VELES JOURNAL

Vol. 9, No. 1; April 2025
E-ISSN 2579-7484
Pages 178-192
DOI: http://dx.doi.org/10.29408/veles.v9i1.29142

Validating a Collaborative Writing Competence Framework for EFL Instruction: A Confirmatory Factor Analysis Approach

***[1]Mujiono, [1]Riza Weganofa, [1]Siane Herawati, [1]Rizky Lutviana**

[1]Universitas PGRI Kanjuruhan Malang, Indonesia

***Correspondence:**
moejie_nova@unikama.ac.id

Submission History:
Submitted: January 1, 2025
Revised: April 15, 2025
Accepted: April 18, 2025

Abstract

Collaborative writing is widely recognized for its benefits in enhancing linguistic competence, critical thinking, and social interaction in EFL contexts. Despite numerous studies highlighting these advantages, a gap remains in how collaborative writing competence can be systematically assessed and practically applied in classroom settings. This study aims to empirically validate a Collaborative Writing Competence Framework (CWCF) comprising five key dimensions: communication, coordination, creativity, responsibility, and reflection. A quantitative research design involved 103 Indonesian undergraduate EFL students enrolled in an Essay Writing course. Data were collected using a Likert-scale questionnaire and analyzed through Confirmatory Factor Analysis (CFA). The model demonstrated a good fit (χ^2 = 86.528, df = 81, p = .317; CMIN/DF = 1.068; RMSEA = 0.026; CFI = 0.992), with acceptable reliability (Cronbach's α = 0.719–0.807) and convergent validity (AVE = 0.501–0.673). Creativity emerged as the most influential factor in collaborative writing competence. The validated CWCF offers actionable insights for EFL instruction: structured peer discussions, guided brainstorming, and task delegation can enhance collaboration, while integrating self- and peer-assessment fosters responsibility and reflection. Digital platforms such as Google Docs may also support real-time coordination and feedback. The CWCF thus serves as both an assessment instrument and pedagogical tool, paving the way for more effective collaborative writing practices in EFL classrooms.

Keywords: collaborative writing competence framework, EFL, assessment framework, writing skills.

INTRODUCTION

Collaborative writing, defined as the joint production of a text by two or more individuals through shared planning, drafting, revising, and editing (Marttunen & Laurinen, 2012; Storch, 2018), has gained increasing pedagogical importance in English as a Foreign Language (EFL) instruction. Rooted in sociocultural learning theory, this approach transforms writing from an isolated cognitive activity into a socially situated practice where learners co-construct knowledge and meaning through interaction (Rojas-Drummond et al.,

2010; Zhang, 2018; Villarreal & Gil-Sarratea, 2019; Li & Zhang, 2021). In EFL classrooms, collaborative writing supports the development of written language skills and promotes active engagement, peer learning, and task ownership—elements essential for communicative competence (Ajmi & Ali, 2014; Challob et al., 2016; Coffin, 2020). From a cognitive perspective, it enhances learners' metacognitive awareness and critical thinking as they negotiate ideas, articulate reasoning, and evaluate language choices together (Dobao, 2012; Clayson, 2018). Linguistically, collaborative writing encourages using more complex structures and accurate forms, driven by real-time feedback and language-related episodes that naturally emerge during group discussions (Wigglesworth & Storch, 2012; Pham, 2021). At the same time, it fosters social skills such as teamwork, mutual responsibility, and interpersonal communication, as students must coordinate roles, manage group dynamics, and reflect on both process and product (Fung, 2010; Huang & Lajoie, 2023). These cognitive, linguistic, and social benefits position collaborative writing as a powerful pedagogical tool for fostering proficient writers and autonomous, communicative, and collaborative EFL learners.

Despite the growing recognition of collaborative writing as a valuable instructional approach in EFL education, the assessment of collaborative writing competence remains notably underdeveloped. Although collaborative tasks are increasingly integrated into language instruction, no widely accepted or empirically validated framework exists to assess the competencies underpinning successful collaboration. Existing studies have focused mainly on the outcomes or final written product, evaluating aspects such as grammatical accuracy, fluency, coherence, or content, while paying limited attention to the collaborative processes. For example, Biria and Jafari (2013), Tavakoli and Rezazadeh (2014), and Anshu and Yesuf (2022) evaluated the effects of collaborative tasks on writing fluency, accuracy, and coherence. However, they did not attempt to define or measure the collaborative competence demonstrated by learners. Similarly, Abrams (2019) and Albesher (2024) explored computer-mediated collaborative writing and its impact on written text features, yet their studies were product-oriented and lacked a systematic process-based evaluation framework.

