity of the questionnaire were further confirmed through pilot analysis. The Cronbach Alpha and R-values were calculated using SPSS 23 to ensure the instrument's consistency and accuracy. The questionnaire's reliability and validity were confirmed with a Cronbach Alpha value of 0.779 and an R-value between 0.325-0.448 with R-table 0.224

Upon confirming the questionnaire's validity and reliability, ethical clearance was obtained from the university institute where the respondents were studying. This clearance ensured that the research adhered to the ethical guidelines and standards set by the institution, safeguarding the rights, confidentiality, and well-being of the participants. The data collection process took place in August 2023. The online questionnaire link was distributed via Google form to the head of the department. The department head then disseminated the questionnaire to the students, ensuring a wide reach and diverse responses.

Data Analysis

The data analysis involved multiple regression using SmartPLS 4. The analysis comprised several progressive stages. The first stage of the analysis is the Normality Test, which checks if the data distribution significantly deviates from a normal distribution. This is followed by a Multicollinearity Test to examine the correlations among predictor variables, ensuring they are not highly correlated. Next, a Heteroscedasticity Test is performed to confirm the assumption of equal error variances, a critical assumption in regression analysis. Finally, a comprehensive Multiple Linear Regression Analysis is conducted to determine the relationship between the independent variables (Academic Reading and Research Competence) and the dependent variable (Academic Writing). This multi-stage analysis allows for a thorough examination of the data, providing valuable insights into the impact of Academic Reading and Research Competence on Academic Writing.

RESEARCH FINDINGS AND DISCUSSION

Research Findings

The endeavor to probe the relationship between AW, in which AR and RC become the predictor variables, led to applying a Multiple Linear Regression Analysis. The intricacies of this investigation have unveiled a trove of insightful correlations and statistical significances that carry potential academic implications.

Normality Test

Table 2
Normality Test Result

	Mean	Median	Standard deviation	Excess kurtosis	Skewness
AW	0.000	0.008	0.312	-0.118	-0.054

Initially, the Normality Test was employed to scrutinize the distribution of the data associated with AW. The data table (see Table 2) elucidates a mean and median of 0.000 and 0.008, respectively, alongside a standard deviation of 0.312. In addition, the table reveals relatively low excess skewness (-0.054) and kurtosis (-0.118), which suggest a reasonably normal distribution of data. This value indicates that the absence of a pronounced skewness underscores a balanced distribution conducive to further parametric analyses. Then, the modest excess kurtosis hints at a moderate outlier presence, which may necessitate further outlier analysis to ascertain the robustness of subsequent analytical stages. This initial exploration into

the data's normality furnishes a significant foundation upon which further statistical examinations can be confidently constructed.

