(RESEARCH ARTICLE)

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The effect of task complexity and gender differences on EFL learners' writing performance

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Abstract

The current study investigates the Effect of Task Complexity and Gender Differences on EFL Learners' Writing Performance. Task complexity is the inherent cognitive demands of the tasks imposed on the learners by the structure of the tasks. It is investigated along the resource-dispersing variables of pre-task planning time, post-task editing time and prior knowledge. This study also tries to intertwine the concepts of task complexity and sociolinguistics (i.e., gender differences). The participants are 160 high school students (80 males and 80 females) studying at international schools in Riyadh City, Saudi Arabia. The writing topics were selected among the essay prompts similar to those of the IELTS test using the cause-and-effect essay task type. A series of T-Test and one-way ANOVAs were used for detecting the significant differences within the same gender and across genders, Cronbach's alpha (α) for the task reliability, Wilk's Lambda for variable contributions, Partial Eta squared (ηp2) for the effect size, and the Observed Power (or post-hoc power) for the test statistical power. This study is thought to be laden with manifold implications for varied stakeholders within the realm of didactics, including language teachers, learners, syllabus designers, test developers, educational bodies and many other individuals in the ministries of education and higher education. Should this be done, it can contribute to improving EFL undergraduate students' ability to a level of writing production that is more likely to be satisfactory. The current study found different effects of task complexity on EFL learners' writing performance across gender. There were both similar and different impacts on CAF metrics between the writing tasks across genders. The results indicate a partial support to the predictions of Skehan and Foster (2001) and those of Robinson (2005) where there is a partial increase in the CAF scores along the resource-dispersing variables. Conversely, findings show no support to the Gender Similarities Hypothesis (GSH) by J. S. Hyde (2005). This study also explored the effect percentage of task complexity along the resource dispersing variables planning time, editing time and prior knowledge on CAF. Besides, the researcher sorted the significant CAF metrics within same gender and across genders according to their occurrence and percentage in the performance of the current student participants.It is recommended that pedagogical tasks should be sequenced for learners on the basis of increasing in their cognitive complexity to help promote learners' performance in terms of accuracy, fluency, and complexity. In addition, educators should motivate male students to engage more and perform better in the writing classes; syllabus designers should introduce new teaching methodologies that help bridge the gap in gender differences between boys and girls.

Keywords: Task Complexity; EFL Learners; Writing Performance; Gender Differences; Planning Time; Editing Time; Prior Knowledge

1. Introduction

The writing performance of English as a Foreign Language (EFL) learners has been a topic of extensive research and investigation. Scholars have explored various aspects of writing performance, including accuracy, complexity, and fluency. Research findings suggest that EFL learners often face challenges in achieving proficiency in these areas. For

instance, Madrid (2017) conducted a study focusing on the effect of individual cultural speeches on the accuracy and cultural content knowledge of intermediate Spanish students. The study revealed that EFL learners encountered difficulties in accurately expressing their ideas and conveying cultural nuances in their writing.

Task complexity has been identified as a significant factor influencing the writing performance of EFL learners. Roubou (2015) examined the effects of task complexity on academic L2 writing by using text analyzers. The study found that as the complexity of the writing tasks increased, EFL learners faced greater challenges in producing accurate and complex written texts. Similarly, Ruiz-Funes (2014) explored task complexity in foreign language writing at the intermediate level and measures of linguistic production. The findings indicated that EFL learners' writing performance was affected by the complexity of the tasks assigned to them, with more complex tasks leading to lower levels of accuracy and linguistic production.

Moreover, the development of writing skills among EFL learners is influenced by various factors, such as language proficiency, learning environment, and text type. Alghizzi (2017) investigated the development of complexity, accuracy, and fluency (CAF) in L2 writing among Saudi EFL learners. The study revealed that different factors, including proficiency level, learning environment, and text type, influenced the development of writing skills. EFL learners' writing performance improved over time, but the rate of improvement varied based on these factors.

Task complexity is a crucial aspect in the field of cognitive psychology, influencing various cognitive processes and performance outcomes. Robinson's Cognition Hypothesis, Skehan's trade-off hypothesis, and Hyde's gender similarities hypothesis provide valuable insights into the relationship between task complexity and cognitive functioning.

Robinson's Cognition Hypothesis suggests that as task complexity increases, cognitive resources are more extensively employed, leading to a decrease in the accuracy and fluency of language production (Robinson, 2001). This hypothesis proposes that when individuals face complex tasks, such as generating complex grammatical structures or producing lengthy responses, their cognitive load intensifies, which can result in reduced linguistic proficiency.

Skehan's trade-off hypothesis complements Robinson's Cognition Hypothesis by proposing that task complexity has a compensatory relationship with accuracy and fluency (Skehan, 1998). According to this hypothesis, as the complexity of a task increases, individuals tend to prioritize accuracy over fluency. In simpler tasks, individuals may prioritize fluency over accuracy. This trade-off between accuracy and fluency reflects the dynamic nature of language production and how individuals allocate cognitive resources to different aspects of the task.

Hyde's gender similarities hypothesis suggests that the effects of task complexity on cognitive performance are likely to be similar for both males and females (Hyde, 2005). This hypothesis highlights that gender differences in cognitive performance are typically small or nonexistent across various cognitive domains. Therefore, regardless of gender, individuals are expected to experience similar challenges and cognitive demands when dealing with complex tasks.

Overall, these three hypotheses shed light on the intricate relationship between task complexity and cognitive functioning. Robinson's Cognition Hypothesis underscores the increased cognitive demands associated with complex tasks, leading to potential decreases in language production accuracy and fluency. Skehan's trade-off hypothesis adds a nuanced perspective by emphasizing the compensatory relationship between task complexity, accuracy, and fluency. Finally, Hyde's gender similarities hypothesis suggests that the effects of task complexity on cognitive performance are likely to be comparable across genders.

1.1. Statement of the problem

Writing is a fundamental skill in second language acquisition and is considered a significant way for learners to express their thoughts and ideas. However, many EFL students face challenges in developing their writing proficiency, particularly in essay writing (An & Lee, 2021; Masrom, Daud, & Alwi, 2015). This problem is prevalent among students who often struggle with writing essays (Awwad & Tavakoli, 2022). Furthermore, there is a persistent gap in writing proficiency between boys and girls, with girls generally outperforming boys in this skill (Al-Saadi, 2020; Alkhrisheh, Aziez, & Alkhrisheh, 2019; Namy Soghady, Hosseinpour, & Talebinejad, 2022).