Moreover, Pham (2021) also noted that while collaborative writing has been widely studied for its impact on accuracy, few studies have investigated how it supports writing fluency or provided a framework to guide collaboration during more complex writing tasks such as argumentative essays. Other research (Dobao, 2012; McDonough et al., 2018) has examined group dynamics and interactional benefits, such as language-related episodes and error resolution, without extending these findings into a structured model for assessment. Chen (2019) further highlighted how collaborative writing practice can lead to improvements in individually written texts over time, yet again, the focus remained on outcomes rather than on capturing the core collaborative competencies. As a result, essential dimensions such as communication, coordination, creativity, responsibility, and reflection are often overlooked in evaluation practices. This apparent gap highlights the urgent need for a multidimensional, evidence-based framework that assesses collaborative writing outcomes and captures the complex, process-oriented competencies necessary for effective collaboration in EFL writing classrooms.

Furthermore, this study proposes the Collaborative Writing Competence Framework (CWCF), which consists of five interrelated dimensions: communication, coordination,

creativity, responsibility, and reflection. The development of the CWCF is theoretically grounded in sociocultural theory (Vygotsky, 1978), communicative language teaching (Richards & Rodgers, 2014), and the principles of collaborative learning (Dillenbourg, 1999). These perspectives emphasize that learning is a socially mediated process in which knowledge is co-constructed through dialogue, interaction, and shared responsibility. In the context of writing, collaborative tasks require learners to engage in joint problem-solving, negotiate meaning, and coordinate actions toward the production of a shared text (Storch, 2019). Each dimension of the CWCF reflects competencies supported by these theoretical perspectives. Communication represents the foundation of social interaction and the effective exchange of meaning during collaboration (Donato, 1994; Kretschmer & Vanneste, 2017).

In addition, coordination draws on collaborative learning theory, emphasizing role distribution, time management, and joint decision-making (Dillenbourg, 1999; Johnson & Johnson, 2009). Creativity is associated with cognitive flexibility and idea generation, which are often enhanced through social interaction and exposure to diverse viewpoints (Paulus et al., 2011). Responsibility reflects the socio-affective dimension of collaboration, where mutual accountability and commitment to group goals are essential for successful teamwork (Gillies, 2007). Finally, reflection aligns with metacognitive theory, underscoring the importance of monitoring, evaluating, and adjusting the collaborative process and the final written product (Azevedo et al., 2012; Zimmerman, 2002). Together, these five dimensions form a comprehensive framework that integrates linguistic, cognitive, social, and metacognitive elements, offering a robust foundation for assessing collaborative writing competence in EFL contexts.

Therefore, this study aims to empirically test and validate the Collaborative Writing Competence Framework (CWCF) developed for English as a Foreign Language (EFL) learners. The framework comprises five key dimensions—communication, coordination, creativity, responsibility, and reflection—representing essential competencies in collaborative writing. Through the use of Confirmatory Factor Analysis (CFA), the study examines the construct validity and internal consistency of these dimensions to ensure the framework's reliability and theoretical soundness. In addition, the study explores the framework's potential as a pedagogical tool to support improving students' collaborative writing performance. By establishing empirical support for the CWCF, this research contributes to developing a comprehensive and practical model for assessing and enhancing collaborative writing competence in EFL instructional settings.

METHOD

The study employed cluster random sampling to obtain a diverse and representative sample of 103 university students who had completed an Essay Writing course. This sampling technique was selected for its practicality and efficiency in educational settings, as it allows researchers to randomly select intact groups or class sections rather than individual participants (Creswell & Creswell, 2018; Fraenkel et al., 2019). By preserving existing classroom groupings, this approach minimized sampling bias, maintained the natural dynamics of collaborative learning, and enabled streamlined data collection without disrupting academic schedules. Cluster sampling also supported heterogeneity in writing proficiency levels and academic backgrounds, enhancing the findings' generalizability. To

measure collaborative writing competence, a structured Likert-scale questionnaire was developed based on five key dimensions: communication, coordination, creativity, responsibility, and reflection. The internal structure of the framework was tested through Confirmatory Factor Analysis (CFA), a statistical method suitable for evaluating the validity of hypothesized measurement models (Kline, 2016). Model reliability and convergent validity were further confirmed using Composite Reliability (CR) and Average Variance Extracted (AVE), with all dimensions exceeding established thresholds (Hair et al., 2019), thereby supporting the robustness of the proposed framework.

The development of the collaborative writing measurement tool followed a systematic, multi-phase procedure, beginning with a comprehensive literature review to establish a strong theoretical foundation for defining collaborative writing and identifying its key dimensions. This review selected five dimensions for measurement: communication, coordination, creativity, responsibility, and reflection. Each dimension was operationalized using three indicators on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), a widely accepted format for attitudinal and behavioral research (DeVellis, 2017). To establish content validity, the initial instrument was reviewed by three experts in education and psychometrics, who evaluated the clarity, relevance, and alignment of the items with the underlying theoretical constructs (Haynes et al., 1995). Their feedback guided revisions to improve item wording and conceptual clarity. A pilot test was subsequently conducted with a small sample of students to assess item comprehensibility and alignment with the intended constructs, after which further adjustments were made to refine the tool.