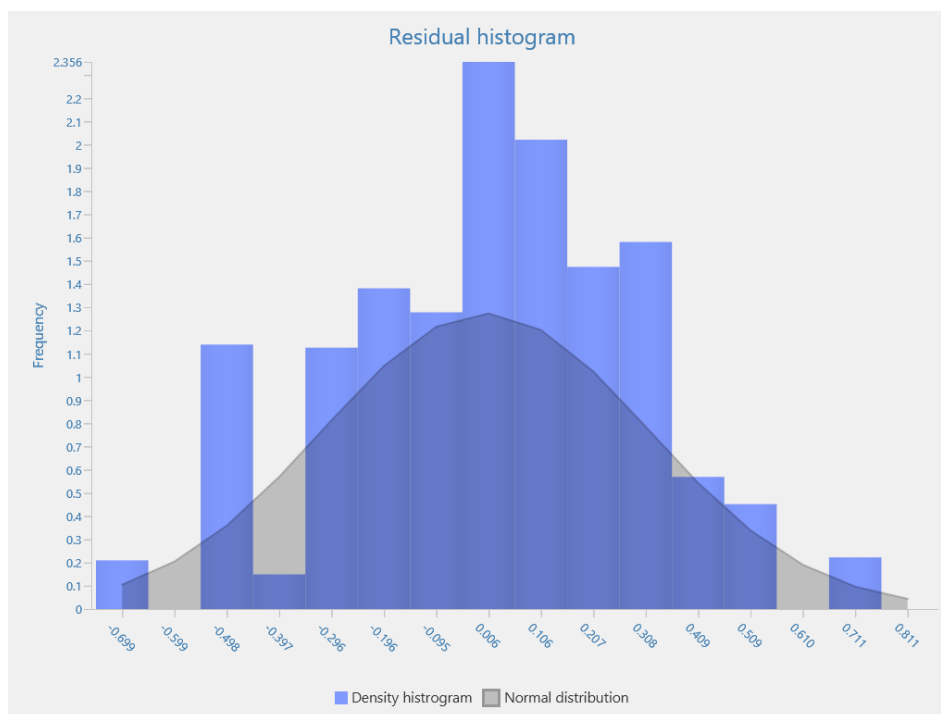


Figure 1. Histogram

Moreover, the histogram (see Figure 1) represents the distribution of residuals in a dataset. The x-axis ranges from -0.15 to 0.17, indicating the values of the residuals. The y-axis ranges from 0 to 2356, representing the frequency of each residual value. The histogram is approximately normally distributed, as indicated by the overlay of the density histogram (in gray), which follows the shape of a normal distribution curve. The peak of the histogram is around 0, suggesting that most residuals are close to 0. This is a good sign as it indicates that the model fits the data well.

Multicollinearity Test

Table 3
Multicollinearity Test Result

	VIF
AR	1.213
RC	1.213

The Multicollinearity Test, a pertinent step, was executed to identify potential multicollinearity between the predictor variables. Table 3 shows that the Variance Inflation Factor (VIF) for both AR and RC was 1.213, a value significantly below the expected threshold of 5; thus, no multicollinearity issues were observed. This result is particularly illuminating as it signifies an absence of multicollinearity between the AR and RC variables. This absence indicates a level of independence between these predictor variables, which is a desirable characteristic in regression analysis as it ensures that the variables carry unique information to the model. The low VIF values provide reassurance against potential multicollinearity concerns, which could have distorted the analysis and interpretation of the relationship between the predictors and the response variable.

Heteroscedasticity Test

Table 4
Breusch-Pagan Test Result

	Test-Statistic	df	P value
Breusch-Pagan Test	0.364	2	0.834

The Heteroscedasticity test, executed via the Breusch-Pagan Test (see Table 4), yielded a test statistic of 0.364 with a degree of freedom (df) of 2 and a p-value of 0.834. The p-value, substantially exceeding the conventional significance level of 0.05, signifies a failure to reject the null hypothesis, thus implying a lack of heteroscedasticity within the dataset. This is a desirable outcome, indicating the constancy of variance across the data—an assumption crucial for the reliability of regression analysis. This data insinuates a harmonious dispersion of residuals, paving the way for a more reliable and valid interpretation of the ensuing multiple regression analysis. The absence of heteroscedasticity, as revealed by the Breusch-Pagan Test, substantiates the homogeneity of variance, a pivotal assumption underlying the linear regression model.

Multiple Linear Regression Analysis

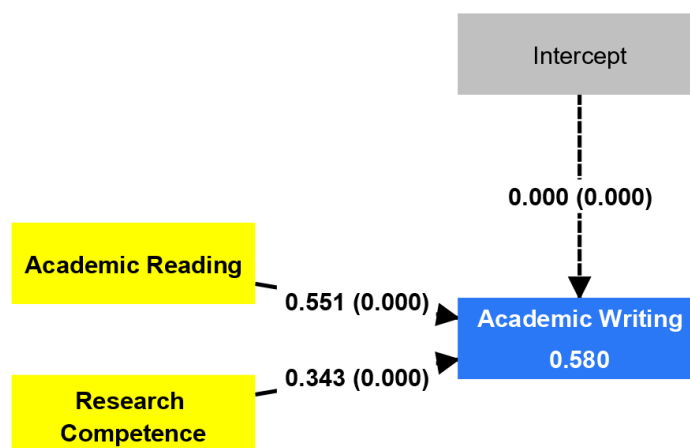


Figure 2. Model Summary

Transitioning to the core of the investigation, the Multiple Linear Regression Analysis, the Model Summary (see Figure 2) reveals a compelling description. The model summary has three observed variables of AR, RC, and AW. The p-values were in-lined with the following tables, which indicate that the relationship of the model is statistically significant (<0.05). Moreover, The R-square value for the model is 0.580, suggesting approximately 58% of the variance in the latent variable.