The first issue is that teachers face a real challenge in promoting students' writing, especially among male students. Writing is a complex task that requires not only linguistic knowledge but also critical thinking skills, creativity, and organization of ideas (Belghoul & Merrouche, 2021). However, male students, in particular, tend to struggle with writing tasks, and their performance lags behind their female counterparts (Alkhrisheh et al., 2019). This gender disparity in

writing performance is a concern as it highlights persistent disparities in educational outcomes between genders (Al-Saadi, 2020).

The differences between boys' and girls' performances in writing may be considered a problem because research has shown that there is a persistent gap in writing proficiency between boys and girls (Alkhrisheh et al., 2019; Namy Soghady et al., 2022). This gap is not only a matter of concern for educational equity but also has practical implications for language teaching practices. Teachers need to understand the factors that contribute to this gap and develop effective strategies to address it (Lillis, McMullan, & Tuck, 2018).

Despite the growing body of research on task complexity in language learning, there is little information on tracing the impact of task complexity on international high school EFL learners' writing production across genders (Tabari, Lu, & Wang, 2023). Specifically, there is a lack of studies examining how task complexity interacts with gender differences in EFL writing performance and how the development of writing skills differs depending on the level of complexity (Frear & Bitchener, 2015; Ruiz-Funes, 2014).

Furthermore, the interaction between task complexity and gender differences in EFL writing performance remains unclear (Kord, 2017). Although some studies have explored the effects of task complexity on writing complexity, accuracy, and fluency (Clark, 2013; Kim, 2020; Wang & Jin, 2022), there is a need for research that specifically investigates the combined effect of task complexity and gender differences on EFL writing performance. There is a need for further research to investigate the combined effect of task complexity and gender differences on EFL writing performance (Rahimi & Zhang, 2018). This research is essential for understanding the factors that impact gender differences in EFL. By exploring gender differences in writing performance, this study aims to shed light on persistent disparities in educational outcomes between genders (Alkhrisheh et al., 2019).

Nevertheless, there is limited information on how task complexity, as manipulated by factors such as planning time, editing time, and prior knowledge, affects the development of complexity, accuracy, and fluency in writing (Dahlan, 2019; Kang & Lee, 2019). It is essential to understand how these resource-dispersing variables interact with task complexity and influence EFL learners' writing performance. This study aims to contribute to the existing knowledge by investigating the combined effect of task complexity and gender differences on EFL writing performance and understanding how the development of complexity, accuracy, and fluency differs based on the level of complexity.

Although Hyde (2005) suggested that men and women are more similar than they are different in cognitive abilities and gender differences are typically small, writing may be an exception to Hyde's Gender Similarity Hypothesis. The interaction between task complexity and gender differences in EFL writing performance remains unclear. This study aims to examine whether gender differences in EFL writing performance are influenced by task complexity, providing insights into the potential variations in how male and female learners respond to different writing tasks.

On the other hand, gender differences have been found to influence language learning and performance (Alkhrisheh et al., 2019). Previous studies have shown that males and females may differ in their writing strategies, language use, and overall writing performance (Lillis, McMullan, & Tuck, 2018; Yoon, 2017). However, there is a lack of research on the factors that impact gender differences in EFL writing performance (Zaidi & Beghoul, 2022). Therefore, there is a need for research to contribute to the understanding of these factors and inform the development of effective language teaching practices.

Furthermore, the role of resource-dispersing variables, such as planning time, editing time, and prior knowledge, in the interaction between task complexity, gender differences, and writing performance has received limited attention. Resource-dispersing variables refer to the factors that allocate cognitive resources during the writing process (Johnson, 2023). The manipulation of these variables can have a significant impact on the quality and fluency of EFL learners' writing (Dahlan, 2019; Luo, 2022). Therefore, investigating the role of these variables in the context of task complexity and gender differences can provide valuable insights into the mechanisms underlying EFL writing performance.

1.2. Research Gap

The study of the effect of task complexity and gender differences on EFL learners' writing performance has received some attention in the literature, but there is still a research gap that needs to be filled. Most studies that have been conducted in this area have investigated the effect of task complexity on writing performance without considering gender differences (Belghoul & Merrouche, 2021; Michel, Kuiken, & Vedder, 2012). Therefore, there is a need to explore the interaction between task complexity and gender differences in EFL writing performance.

Moreover, the body of research on task complexity on writing complexity for the international schools EFL learners is modest, especially in Saudi Arabia (Atef, 2017; Frear & Bitchener, 2015). Although some studies have examined the effects of task complexity on various aspects of writing performance, there is still a need for more studies that specifically focus on EFL learners in the context of international schools, especially in Saudi Arabia.

Besides, the differences between boys' and girls' performances in writing are still unclear, especially in terms of educational outcomes between genders. While some studies have reported gender differences in writing performance (Alkhrisheh, Aziez, & Alkhrisheh, 2019; Namy Soghady, Hosseinpour, & Talebinejad, 2022), other studies have found no significant gender differences (Hyde, 2005). Some studies have suggested that girls outperform boys in writing tasks (Lillis, McMullan, & Tuck, 2018), while others have found no significant gender differences in educational outcomes (Tankó, 2021). Hence, there is a need for more research to explore the relationship between gender differences and educational outcomes in writing, and investigate the differences between boys' and girls' performances in writing.

Nevertheless, Writing may be an exception to Hyde's Gender Similarity Hypothesis. Hyde's Gender Similarity Hypothesis states that males and females are more similar than different in most psychological attributes (Hyde, 2005). However, research on gender differences in writing suggests that there may be some differences between males and females in this specific domain (Lillis et al., 2018). This highlights the need for further investigation to determine whether writing is indeed an exception to Hyde's Gender Similarity Hypothesis.