The revised instrument was then subjected to Confirmatory Factor Analysis (CFA) using AMOS software to examine construct validity, ensuring the consistency between the hypothesized model and the empirical data (Kline, 2016). Converging and discriminant validity were evaluated to strengthen the instrument's validity. Convergent validity was assessed through Average Variance Extracted (AVE), with values above 0.50 indicating that the indicators adequately explained the variance of each dimension. In contrast, discriminant validity was confirmed when each construct was statistically distinct from the others (Hair et al., 2019). Reliability was tested through Cronbach's alpha, with values exceeding 0.70 suggesting acceptable internal consistency (Nunnally & Bernstein, 1994). In addition, Composite Reliability (CR) was calculated to assess the internal consistency of each latent construct, with values above 0.70 considered satisfactory. These psychometric analyses were used to finalize the instrument and ensure its validity and reliability before being applied in the main study.

The data collection process for the collaborative writing measurement instrument involved undergraduate students from the English Education and English Literature departments who had completed courses related to academic writing. Cluster random sampling was used to select participants, including intact class groups to preserve the natural learning environment and ensure sampling efficiency (Fraenkel et al., 2019). Students were asked to sign informed consent forms before participation, and ethical protocols were followed to ensure confidentiality and data protection. All responses were anonymized before analysis, and data were stored in password-protected digital files accessible only to the research team, following standard ethical research practices (Creswell & Creswell, 2018).

The research instrument—a structured Likert-scale questionnaire—was distributed via Google Forms, with participation links sent electronically. A pilot test was conducted with a small group of students before the primary data collection phase to ensure content clarity and usability. During the main data collection, participants worked in small groups to complete a collaborative writing task. Their experiences were measured using the questionnaire, which assessed core dimensions of collaborative writing such as group interaction, task distribution, and idea negotiation. The data gathered through this process were then prepared for quantitative analysis using statistical software, including SPSS for descriptive statistics and reliability testing, and AMOS for structural validation through Confirmatory Factor Analysis (CFA).

The data analysis examined the Collaborative Writing Competence Framework (CWCF) construct validity using Confirmatory Factor Analysis (CFA) via AMOS software. Several model fit indices were assessed to determine the adequacy of the measurement model. The chi-square (χ^2) test was reported, though its sensitivity to sample size warranted the inclusion of additional fit indices to provide a more robust evaluation (Kline, 2016). The Root Mean Square Error of Approximation (RMSEA) was examined, with values of ≤ 0.08 considered acceptable. At the same time, the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were interpreted using the threshold of ≥ 0.90, indicating good model fit (Hu & Bentler, 1999; Hair et al., 2019). The Standardized Root Mean Square Residual (SRMR) was also assessed, with values ≤ 0.08 indicating acceptable residuals. In addition, the Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI) were reviewed, with ideal values ≥ 0.90. The normed chi-square (χ^2/df) ratio, with values between 1 and 3, was used as an additional fit indicator. Together, these indices provided evidence supporting the model's construct validity. At the same time, Composite Reliability (CR) and Average Variance Extracted (AVE) were computed to confirm internal consistency and convergent validity across all dimensions.

FINDING AND DISCUSSION

The dimensions of the collaborative writing

The Collaborative Writing instrument was developed to assess students' proficiency in producing written work through group collaboration. It comprises five core dimensions: communication, coordination, creativity, responsibility, and reflection. This instrument is designed to capture both the interpersonal and task-related aspects of collaborative writing, providing a structured means of evaluating how effectively students contribute to and engage in group writing activities. For further clarification, the operational definitions of each dimension are presented in Table 1.

Table 1. The dimensions of the collaborative writing

No	Dimensions	Indicators
1	Communication	a) Communicates with group members during collaborative writing effectively b) Listens attentively to group members' opinions. c) Feels comfortable sharing ideas with group members.
2	Coordination	a) Able to efficiently allocate tasks among group members. b) Assists other group members in completing writing tasks. c) Adheres to the plan agreed upon by the group.

3	Creativity	a) Feels that collaboration enhances their creativity in writing. b) Able to generate new ideas through discussion with group members. c) Appreciates other group members' creative contributions .
4	Responsibility	a) Takes responsibility for their part of the collaborative writing project, b) Completes their assigned tasks on time. c) Helps ensure that all group members contribute to the task.
5	Reflection	a) Able to evaluate the collaborative process after completing the writing task. b) Feels that feedback from group members helps them improve. c) Able to identify the strengths and weaknesses of their collaboration.

Table 1 outlines the five dimensions of the Collaborative Writing Competence Framework (CWCF) and their respective indicators, which were used to operationalize and measure students' collaborative writing competence. Each dimension reflects a distinct but interrelated component of effective collaboration in writing tasks. The first dimension, Communication, focuses on the effectiveness of interpersonal interactions among group members. It includes communicating clearly during group writing activities, listening attentively to others' ideas, and feeling confident in expressing one's own thoughts. The second dimension, Coordination, measures how well group members manage and distribute tasks. This involves allocating responsibilities efficiently, providing needed assistance, and adhering to the group's agreed-upon plan.