Table 5
Coefficients Summary

	Standardized coefficients	SE	T value	P value
AR	0.551	0.049	9.724	0.000
RC	0.343	0.045	6.064	0.000
Intercept	0.000	0.192	5.128	0.000

On the other hand, based on the Coefficients Summary (see Table 5), the standardized coefficients, 0.551 for AR and 0.343 for RC, denote these predictors' relative impact, with AR wielding a slightly more pronounced influence. The t-values of 9.724 and 6.064, coupled with

p-values of 0.000, underscore the statistical significance of these predictors. The intercept, a crucial part of the model, stood at 0.986, elucidating the expected value of AW when the predictor variables are held constant. This, alongside the significant t-value of 5.128 and p-value of 0.000, affirms the model's structural integrity.

Table 6
ANOVA Summary

	Sum square	df	Mean square	F	P value
Total	37.575	161	0.000	0.000	0.000
Error	15.790	159	0.099	0.000	0.000
Regression	21.785	2	10.892	109.684	0.000

In addition, Table 6 furnishes a robust verification of the model's significance with an F-statistic of 109.684 and a p-value of 0.000, indicating that the model significantly elucidates the variance in AW. It can be deduced that the model significantly fits the data. The significant F-statistic affirms the model's efficacy in explaining the variance in the dependent variable. As mirrored in the substantial F-value, this model serves as a robust framework for interpreting the dynamics between AR, RC, and the dependent variable.

Table 7
R² Values

	AW
R-square	0.580
R-square adjusted	0.574
Durbin-Watson test	1.910

Delving into the model's explanatory power (see Table 7), the R-square value of 0.580 and the adjusted R-square value of 0.574 depict that the predictor variables elucidate approximately 58% of the variance in AW. This level of explanatory power signifies a substantial degree of association between the variables. This reveals a moderate level of explanatory power, suggesting that other variables not included in this model may also contribute to the variance in AW. In addition, the Durbin-Watson test statistic of 1.910, falling within the conventional range of 1.5 to 2.5, dismisses the presence of significant autocorrelation, thereby bolstering the model's validity.

Discussion

The analytical examination of this study has revealed critical correlations between AW and the predictor variables of AR and RC. The statistical validity of the findings provides a substantial basis for further academic discourse, unveiling AR and RC's influence over AW. The data analysis indicates that both AR and RC are strong predictors of AW proficiency among EFL students.

In synthesizing the findings, the significance levels and the substantial F-statistic from the regression analysis attest to the robustness of the model, validating the critical roles of AR in enhancing AW proficiency. The symbiotic relationship between AR and writing proficiency is paramount, particularly for EFL undergraduate students in Indonesia, and is substantiated by several facets. Initially, these competencies are intertwined, where mastering summarizing skills, synthesis writing, and note-taking are essential aspects of reading-writing relations that significantly contribute to academic triumph (Grabe & Zhang, 2016). Reading is often the precursor to writing, serving as a wellspring of diverse writing styles, structures, and vocabulary

that students can assimilate and employ in their AW endeavors (Grabe & Zhang, 2016). Moreover, AR and writing are instrumental in honing research skills, a requisite in higher education, particularly when embarking on coursework or thesis projects (Ratnawati et al., 2018). Proficient writers in an L2 setting deploy various strategies to surmount challenges in English writing, and reading can unveil these strategies, aiding students in selecting the most efficacious ones for their writing (Cadiz-Gabejan & Quirino, 2021). Hence, in aligning with the academic exigencies at the university, enhancing AR skills among Indonesian EFL undergraduates is a significant stride toward bolstering their AW proficiency (Abid et al., 2023).

AR hurdles in higher education are discernibly linked to challenges in AW, as students often grapple with deciphering formal and intricate words, impeding their ability to articulate ideas effectively in writing (Anwar & Sailuddin, 2022). While AR seminars aim to foster a conducive learning milieu for academic engagement and professional growth, crafting a reading practice that stimulates a dialogical arena for dissecting complex concepts remains a complex endeavor (Afdal et al., 2023). The landscape of AW, although affected by reading anxiety and cultural conditioning, especially among multilingual English-as-additional-language learners, retains its quintessential role in higher education, symbolizing both academic rigor and practical relevance, thus necessitating further exploratory studies to fully comprehend the multifaceted impact of reading anxiety on academic achievements (Soares et al., 2023).