It is important to highlight the need for further research to investigate the combined effect of task complexity and gender differences on EFL writing performance. While there is some research on the individual effects of task complexity and gender differences on writing performance (Awwad & Tavakoli, 2022; Shamsini & Farahani, 2016), there is a lack of research that examines their combined effect. Therefore, it is important to fill this research gap by exploring the interaction between task complexity and gender differences in EFL writing performance.

On the other hand, the interaction between task complexity and gender differences in EFL writing performance remains unclear. Existing studies have mainly focused on the separate effects of task complexity and gender differences on writing performance (Clark, 2013; Wang & Jin, 2022). However, there is limited research that investigates the interaction between these two factors. Therefore, there is a need for further research to explore how task complexity and gender differences interact and influence EFL writing performance.

Previous research has shown that gender may play a role in language production and performance (Alkhrisheh, Aziez, & Alkhrisheh, 2019; Hyde, 2005). Therefore, it is essential to examine the potential impact of gender on EFL writing performance and determine if there are any gender-related differences in writing skills. By incorporating gender as a variable in the study of EFL writing, researchers and educators can gain a more comprehensive understanding of the factors that affect language learning and tailor teaching practices to address potential gender-related differences.

The inclusion of the resource-dispersing variables, such as planning time, editing time, and prior knowledge, in the study design can provide valuable insights into the specific mechanisms through which gender may influence EFL writing performance. These variables have been identified as important factors that affect language production and performance (Johnson, 2023; Sadeghi & Mosalli, 2012). By examining how these variables interact with gender, researchers can shed light on the underlying processes and shed light on potential areas for intervention and pedagogical support.

In conclusion, there is a need for further research to explore the influence of gender on EFL writing performance and inform effective language teaching practices. By investigating the effect of task complexity and gender differences on EFL learners' writing performance along resource-dispersing variables, this study aims to fill the research gap and provide valuable insights for educators and researchers in the field of second language writing.

1.3. Objectives of the Study

The main objective of the study is to investigate the effectiveness of task complexity on EFL learners' writing production across genders along the resource-dispersing variables of pre-task planning time, post-task editing time and prior knowledge which has been measured in terms of CAF i.e., complexity, accuracy and fluency. This helps better understand the effective of task complexity on the essay writing complexity of EFL learners, see how the linguistic domains are affected by manipulating task complexity, and to obtain information on the effect of CAF measures and sub-constructs of task complexity. Furthermore, this study analyzes and compares the performance of the female and the male participants though the triangulation theoretical models developed by Hyde (2005) (i.e., the Gender Similarities Hypothesis (GSH), Skehan's Limited Attentional Capacity Model (Skehan and Foster, 1999, 2001), and Robinson's

Triadic Componential Framework (2001a, 2001b, 2005, 2007a), which can help language teachers, learners, syllabus designers, test developers, educational bodies and many other stakeholders in the ministries of education to decide on the best methodologies for helping EFL male and female learners to enhance their performance of writing composition. In other words, it is possible that the relationship between task complexity and writing performance is different for male and female EFL learners. Investigating this potential interaction can provide valuable insights into how to optimize EFL writing instruction. Overall, these objectives aim to provide a comprehensive understanding of the complex interplay between task complexity, gender differences, individual differences, and writing performance in EFL contexts. By achieving these objectives, the study can inform the development of more effective EFL writing instruction and contribute to the ongoing research on EFL writing.

1.4. Research Questions

Specifically, the current study addresses the following five main research questions:

- What is the effect of task complexity along the resource-dispersing variable of ± planning time on EFL learners' writing production within same gender and across genders?
- What is the effect of task complexity along the resource-dispersing variable of ± post- task editing time on EFL learners' writing production within same gender and across genders?
- What is the effect of task complexity along the resource-dispersing variable of ±prior knowledge on EFL learners' writing production within same gender and across genders?

Are there any statistically significant differences in the means of CAF measures of low-complexity tasks across genders?

Which specific CAF metrics are most strongly correlated with predicting writing performance?

1.5. Significance of the Study

The primary objective is to examine the effect of task complexity on EFL learners' writing proficiency by manipulating various dimensions of task complexity. Additionally, the study aims to explore potential variations in the performance of male and female learners within the context of EFL writing. By understanding the interplay between task complexity, gender differences, and their influence on EFL learners' writing performance, this research seeks to inform language educators about effective strategies for enhancing writing instruction and curriculum design.

Task complexity has been a central focus in second language acquisition (SLA) research and has been shown to influence learners' linguistic and cognitive processes (Salimi, 2015; Sanajoo, 2016; Wang & Jin, 2022). Task complexity refers to the cognitive demands placed on learners during a language task, including the cognitive processes involved in planning, executing, and evaluating language production (Sanajou, Zohali, & Zabihi, 2017). Previous studies have found that task complexity affects various aspects of language production, such as syntactic complexity, lexical complexity, accuracy, and fluency (Tabari, Lu, & Wang, 2023; Zhan, Sun, & Zhang, 2021). Understanding how task complexity influences EFL learners' writing performance can provide insights into instructional practices and the design of writing tasks that promote language development.

Gender differences have also been a topic of interest in language research, with studies investigating potential variations in language use, proficiency, and performance between males and females (Alkhrisheh, Aziez, & Alkhrisheh, 2019; John, 2019; Lillis, McMullan, & Tuck, 2018). Although the gender similarities hypostudy suggests that there are more similarities than differences between males and females in various domains (Hyde, 2005), some studies have reported differences in language production and writing performance (Al-Saadi, 2020; Ginting, 2018). Exploring gender differences in EFL writing performance can provide insights into the specific challenges and strengths of male and female learners and inform instructional practices that cater to their needs.

The selected variables in this study, namely planning time, editing time, and prior knowledge, have been identified as crucial factors in EFL writing performance. Planning time refers to the time allocated for pre-writing activities, which have been shown to facilitate organization, idea generation, and content development (Abrams & Byrd, 2016; Ma & Zainal, 2018). Editing time, on the other hand, focuses on post-writing activities, including reviewing, revising, and editing written texts to improve accuracy and fluency (Adams, Amani, Newton, & Alwi, 2014; Oliver, Conlan, & Jay, 2014). Prior knowledge encompasses learners' existing knowledge and experiences that can influence their ability to generate ideas, select appropriate vocabulary, and construct coherent texts (Merrouche, 2014; Nguyễn, 2015). Investigating these variables in relation to task complexity and gender differences can provide a comprehensive understanding of their combined effects on EFL learners' writing performance.