The third dimension, Creativity, captures how collaboration stimulates new ideas and encourages appreciation of creative input. It reflects how group discussions enhance idea generation and how members value each other's contributions. The fourth dimension, Responsibility, addresses individual accountability within the group. It includes completing assigned tasks on time, taking ownership of one's contributions, and ensuring all members actively participate. Finally, the fifth dimension, Reflection, emphasizes the group's ability to evaluate their collaborative experience. This involves identifying strengths and weaknesses in their teamwork, recognizing the value of peer feedback, and reflecting on the overall process to inform future improvement. These indicators provide a comprehensive tool for assessing the cognitive, interpersonal, and metacognitive aspects of students' collaborative writing performance.

Confirmatory factor analysis of the collaborative writing model

The analysis was performed to determine the extent to which the proposed five-dimensional model—comprising communication, coordination, creativity, responsibility, and reflection—accurately represents the structure of collaborative writing competence among EFL learners. CFA was selected as the primary statistical method due to its capacity to test the hypothesized relationships between observed variables (questionnaire items) and latent constructs and assess the model's overall fit to the empirical data. The results include standardized factor loadings, model fit indices, and reliability coefficients, all providing evidence of the framework's internal consistency, construct validity, and suitability for application in EFL writing instruction and assessment.

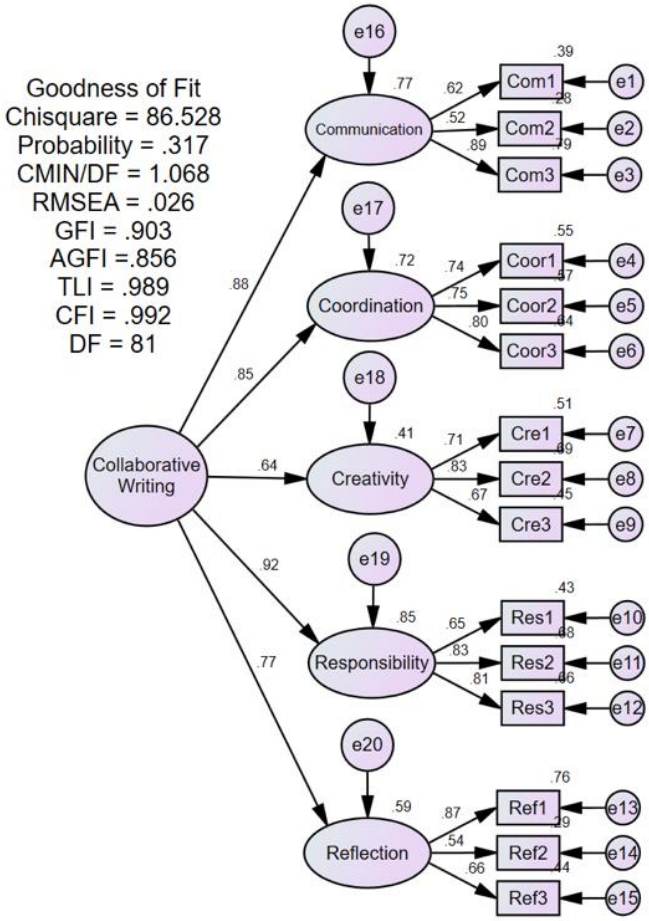

Figure 1. Confirmatory Factor Analysis Model of the Collaborative Writing Competence Framework (CWCF)

The Confirmatory Factor Analysis (CFA) model provides empirical validation for the proposed Collaborative Writing Competence Framework (CWCF), which conceptualizes collaborative writing as a higher-order construct composed of five interrelated dimensions: communication, coordination, creativity, responsibility, and reflection. These dimensions are measured through three observed indicators, all represented in the model as rectangles linked to their respective latent variables (ellipses). The path coefficients (factor loadings) connecting the observed variables to their latent constructs range from 0.52 to 0.90, indicating moderate to strong relationships. These values suggest that the items consistently measure the intended dimensions and contribute meaningfully to the overall construct. Communication shows variability in item strength among the dimensions, while creativity, coordination, and responsibility demonstrate consistently strong loadings. Reflection also shows acceptable internal consistency, though one item (Ref2) exhibits a comparatively lower loading.

The model's goodness-of-fit indices further support the validity of the CWCF. The chi-square statistic (χ^2 = 86.528, p = .317) is non-significant, indicating no substantial difference between the model and the observed data. The normed chi-square (CMIN/DF = 1.068) is well

within the acceptable range (1–3), suggesting an excellent model fit. Additional fit indices reinforce this conclusion: The Root Mean Square Error of Approximation (RMSEA) is 0.026, indicating excellent fit (values below 0.06 are preferred), while the Comparative Fit Index (CFI = 0.992) and Tucker-Lewis Index (TLI = 0.989) both exceed the 0.95 threshold, suggesting firm comparative fit. The Goodness-of-Fit Index (GFI = 0.903) and the Adjusted Goodness-of-Fit Index (AGFI = 0.856) also indicate an acceptable fit, though AGFI is slightly lower than the ideal 0.90. These indices collectively confirm that the theoretical model aligns well with the empirical data.