In addition, this study has revealed that RC positively affects AW. Research studies have shown a positive correlation between RC and AW. RC significantly bolsters AW, particularly among EFL undergraduate students in Indonesia, underscored by various factors. Initially, a profound understanding of research methodology, a cornerstone of RC, provides a solid framework for students to construct robust arguments, utilize evidence astutely, and derive legitimate conclusions in their AW (Ratnawati et al., 2018). Furthermore, information literacy, an integral component of RC, empowers students to adeptly locate, assess, and integrate pertinent sources into their writing, elevating its quality (Fajrina et al., 2021).

This study unequivocally underscores that RC positively influences AW, resonating with the established correlation in previous scholarly inquiries. Pertinently, interventions such as research workshops have been evidenced to significantly refine AW expertise, especially among senior members, by engendering critical thinking and adeptness in information evaluation (Martínez & Montoya, 2021). Furthermore, the marked correlation between AR and RC vis-à-vis AW not only corroborates preceding studies but accentuates the indispensable role of AW and RC in cultivating AW skills, thereby underscoring the exigency for higher education curricula to meticulously integrate reading and writing research skills through innovative modalities such as blended courses. The rich interplay between extensive reading, learning style, and emotions, as delineated in the literature, remarkably impacts students' AW competency, reaffirming the imperative to nurture a positive academic self-concept among learners. The nuanced confluence of critical reading and a robust academic vocabulary significantly augments argumentative writing skills, epitomizing the synergistic enhancement of AW through the diligent fostering of RC and AR (Boggs & Manchón, 2023).

The empirical findings presented herein have practical implications for EFL pedagogical approaches. By sharpening the AR and RC of EFL students, there's a strong potential to enhance their AW proficiency. The findings advocate for a more structured integration of AR and research training within the pedagogical framework, a move poised to propel EFL students to higher levels of AW mastery. However, despite the robustness of the findings, the study has certain limitations, including its focus solely on the nexus between AR, RC, and AW. Additionally, the demographic diversity of the EFL populace might impart variations not accounted for in this study. Future research may further delve into the broader sociocultural and linguistic landscapes influencing AW competence, thereby furnishing a more holistic perspective. This investigation has served as a precursor in unearthing AR and RC's significant

impacts on EFL students' AW proficiency. Its findings contribute to a burgeoning academic dialogue, fostering a deeper understanding of the multifaceted academic literacy landscape.

CONCLUSION

In summary, this study sought to investigate the profound impact of Academic Reading (AR) and Research Competence (RC) on the Academic Writing (AW) abilities of EFL undergraduate scholars. Through a meticulous multi-regression analysis, the researcher discovered a significant positive correlation, highlighting the crucial role of these competencies in elevating AW quality. As AR and RC scores increased, he observed a corresponding improvement in AW performance. These findings align with existing research, reinforcing the importance of integrating rigorous AR and RC development initiatives into the EFL curriculum.

Exploring the complex academic, social, and linguistic challenges faced by EFL learners revealed a nuanced narrative. However, this robust statistical analysis, indicated by the strong T values and P values near zero, unequivocally supports the indispensability of AR and RC, affirming their universal significance. With an R-square value of 0.58, the researcher further substantiate the substantial impact of AR and RC on AW expertise. These results provide strong evidence against contrary claims and emphasize the need for a structured educational framework dedicated to nurturing these competencies. Additionally, the sound methodology, as evidenced by a Durbin-Watson test statistic of 1.91, lends credibility to the findings and underscores the interconnected relationship among AR, RC, and AW expertise.

The practical implications of this study are significant, advocating for a pedagogical shift toward comprehensive AR and research competency development programs. This is not just a matter of educational preference but a critical academic imperative to cultivate proficient academic writers. However, this exploration doesn't end here. Despite the robust quantitative analysis, the researcher invite further research into the qualitative dimensions governing these competencies. Expanding the demographic scope and adopting diverse evaluative metrics for AR and RC assessment could reveal additional insights, enriching the existing body of knowledge and guiding future pedagogical methodologies for nurturing adept academic writers within the EFL domain.

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