Furthermore, the study will explore the role of resource dispersing variables, namely planning time, editing time, and prior knowledge, in relation to task complexity and writing performance. Resource dispersing variables refer to the allocation and management of cognitive resources during the task performance (Wang & Jin, 2022). Investigating the effects of these variables on writing performance will provide insights into how learners utilize their cognitive resources to accomplish writing tasks of varying complexity. This knowledge can inform instructional practices and assist teachers in designing tasks that optimize learners' resource allocation and improve their writing skills.

The findings of this study will have practical implications for language teachers and curriculum designers. By identifying the effects of task complexity on writing performance, teachers can select or design tasks that are appropriate for learners' proficiency levels and promote their writing development. Additionally, understanding gender differences in writing performance can help teachers adopt gender-responsive approaches in the classroom, taking into account the unique needs and strengths of male and female learners.

Besides, the study's focus on resource dispersing variables can inform the design of effective writing instruction. By considering the role of planning time, editing time, and prior knowledge, teachers can provide explicit instruction and support in these areas to enhance learners' writing skills. For instance, teachers can allocate sufficient time for pre-writing activities to facilitate effective planning and organization of ideas. They can also guide learners in developing effective editing strategies to improve accuracy and fluency in their writing.

In addition, the findings of this study can contribute to the development of task-based language teaching (TBLT) pedagogy. TBLT emphasizes the use of meaningful, communicative tasks to promote language learning (Ellis, Skehan, Li, Shintani, & Lambert, 2019). Understanding how task complexity and gender differences influence writing performance can help TBLT practitioners in task selection and task design. By tailoring tasks to the specific needs and characteristics of learners, TBLT practitioners can create engaging and effective writing tasks that foster language development.

 Additionally, its implications for teaching and curriculum design, this study holds significance for the broader field of second language acquisition research. By investigating the effects of task complexity, gender differences, and resource dispersing variables on writing performance, the study contributes to our understanding of the complex interplay between these factors and language learning outcomes. The findings can expand theoretical frameworks and provide empirical evidence that informs future research in SLA.

Lastly, this study has the potential to contribute to the development of assessment practices in the context of EFL writing. By examining how task complexity and gender influence various aspects of writing performance, such as complexity, accuracy, and fluency, the study can provide insights into the design and evaluation of writing assessments. The findings may help assessment specialists and educators develop more valid and reliable writing assessments that capture the multidimensional nature of writing proficiency.

In conclusion, this study on the effect of task complexity and gender differences on EFL learners' writing performance along resource dispersing variables holds significant implications for the field of SLA, TBLT, language teaching, and assessment. By exploring the relationships between these variables and writing performance, the study contributes to our understanding of how to optimize writing instruction, cater to the diverse needs of learners, and enhance language learning outcomes. The findings have practical applications for teachers, curriculum designers, and assessment specialists, while also advancing theoretical frameworks and informing future research in the field of second language acquisition.

1.6. Post-task editing time

As for the changes in syntactic complexity within the same gender along the resource- dispersing variable of post-task editing-time, the results of both female and male groups revealed that out of the 12 metrics used, no scores are statistically significant. When comparing the outputs of both across gender along the resource-dispersing variable of post-task editing- time variable, results revealed there are no statistically significant difference between male and female.

As for the changes in lexical density and lexical sophistication within the same gender along the resource-dispersing variable of post-task editing-time, the results within same gender revealed that, out of the 6 metrics used in this study, the 5 metrics of lexical sophistication showed significant increase. When comparing the outputs across gender, the females outperformed their male counterparts along 5 out of 6 metrics

As for the changes in lexical variation withing the same gender along the resource- dispersing variable of post-task editing-time, the results of the female group revealed that, out of the 19 metrics used in this study, only 2 metrics showed significant increase. The results of the male group revealed that, out of the 19 metrics used in this study, no metrics showed statistically significant scores. When comparing the outputs of lexical variation across gender, out of the 19 metrics used in this study, the females significantly outperformed the males in 2 out of 19 metrics.

As for the changes in accuracy within the same gender along the resource-dispersing variable of post-task editing-time, the results of the female and male groups revealed that all the metrics showed significant increase. When comparing the outputs of accuracy across gender, results revealed that the females outperformed their male counterparts in 3 out of 4 metrics.

As for the changes in fluency within the same gender along the resource-dispersing variable of post-task editing-time, the results of the female and male groups revealed that, out of the 4 metrics used in this study, only 1 metric showed significant increase. When comparing the writing output of fluency across gender, results revealed that the females outperformed their male counterparts in only one out of four.

1.7. Prior-knowledge

As for the changes in syntactic complexity within the same gender along the resource- dispersing variable of prior-knowledge, the results of the female group revealed that out of the 12 metrics used in this study, only 7 metrics showed significant increase. The results of the male group revealed that, out of the 12 metrics used in this study, only 4 metrics showed significant increase. When comparing the outputs of syntactic complexity across gender, the females significantly outperformed the males in 7 out of 12 metrics.

As for the changes in lexical density and sophistication within the same gender along the resource-dispersing variable of prior-knowledge, the results revealed that all of the 6 out of 6 metrics showed significant increase. When comparing the outputs of lexical density and sophistication across gender, the results revealed that the females outperformed their male counterparts in 6 out of 6 metrics.

As for the changes in lexical variation within the same gender along the resource- dispersing variable of prior-knowledge, the results of the female group revealed that, out of the 19 metrics used in this study, only 10 metrics showed significant increase, revealing statistically significant scores. When comparing the outputs of lexical variation across gender, out of the 19 metrics used in this study, there are 9 common metrics that showed statistically significant score in both genders, female and male. However, the results revealed that the females outperformed their male counterparts in 10 out of 19 metrics.

As for the changes in accuracy within the same gender along the resource-dispersing variable of prior-knowledge, the results of the female and male groups revealed that all the 4 out 4 metrics showed significant increase. When comparing the outputs of accuracy across gender, results revealed that the females outperformed their male counterparts along all of the 4 metrics.