Goodness of fit for the collaborative writing constructs

Furthermore, Confirmatory Factor Analysis (CFA) examined a series of goodness-of-fit indices. These indices are critical for assessing whether the five-dimensional structure—communication, coordination, creativity, responsibility, and reflection—adequately represents collaborative writing competence among EFL learners. The evaluation includes multiple fit statistics such as the chi-square value, RMSEA, CFI, TLI, GFI, AGFI, and the normed chi-square (χ^2/df) ratio.

Table 2. Goodness of fit for the collaborative writing constructs

Instrument Collaborative Writing	DF	Chi-square	Probability	CMIN/DF	RMSEA	GFI	AGFI	TLI	CFI
	81	86.528	0.317	1.068	0.026	0.903	0.856	0.989	0.992

Table 2 presents the goodness-of-fit indices obtained from the Confirmatory Factor Analysis (CFA) conducted to validate the Collaborative Writing Competence Framework (CWCF). The chi-square value (χ^2 = 86.528, df = 81, p = .317) is non-significant, indicating no substantial difference between the hypothesized model and the observed data, which suggests a good model fit. However, additional fit indices were considered due to the chi-square statistic's sensitivity to sample size. The normed chi-square (CMIN/DF) is 1.068, which falls within the acceptable range of 1 to 3, indicating an excellent fit. The Root Mean Square Error of Approximation (RMSEA) is 0.026, below the commonly accepted threshold of 0.06, further supporting a close fit between the model and the data. The Comparative Fit Index (CFI = 0.992) and Tucker-Lewis Index (TLI = 0.989) exceed 0.95, reflecting a firm comparative fit. The Goodness-of-Fit Index (GFI = 0.903) is slightly above the 0.90 benchmark, while the Adjusted Goodness-of-Fit Index (AGFI = 0.856) is just below the ideal threshold, yet still considered acceptable. Overall, these results indicate that the CWCF demonstrates a high level of structural validity and that the model fits the empirical data very well.

Table 3. Reliability and validity of collaborative writing

Variables	**Dimensions**	**Items**	**Loadings**	**Cronbach's Alpha**	**AVE**	**CR**
Collaborative Writing	Communication	Com1	0.625	0.719	0.542	0.701
		Com2	0.525			
		Com3	0.899			
	Coordination	Coor1	0.713	0.807	0.601	0.751
		Coor2	0.832			
		Coor3	0.668			
	Creativity	Cre1	0.713	0.774	0.569	0.723

	Cre2	0.832			
	Cre3	0.668			
Responsibility	Res1	0.655	0.805	0.673	0.805
	Res2	0.827			
	Res3	0.814			
Reflection	Ref1	0.873	0.733	0.501	0.701
	Ref2	0.538			
	Ref3	0.662			

Table 3 presents the results of the reliability and validity analysis for each dimension of the Collaborative Writing Competence Framework (CWCF). The table includes standardized factor loadings for each item and values for Cronbach's alpha, Average Variance Extracted (AVE), and Composite Reliability (CR), standard indicators used to assess internal consistency and construct validity. Across all five dimensions—communication, coordination, creativity, responsibility, and reflection—the loadings range from 0.525 to 0.899. These values indicate moderate to strong relationships between the observed items and their respective latent constructs. Notably, items such as Com3 (0.899), Ref1 (0.873), and Coor2 (0.832) demonstrate particularly high loadings, indicating that they are strong indicators of their respective dimensions. Although a few items, such as Com2 (0.525) and Ref2 (0.538), fall closer to the lower threshold of acceptability (0.50), they still contribute meaningfully to the overall measurement model. The Cronbach's alpha values for all five dimensions exceed the recommended minimum of 0.70, indicating good internal consistency: communication (0.719), coordination (0.807), creativity (0.774), responsibility (0.805), and reflection (0.733). The Composite Reliability (CR) values also meet the minimum criterion of 0.70, confirming the overall reliability of each construct. Meanwhile, the Average Variance Extracted (AVE) values range from 0.501 to 0.673, with all dimensions exceeding the 0.50 threshold, indicating acceptable convergent validity—that is, each set of items effectively captures the variance of its associated latent variable.

DISCUSSION

The results of this study provide strong empirical support for the validity and reliability of the Collaborative Writing Competence Framework (CWCF) in assessing EFL students' collaborative writing proficiency. The Confirmatory Factor Analysis (CFA) confirmed the five-factor model, with all factor loadings exceeding the minimum acceptable threshold of 0.50. The model demonstrated excellent overall fit, as indicated by the chi-square value (χ^2 = 86.528, p = .317), normed chi-square (CMIN/DF = 1.068), RMSEA (0.026), and other fit indices such as CFI (0.992) and TLI (0.989), which exceeded the recommended cutoffs. These findings validate the theoretical structure of the CWCF, indicating that the five dimensions—communication, coordination, creativity, responsibility, and reflection—collectively provide a coherent and meaningful measure of collaborative writing competence.