As for the changes in fluency within the same gender along the resource-dispersing variable of prior-knowledge, the results of the female group revealed that out of the 4 metrics used in this study, only 2 metrics showed significant increase. The results of the male group revealed that, out of the 4 metrics used in this study, only 1 metric showed significant increase. When comparing the outputs of fluency across gender, results revealed that both the female and male groups performed similarly. There is no statistically significant difference between the two groups.

2. Results

Summary of the results Pre-task planning time

This study examined the impact of task complexity, pre-task planning time, post-task editing time, and prior knowledge on the writing production of EFL learners across genders. The study used different metrics such as syntactic complexity, lexical density and sophistication, lexical variation, accuracy, and fluency to evaluate the writing production.

As for the changes in syntactic complexity along the dispersing variable of planning time within the same gender, the results of the female groups revealed that out of the 12 metrics used, 5 metrics showed a significant increase. The results of the male groups revealed that, out of the 12 metrics used, 4 metrics showed significant increase. As for the changes across gender, out of the 12 metrics used, there are 4 common metrics that showed statistically significant score in both

genders, female and male. The results revealed that the females outperformed their male counterparts along syntactic complexity. Specifically, the females significantly outperformed the males in almost 5 out of 12 metrics.

As for the changes in lexical density and sophistication along the dispersing variable of planning time within the same gender, the results of both female and male groups revealed that out of the 6 metrics used, no scores are statistically significant. As for the changes across gender, the results revealed that out of the 6 metrics used, no scores are statistically significant showing no significant differences between the two levels of task complexity.

As for the changes in lexical variation along the dispersing variable of planning time within the same gender, the results of the female group revealed that, out of the 19 metrics used, only 7 metrics showed significant increase. The results of the male group revealed that, out of the 19 metrics used, only 8 metrics showed significant increase. As for the changes across gender, out of the 19 metrics used, there are 6 common metrics that showed statistically significant score in both genders, female and male. Also, the females significantly outperformed the males in 6 out of 19 metrics.

As for the changes in Accuracy along the dispersing variable of planning time within the same gender. The results of both female and male groups revealed that out of the 4 metrics used, no scores are statistically significant showing no significant differences between the two levels of task complexity within the same gender. As for the changes across gender, the results of both female and male groups revealed that out of the 4 metrics used, no scores are statistically significant showing no significant differences between the two levels of task complexity across gender.

As for the changes in fluency along the dispersing variable of planning time within the same gender. The results of the female group revealed that, out of the 4 metrics, only 1 metric showed significant increase. The results of the male group revealed that, out of the 4 metrics used, only 1 metric showed significant increase. As for the changes across gender, results revealed that the females partially outperformed their male counterparts in 2 out of 4 metrics.

2.1. Post-task editing time

As for the changes in syntactic complexity within the same gender along the resource- dispersing variable of post-task editing-time, the results of both female and male groups revealed that out of the 12 metrics used, no scores are statistically significant. When comparing the outputs of both across gender along the resource-dispersing variable of post-task editing- time variable, results revealed there are no statistically significant difference between male and female.

As for the changes in lexical density and lexical sophistication within the same gender along the resource-dispersing variable of post-task editing-time, the results within same gender revealed that, out of the 6 metrics used in this study, the 5 metrics of lexical sophistication showed significant increase. When comparing the outputs across gender, the females outperformed their male counterparts along 5 out of 6 metrics

As for the changes in lexical variation withing the same gender along the resource- dispersing variable of post-task editing-time, the results of the female group revealed that, out of the 19 metrics used in this study, only 2 metrics showed significant increase. The results of the male group revealed that, out of the 19 metrics used in this study, no metrics showed statistically significant scores. When comparing the outputs of lexical variation across gender, out of the 19 metrics used in this study, the females significantly outperformed the males in 2 out of 19 metrics.

As for the changes in accuracy within the same gender along the resource-dispersing variable of post-task editing-time, the results of the female and male groups revealed that all the metrics showed significant increase. When comparing the outputs of accuracy across gender, results revealed that the females outperformed their male counterparts in 3 out of 4 metrics.

As for the changes in fluency within the same gender along the resource-dispersing variable of post-task editing-time, the results of the female and male groups revealed that, out of the 4 metrics used in this study, only 1 metric showed significant increase. When comparing the writing output of fluency across gender, results revealed that the females outperformed their male counterparts in only one out of four.

2.2. Prior-knowledge

As for the changes in syntactic complexity within the same gender along the resource- dispersing variable of prior-knowledge, the results of the female group revealed that out of the 12 metrics used in this study, only 7 metrics showed significant increase. The results of the male group revealed that, out of the 12 metrics used in this study, only 4 metrics showed significant increase. When comparing the outputs of syntactic complexity across gender, the females significantly outperformed the males in 7 out of 12 metrics.

As for the changes in lexical density and sophistication within the same gender along the resource-dispersing variable of prior-knowledge, the results revealed that all of the 6 out of 6 metrics showed significant increase. When comparing the outputs of lexical density and sophistication across gender, the results revealed that the females outperformed their male counterparts in 6 out of 6 metrics.

As for the changes in lexical variation within the same gender along the resource- dispersing variable of prior-knowledge, the results of the female group revealed that, out of the 19 metrics used in this study, only 10 metrics showed significant increase, revealing statistically significant scores. When comparing the outputs of lexical variation across gender, out of the 19 metrics used in this study, there are 9 common metrics that showed statistically significant score in both genders, female and male. However, the results revealed that the females outperformed their male counterparts in 10 out of 19 metrics.

As for the changes in accuracy within the same gender along the resource-dispersing variable of prior-knowledge, the results of the female and male groups revealed that all the 4 out 4 metrics showed significant increase. When comparing the outputs of accuracy across gender, results revealed that the females outperformed their male counterparts along all of the 4 metrics.

As for the changes in fluency within the same gender along the resource-dispersing variable of prior-knowledge, the results of the female group revealed that out of the 4 metrics used in this study, only 2 metrics showed significant increase. The results of the male group revealed that, out of the 4 metrics used in this study, only 1 metric showed significant increase. When comparing the outputs of fluency across gender, results revealed that both the female and male groups performed similarly. There is no statistically significant difference between the two groups.

The following is a summary of the findings above:

Table 1 Resource dispersing: Pre-Task Planning-time

Context	Gender	Total Metrics	Significant metrics
1. Syntactic Complexity	Same Gender (Female)	12 metrics	5 metrics: Syn_MLS (the mean length of sentence), Syn_CS (sentence complexity ratio), Syn_CT (T- unit complexity ratio), Syn_TS (sentence coordination ratio), and Syn_CTT (Complex T-unit ratio).
	Same Gender (Male)	12 metrics	4 metrics:. Syn_MLS (the mean length of sentence), Syn_CS (sentence complexity ratio), Syn_TS (sentence coordination ratio), and Syn_CTT (Complex T-unit ratio)
	Across Gender	12 metrics	Females outperformed male in 5 metrics: Syn_MLS (the mean length of sentence), Syn_CS (sentence complexity ratio), Syn_CT (T-unit complexity ratio), Syn_TS (sentence coordination ratio), and Syn_CTT (Complex T-unit ratio).
2. Lexical Density and Sophistication	Same Gender (Female)	6 metrics	None
	Same Gender (Male)	6 metrics	None
	Across Gender	6 metrics	None
	Same Gender (Female)	19 metrics	7 metrics: Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_CTTR (Corrected Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), Lex_Uber (Uber Index), and Lex_VV2 (Verb variation-II)
	Same Gender (Male)	19 metrics	8 metrics: Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_MSTTR (Mean TTR of all 50-word segments),

3. Lexical Variation			Lex_CTTR (Corrected Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), Lex_Uber (Uber Index), and Lex_AdjV (Adjective variation)
	Across Gender	19 metrics	Females outperformed males in 6 metrics: Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_CTTR (Corrected Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), and Lex_Uber (Uber Index)
4. Accuracy	Same Gender (Female)	4 metrics	none
	Same Gender (Male)	4 metrics	none
	Across Gender	4 metrics	none
5. Fluency	Same Gender (Female)	4 metrics	1 metric: Fl_MLC or Fl_W/C (Mean length of clause)
	Same Gender (Male)	4 metrics	1 metric: Fl_MLC or Fl_W/C (Mean length of clause)
	Across Gender	4 metrics	females outperformed males in 2 metrics: Flu_MLC or Fl_W/C (Mean length of clause), and Flu_W (Text length)

2.3. Resource dispersing: Post-Task editing-time

Table 2 Resource dispersing: Post-Task editing-time

Context	Gender	Total Metrics	Significant metrics
1. Syntactic Complexity	Same Gender (Female)	12 metrics	none
	Same Gender (Male)	12 metrics	none
	Across Gender	12 metrics	none
2. Lexical Density and Sophistication	Same Gender (Female)	6 metrics	5 metrics: Lex_LS1 (Lexical sophistication-I), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)
	Same Gender (Male)	6 metrics	5 metrics: Lex_LS1 (Lexical sophistication-I), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)
	Across Gender	6 metrics	females outperformed male along 5: Lex_LS1 (Lexical sophistication-I), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)

3. Lexical Variation	Same Gender (Female)	19 metrics	2 metrics: Lex_TTR (Type/Token ratio), and Lex_CVV1 (Corrected Verb variation-I)
	Same Gender (Male)	19 metrics	None
	Across Gender	19 metrics	2 metrics Lex_NDW (number of different words), and Lex_CVV1 (Corrected Verb variation-I)
4. Accuracy	Same Gender (Female)	4 metrics	all the 4 metrics (i.e., Acc_EFT (Error-free T-units), Acc_EFTT (Error-free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length)
	Same Gender (Male)	4 metrics	all the 4 metrics (i.e., Acc_EFT (Error-free T-units), Acc_EFTT (Error-free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length)
	Across Gender	4 metrics	females outperformed males in 3 out of 4 metrics Acc_EFTT (Error-free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length)
5. Fluency	Same Gender (Female)	4 metrics	1 metric: Fl_W/EFT (Mean length of error-free T-unit)
	Same Gender (Male)	4 metrics	1 metric: Fl_W/EFT (Mean length of error-free T-unit)
	Across Gender	4 metrics	1 metric: Fl_W/EFT(Mean length of error-free T-unit).

2.4. Resource dispersing: Prior Knowledge

Table 3 Resource dispersing: Prior Knowledge

Context	Gender	Total Metrics	Significant metrics
1. Syntactic Complexity	Same Gender (Female)	12 metrics	7 metrics (i.e., Syn_MLS (the mean length of sentence), Syn_CS (sentence complexity ratio), Syn_VPT (Verb phrases per T-unit), Syn_CT (T- unit complexity ratio), Syn_DCC (dependent clause ratio), Syn_DCT (Dependent clause ratio), and Syn_TS (sentence coordination ratio)
	Same Gender (Male)	12 metrics	4 metrics Syn_MLS (the mean length of sentence), Syn_DCC (dependent clause ratio), Syn_DCT (Dependent clause ratio), and Syn_TS (sentence coordination ratio)
	Across Gender	12 metrics	females outperformed males in 7 out of 12 metrics: Syn_MLS (the mean length of sentence), Syn_CS (sentence complexity ratio), Syn_VPT (Verb phrases per T-unit), Syn_CT (T-unit complexity ratio), Syn_DCC (dependent clause ratio), Syn_DCT (Dependent clause ratio), and Syn_TS (sentence coordination ratio)
	Same Gender (Female)	6 metrics	all of the 6 metrics Lex_LD (lexical density), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)