In addition to model fit, the results confirm each construct's internal consistency and convergent validity. Cronbach's alpha values for all dimensions ranged from 0.719 to 0.807, exceeding the commonly accepted threshold of 0.70 (Shemwell et al., 2014; Taber, 2017), which suggests that the items within each dimension reliably measure the same underlying construct. Composite Reliability (CR) values were also all above 0.70, and Average Variance

Extracted (AVE) values ranged from 0.501 to 0.673, indicating adequate convergent validity (Cheung et al., 2023). These psychometric properties suggest that the instrument captures linguistic skills and the social, cognitive, and metacognitive processes fundamental to effective collaborative writing.

The prominence of Creativity as the dimension with the highest factor loading is supported by Anggraini et al. (2020), who reported that students perceive collaborative writing to enhance their creative thinking and idea generation. This reinforces the role of creativity as a key outcome of collaborative learning. However, studies such as Vasylets et al. (2017) offer contrasting perspectives, which emphasize task complexity's influence on language production during collaboration. Their findings suggest that while creativity is an important aspect, the effectiveness of collaborative writing is also shaped by the design and cognitive demands of the task itself. This highlights the need to consider task characteristics when evaluating collaborative writing outcomes, as different task types may lead to varying degrees of student engagement, idea development, and overall performance (Alzubi et al., 2024; Ginting, 2021; Yadollahi & Rahimi, 2015).

The reliability and validity results of the current study, as evidenced by high Composite Reliability (CR) and Average Variance Extracted (AVE) values across all five dimensions, affirm the robustness of the Collaborative Writing Competence Framework (CWCF) as a multidimensional assessment tool. These findings align with prior research that advocates for evaluating both the process and product of collaborative writing to capture the full scope of student performance (Winarti & Cahyono, 2020; Pham, 2021; Anshu & Yesuf, 2022; McDonough et al., 2018). For instance, the emphasis in Chen and Lee's (2022) study on multidimensional assessment supports the present framework's inclusion of communication, coordination, creativity, responsibility, and reflection as distinct yet interrelated components of collaborative writing competence. The results also resonate with Teng and Huang's (2023) findings, which demonstrate the positive influence of metacognitive strategies on writing complexity, accuracy, and fluency, suggesting that reflective practices, as captured in the CWCF, are crucial to supporting writing development. While the present study did not explicitly investigate technological variables, findings from Pourdana (2022) highlight how digital tools can mediate collaborative writing and offer new modes of assessment. Although the CWCF was validated in a conventional learning environment, its structure could be adapted in technology-enhanced contexts, potentially increasing student engagement and real-time collaboration.

This study, while offering meaningful insights into the development and validation of the Collaborative Writing Competence Framework (CWCF), is not without its limitations. The sample was limited to university students enrolled in English Education and Literature programs at a single institution, which may affect the generalizability of the findings to other educational levels or learning contexts. Additionally, using self-reported questionnaires introduces the potential for response bias, as students' perceptions may not always accurately reflect their collaborative behaviors. Although the instrument showed acceptable levels of reliability and validity, its application was confined to traditional classroom-based settings, without considering the role of digital tools or online platforms increasingly used in collaborative writing.

Future research could address these limitations by involving a more diverse sample, including learners from various academic backgrounds, institutions, and proficiency levels.

Employing alternative or complementary data collection methods, such as observations, writing portfolios, or peer assessments, may also offer a more comprehensive view of collaborative writing practices. Furthermore, integrating technology into collaborative writing contexts warrants further exploration, particularly concerning how digital tools influence group dynamics and writing outcomes. Finally, expanding the framework to include metacognitive dimensions more explicitly could provide a deeper understanding of how learners plan, monitor, and evaluate their contributions in collaborative tasks. Such efforts may contribute to refining the CWCF and adapting for broader instructional use.

CONCLUSION

This study aimed to validate the Collaborative Writing Competence Framework (CWCF) to assess collaborative writing proficiency among EFL university students. The framework, which consists of five dimensions—communication, coordination, creativity, responsibility, and reflection—was examined through Confirmatory Factor Analysis (CFA) to determine its structural validity. The results demonstrated a good model fit, with all statistical indices falling within acceptable thresholds, and the individual dimensions showing satisfactory internal consistency, as indicated by Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). These findings suggest that the CWCF offers a coherent structure for capturing the multifaceted nature of collaborative writing in EFL contexts.