2. Lexical Density and Sophistication	Same Gender (Male)	6 metrics	all of the 6 metrics Lex_LD (lexical density), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)
	Across Gender	6 metrics	females outperformed males in 6 out of 6 metrics used (i.e., Lex_LD (lexical density), Lex_LS2 (Lexical sophistication-II), Lex_VS1 (Verb sophistication-I), Lex_VS2 (Verb sophistication-II), and Lex_CVS1 (corrected verb sophistication-I)
3. Lexical Variation	Same Gender (Female)	19 metrics	10 metrics Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_CTTR (Corrected Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), Lex_Uber (Uber Index), Lex_VV1 (Verb variation-I), Lex_LV (Lexical word variation), Lex_VV2 (Verb variation-II), and Lex_NV (noun variation)
	Same Gender (Male)	19 metrics	8 metrics Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_CTTR (Corrected
			Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), Lex_Uber (Uber Index), Lex_VV1 (Verb variation-I), Lex_LV (Lexical word variation), Lex_VV2 (Verb variation-II), and Lex_NV (noun variation)
	Across Gender	19 metrics	females outperformed males in 10 out of 19 metrics: Lex_NDW (number of different words), Lex_TTR (Type/Token ratio), Lex_CTTR (Corrected Type/Token ratio), Lex_RTTR (Root Type/Token ratio), Lex_LogTTR (Bilogarithmic Type/Token ratio), Lex_Uber (Uber Index), Lex_VV1 (Verb variation-I), Lex_LV (Lexical word variation), Lex_VV2 (Verb variation-II), and Lex_NV (noun variation)
4. Accuracy	Same Gender (Female)	4 metrics	4 metrics Acc_EFT (Error-free T-units), Acc_EFTT (Error- free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length)
	Same Gender (Male)	4 metrics	4 metrics Acc_EFT (Error-free T-units), Acc_EFTT (Error- free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length)
	Across Gender	4 metrics	females outperformed the males in all of the 4 metrics : Acc_EFT (Error-free T-units), Acc_EFTT (Error- free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length).
5. Fluency	Same Gender (Female)	4 metrics	2 metrics
Context	Gender	Total Metrics	Significant metrics
			Flu_W (Text length), and Flu_W/EFT (Mean length of error-free T-unit)
	Same Gender (Male)	4 metrics	only 1 metric: Flu_W/EFT (Mean length of error-free T-unit)
	Across Gender	4 metrics	both the female and male groups performed similarly, i.e. no statistically significant difference.

2.5. Differences in the means of CAF measures of low-complexity tasks across genders

Table 4 Differences in the means of CAF measures of low-complexity tasks across genders

Context	Gender	Total Metrics	Significant metrics
1. Syntactic Complexity	Across Gender	12 metrics	females outperformed the males in 11 metrics out of the 12 metrics.
			The mean Length of sentence (MLS), Sentence complexity ratio (C/S), T-unit complexity ratio (C/T), Complex T-unit ratio (CT/T), Dependent clause ratio (DC/C), Dependent clauses per T-unit (DC/T), Coordinate phrases per clause (CP/C), Coordinate phrases per T-unit (CP/T), Sentence coordination ratio (T/S), Complex nominals per clause (CN/C), Complex nominals per T-unit (CN/T)
2. Lexical Complexity	Across Gender	25 metrics	females outperformed males in 16 metrics out of the 25 metrics.
			Lexical density (LD), Lexical sophistication-I (LS1), Lexical sophistication-II (LS2), Verb sophistication-I (VS1), Corrected VS1 (CVS1), Verb sophistication-II (VS2), Number of different words (NDW), Type/Token ratio (TTR), Corrected TTR (CTTR), Root TTR (RTTR), Bilogarithmic TTR (LogTTR), Uber Index (Uber), Lexical word
Context	Gender	Total Metrics	Significant metrics
			variation (LV), Verb variation-I (VV1), Verb variation-II (VV2), Noun variation (NV).
3. Accuracy	Across Gender	4 metrics	females outperformed males in all of the 4 metrics: Acc_EFT (Error-free T-units), Acc_EFTT (Error- free T-units ratio), Acc_ET (Errors per T-unit), and Acc_EW (Errors in text length).
4. Fluency	Across Gender	4 metrics	None

2.6. Effect percentage of task complexity

Table 5 Effect percentage of task complexity along the resource dispersing variables planning time, editing time and prior knowledge on CAF.

Domain	Count of metrics used	Full Sig. Occurrence	Actual Sig. Occurrence	Actual Occurrence %
Syntactic complexity	12	72	20	28%
Lexical complexity	25	150	59	39%
Accuracy	4	24	16	67%
Fluency	4	24	7	29%

Table 5 indicates that the Syntactic Complexity was partially affected by 28% when decreasing task complexity along resource-dispersing variables of planning time, editing time and prior knowledge, lexical complexity affected by 39%, accuracy by 67%, and fluency by 29%.

Table 6 Effect percentage of task complexity along the resource dispersing variables of planning time, editing time and prior knowledge on gender performance.

Domain	Count of metrics used	Full Sig. Occurrence	Actual Sig. Occurrence	Actual Occurrence %
Syntactic complexity	12	60	34	57%
Lexical complexity	25	125	62	50%
Accuracy	4	20	13	65%
Fluency	4	20	3	15%

Table 6 indicates the percentage of gender differences of task complexity along the resource dispersing variables planning time, editing time and prior knowledge. Results show that gender difference in syntactic complexity is 57%, lexical complexity 50%, accuracy 65%, and fluency 15%.

2.7. Practical Implications

The practical implications of this study are significant for EFL teachers, materials developers, and curriculum designers. By understanding the factors that influence EFL learners' writing production, teachers and materials developers can design writing tasks that match the learners' language needs. The practical implications of this study are summarized in the following points:

Pedagogical implications: The findings of this study suggest that teachers should consider the level of task complexity when designing writing tasks for their EFL learners. They should provide sufficient pre-task planning time, post-task editing time, and opportunities for learners to activate their prior knowledge to enhance their writing production. Furthermore, teachers should consider gender differences in writing and provide targeted instruction to help learners overcome their weaknesses. For example, male students may need more support in enhancing their fluency, while female students may require more support in accuracy. Teachers may also utilize various teaching strategies to support the learners' writing skills, such as process-oriented writing instruction, peer review, and feedback provision. In this regard, Li et al. (2019) investigated the impact of different writing tasks on the quality of writing, and found that argumentative writing tasks yielded the highest quality of writing among Chinese EFL learners. Similarly, Chang and Lee (2020) found that narrative tasks promoted the development of writing fluency among Taiwanese EFL learners. Furthermore, teachers should vary the level of task complexity based on learners' proficiency levels, as suggested by Ellis and Shintani (2017), to provide an appropriate level of challenge to learners.

Syllabus design: The results of this study imply that syllabus designers should consider task complexity, task sequence, and resources-dispersing variables when designing writing courses. They should include a variety of task types that promote complexity, accuracy, and fluency in writing, and sequence the tasks in a way that allows learners to gradually develop their writing proficiency. The syllabus should also provide sufficient pre-task planning time, post-task editing time, and opportunities for learners to activate their prior knowledge. In this regard, Nazary and Asgari (2020) proposed a syllabus design that integrates the development of critical thinking skills with the development of writing skills. They found that this approach enhanced the quality of writing and critical thinking skills among Iranian EFL learners.

Teaching strategies: The findings of this study suggest that teachers should utilize various teaching strategies to support learners' writing skills which can help learners improve their writing proficiency. Implementing effective teaching techniques is crucial in promoting language learners' writing proficiency. Writing is a complex skill that requires learners to develop cognitive and linguistic skills, such as critical thinking, organization, coherence, accuracy, and fluency. Teachers, therefore, should implement various teaching techniques that promote the development of these skills among language learners.

Enhancing writing proficiency: The results of this study suggest that pre-task planning time, post-task editing time, and prior knowledge are important variables in enhancing writing proficiency. Teachers can help learners improve their writing proficiency by providing sufficient pre-task planning time, post-task editing time, and opportunities for learners to activate their prior knowledge. For instance, Mohd Nawi et al. (2019) found that the provision of pre-writing activities enhanced the quality of writing and promoted the development of writing fluency among Malaysian EFL learners.

Similarly, Zou et al. (2021) found that the provision of post-writing feedback enhanced the quality of writing and promoted the development of writing accuracy among Chinese EFL learners.

Gender differences in writing: The findings of this study suggest that there are gender differences in writing, with female students outperformed their male counterparts in most CAF performance. Teachers can provide targeted instruction to help learners overcome their weaknesses and improve their writing proficiency. Gender differences in writing implications suggest that teachers should be aware of gender differences in writing and provide targeted instruction that promotes the development of writing accuracy, complexity, and fluency among both male and female learners and bridge the gap between them. For instance, Al Mazrooei and Albakry (2018) found that female Emirati EFL learners outperformed male learners in writing tasks, and suggested that teachers should use strategies that promote male learners' engagement in writing tasks.

CAF metrics: CAF metrics (complexity, accuracy, and fluency) can be useful in evaluating EFL learners' writing proficiency. researchers can use CAF metrics to identify learners' strengths and weaknesses and provide instructors with targeted instruction to help them improve learners' writing skills. CAF metrics can provide researchers with valuable insights into the complexity of a writer's text. Researchers can refer to the specific CAF metrics that are most strongly correlated with predicting writing performance as stated in this study findings to get the best effective result of assessing writing. For instance, studies by Crossley and McNamara (2019) and Malvern et al. (2020) found that CAF metrics were effective in identifying differences in lexical complexity and syntactic complexity between texts produced by native and non-native English speakers. By analyzing specific aspects of writing complexity, researchers can gain a more nuanced understanding of the cognitive and linguistic skills involved in writing proficiency.

Expanding the scope of the writing skill: The results of this study suggest that writing proficiency can be enhanced by providing sufficient pre-task planning time, post-task editing time, and opportunities for learners to activate their prior knowledge. Teachers can expand the scope of the writing skill by providing instruction on pre-task planning, post- task editing, and activating prior knowledge.

Pre-task planning time: The findings of this study suggest that providing sufficient pre-task planning time can enhance writing production. Teachers can provide learners with strategies to plan their writing, such as brainstorming, outlining, and organizing their ideas.

Post-task editing time: The results of this study suggest that providing sufficient post-task editing time can enhance writing production. Teachers can provide learners with strategies to revise their writing, such as checking for grammar errors, reorganizing sentences, and improving word choice.

Prior knowledge: The findings of this study suggest that activating prior knowledge can enhance writing production. Teachers can provide learners with opportunities to connect their prior knowledge with the writing task, such as providing background information, linking the topic to the learners' experiences, and activating relevant vocabulary.

Task type: The results of this study suggest that task type can influence writing production.

Teachers can provide learners with a variety of task types, such as argumentative, Descriptive, and narrative tasks, to promote complexity, accuracy, and fluency in writing. Teachers can also vary the level of task complexity based on learners' proficiency levels to provide a suitable challenge.

Task sequence: The findings of this study suggest that task sequence can influence writing production. Teachers can sequence the writing tasks in a way that allows learners to gradually develop their writing proficiency. For example, they can start with simpler tasks and gradually increase the level of complexity.

Task-based language teaching (TBLT): The findings of this study support the use of task- based language teaching (TBLT) in promoting writing production. TBLT focuses on the use of language in meaningful tasks, which can enhance learners' motivation and engagement in the learning process. TBLT also promotes the development of language skills, such as writing, by providing learners with opportunities to use language in context. Alghamdi (2019) investigated about the importance of teachers utilizing effective teaching techniques with Saudi EFL learners. The study aimed to investigate the effectiveness of utilizing a task-based language teaching (TBLT) approach in promoting the development of writing proficiency among Saudi EFL learners. The TBLT approach involves the use of authentic and meaningful writing tasks that simulate real-life situations.

3. Conclusion

In conclusion, this study has important practical implications for pedagogy, syllabus design, teaching strategies, and enhancing writing proficiency. Teachers can utilize the findings of this study to provide targeted instruction to learners, expand the scope of the writing skill, and promote the development of writing proficiency. The use of CAF metrics, task-based language teaching, and a variety of task types can also enhance the effectiveness of writing instruction. The findings of the current study are highly important in EFL writing classes as few teachers consider this gender gap in writing instruction. Teachers need to play more positive roles to put into account gender differences through their assessments and feedback. It has been suggested that teachers' assessments tend to be biased by their perceptions towards the writer's gender, e.g., they tend to criticized male writers and give them more corrections compared to female writers who usually given higher scores by their teachers (Castro and Limpo, 2018). Teacher's critical feedback to male writers might affect males' self-efficacy and this in turn might affect negatively their writing skills. Therefore, it is highly important that teacher provide their male writers with more positive and constructive feedback in order to strengthen males' sense of capability in writing. Teachers also need to avoid creating an impression that writing is a feminine act in their language classes (Ong, 2015). This is highly important to motivate male students to engage more and perform better in the writing classes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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