Each dimension contributed uniquely to the overall construct, with creativity emerging as the most prominent factor. This underscores the value of collaborative writing in fostering idea generation and creative engagement. The framework's alignment with existing research further supports its relevance, although differences in methodology across studies highlight the need for continued refinement and contextual adaptation. Notably, the study was limited by its sample scope and reliance on self-reported data, and it did not incorporate technology-mediated collaboration or metacognitive strategy training—factors that could further enrich the understanding of collaborative writing competence.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the support from the Directorate of Research, Technology, and Community Service, Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology, under Contract No. 109/F5/PG.02.00, for funding this research. Special thanks are also extended to Universitas PGRI Kanjuruhan Malang for providing additional financial support through the fundamental research scheme. This combined support was instrumental in facilitating the successful completion of this study.

REFERENCES

Abrams, Z. I. (2019). Collaborative writing and text quality in Google Docs. *Language Learning & Technology*, *23*(2), 22–42.

Ajmi, A. a. S. A., & Ali, H. I. H. (2014). Collaborative writing in group assignments in an EFL/ESL classroom. *English Linguistics Research*, *3*(2). https://doi.org/10.5430/elr.v3n2p1

Albesher, K. B. (2024). The effect of Google-Mediated collaborative writing on students' global and local writing features in English as a second language. *SAGE Open*, *14*(4). https://doi.org/10.1177/21582440241290034

Alzubi, A. A., Nazim, M., & Ahamad, J. (2024). Examining the effect of a collaborative learning intervention on EFL students' English learning and social interaction. *Journal of Pedagogical Research*. https://doi.org/10.33902/jpr.202425541

Anggraini, R., Rozimela, Y., & Anwar, D. (2020). The effects of collaborative writing on EFL learners' writing skills and their perception of the strategy. *Journal of Language Teaching and Research*, *11*(2), 335. https://doi.org/10.17507/jltr.1102.25

Anshu, A. H., & Yesuf, M. Y. (2022). Effects of Collaborative Writing on EFL Students' paragraph writing performance: Focus on content and coherence. *International Journal of Education and Literacy Studies*, *10*(1), 36. https://doi.org/10.7575/aiac.ijels.v.10n.1p.36

Azevedo, R., Behnagh, R. F., Duffy, M., Harley, J. M., & Trevors, G. (2012). Metacognition and self-regulated learning in student-centered learning environments. In: Land, S., & Jonassen, D. (Eds), *Theoretical foundations of learning environments* (pp. 171–197). Routledge.

Biria, R., & Jafari, S. (2013). The impact of collaborative writing on the writing fluency of Iranian EFL learners. *Journal of Language Teaching and Research*, *4*(1). https://doi.org/10.4304/jltr.4.1.164-175

Challob, A. I., Bakar, N. A., & Latif, H. (2016). Collaborative Blended Learning writing Environment: Effects on EFL students' writing apprehension and writing performance. *English Language Teaching*, *9*(6), 229. https://doi.org/10.5539/elt.v9n6p229

Chen, W. (2019). An exploratory study on the role of L2 collaborative writing on learners' subsequent individually composed texts. *The Asia-Pacific Education Researcher*, *28*(6), 563–573. https://doi.org/10.1007/s40299-019-00455-3

Chen, W., & Lee, Y. (2022). Revisiting proficiency pairing in collaborative Writing from an equity Theory perspective: Voices from High-Proficiency EFL Learners. *SAGE Open*, *12*(2). https://doi.org/10.1177/21582440221087267

Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2023). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, *41*(2), 745–783. https://doi.org/10.1007/s10490-023-09871-y

Clayson, A. (2018). Distributed cognition and embodiment in text planning: A situated study of collaborative writing in the workplace. *Written Communication*, *35*(2), 155–181. https://doi.org/10.1177/0741088317753348

Coffin, P. (2020). Implementing collaborative writing in EFL classrooms: Teachers and students' perspectives. *LEARN Journal: Language Education and Acquisition Research Network*, *13*(1), 178–194.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications.

Dillenbourg P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative-learning: Cognitive and computational approaches* (pp. 1-19). Oxford: Elsevier.

Dobao, A. F. (2012). Collaborative writing tasks in the L2 classroom: Comparing group, pair, and individual work. *Journal of Second Language Writing*, *21*(1), 40–58. https://doi.org/10.1016/j.jslw.2011.12.002

Donato, R. (1994). Collective scaffolding in second language learning. In J. P. Lantolf & G. Appel (Eds.), Vygotskian *approaches to second language research* (pp. 33–56). New Jersey: Ablex.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2019). *How to design and evaluate research in education* (10th ed.). McGraw-Hill Education.

Fung, N. Y. M. (2010). Collaborative writing features. *RELC Journal*, *41*(1), 18–30. https://doi.org/10.1177/0033688210362610

Gillies, R. M. (2007). *Cooperative learning: Integrating theory and practice*. SAGE.

Ginting, D. (2021). Student engagement and factors affecting active learning in English language teaching. *Voices of English Language Education Society*, *5*(2), 215–228. https://doi.org/10.29408/veles.v5i2.3968

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling a Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Huang, X., & Lajoie, S. P. (2023). Social emotional interaction in collaborative learning: Why it matters and how we can measure it? *Social Sciences & Humanities Open*, *7*(1), 100447. https://doi.org/10.1016/j.ssaho.2023.100447

Haynes, S. N., Richard, D. C. S., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment, 7*(3), 238–247. https://doi.org/10.1037/1040-3590.7.3.238

Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher, 38*(5), 365–379. https://doi.org/10.3102/0013189X09339057

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). Guilford Press.

Kretschmer T., Vanneste B. S. (2017). Collaboration in strategic alliances: Cooperation and coordination. In Mesquita L., Ragozzino R., Reuer J. (Eds.), *Collaborative strategy: A guide to strategic alliances*: 53-62. Cheltenham, UK: Edward Elgar Publishing.

Li, M., & Zhang, M. (2021). Collaborative writing in L2 classrooms: A research agenda. *Language Teaching*, *56*(1), 94–112. https://doi.org/10.1017/s0261444821000318

Marttunen, M., & Laurinen, L. (2012). Participant profiles during collaborative writing. *Journal of Writing Research*, *4*(1), 53–79. https://doi.org/10.17239/jowr-2012.04.01.3

McDonough, K., De Vleeschauwer, J., & Crawford, W. (2018). Comparing the quality of collaborative writing, collaborative prewriting, and individual texts in a Thai EFL context. *System*, *74*, 109–120. https://doi.org/10.1016/j.system.2018.02.010

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Paulus, P. B., Dzindolet, M., & Kohn, N. W. (2012). Collaborative creativity—group creativity and team innovation. In M. Mumford (Ed.), *Handbook of organizational creativity* (pp. 327- 357). London, UK: Elsevier.

Pham, V. P. H. (2021). The effects of collaborative writing on students' writing fluency: An efficient framework for collaborative writing. *SAGE Open*, *11*(1). https://doi.org/10.1177/2158244021998363

Pourdana, N. (2022). Impacts of computer-assisted diagnostic assessment on the sustainability of L2 learners' collaborative writing improvement and engagement modes. *Asian-Pacific Journal of Second and Foreign Language Education*, *7*(1). https://doi.org/10.1186/s40862-022-00139-4

Richards, J. C., & Rodgers, T. S. (2014). *Approaches and methods in language teaching*. Cambridge University Press.

Rojas-Drummond, S. M., Littleton, K., Hernández, F., & Zúñiga, M. (2010). Dialogical interactions among peers in collaborative writing contexts. In C. Howe & K. Littleton (Eds.), *Educational dialogues: Understanding and promoting productive interaction* (pp. 128–148). London: Routledge.

Shemwell, J. T., Chase, C. C., & Schwartz, D. L. (2014). Seeking the general explanation: A test of inductive activities for learning and transfer. *Journal of Research in Science Teaching*, *52*(1), 58–83. https://doi.org/10.1002/tea.21185

Storch, N. (2018). Collaborative writing. *Language Teaching*, *52*(1), 40–59. https://doi.org/10.1017/s0261444818000320

Taber, K. S. (2017). The use of Cronbach's Alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Tavakoli, M., & Rezazadeh, M. (2014). Individual and collaborative planning conditions affect fluency, complexity, and accuracy in L2 Argumentative writing. *Journal of Teaching Language Skills*, *32*(4), 85–110. https://doi.org/10.22099/jtls.2014.1857

Teng, M. F., & Huang, J. (2021). The effects of incorporating metacognitive strategies instruction into collaborative writing on writing complexity, accuracy, and fluency. *Asia Pacific Journal of Education*, *43*(4), 1071–1090. https://doi.org/10.1080/02188791.2021.1982675

Vasylets, O., Gilabert, R., & Manchón, R. M. (2017). The effects of mode and task complexity on second language production. *Language Learning*, *67*(2), 394–430. https://doi.org/10.1111/lang.12228

Villarreal, I., & Gil-Sarratea, N. (2019). The effect of collaborative writing in an EFL secondary setting. *Language Teaching Research*, *24*(6), 874–897. https://doi.org/10.1177/1362168819829017

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press

Wigglesworth, G., & Storch, N. (2012). What role does collaboration play in writing and writing feedback? *Journal of Second Language Writing*, *21*(4), 364–374. https://doi.org/10.1016/j.jslw.2012.09.005

Winarti, N., & Cahyono, B. Y. (2020). Collaborative writing and process writing approach: The effect and students' perception. *JEES (Journal of English Educators Society)*, *5*(2). https://doi.org/10.21070/jees.v5i2.773

Yadollahi, H., & Rahimi, A. (2015). The effects of different task types on learners' performance in the collaborative virtual learning environment. *Procedia - Social and Behavioral Sciences*, *192*, 526–533. https://doi.org/10.1016/j.sbspro.2015.06.083

Zhang, M. (2018). Collaborative writing in the EFL classroom: The effects of L1 and L2 use. *System*, *76*, 1–12. https://doi.org/10.1016/j.system.2018.04.009

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, *41*(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2