

LENS Model: Comparing Pre- and Post-Writing Model-Text Feedback

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Abstract

Developing effective persuasive writing skills remains a major challenge for ESL learners, and identifying feedback strategies that promote meaningful revision is an important concern in second language writing instruction. This study compared pre-writing versus post-writing exposure to model texts on the persuasive writing of 100 Bahraini EFL undergraduates. Over three weeks, a control group analyzed a model before writing, while an experimental group wrote a draft, then compared it to the model. Results showed the post-writing group achieved significantly greater gains in overall writing and all subscales (Organization, Coherence, Grammar, Vocabulary). Their reflective notes demonstrated deeper noticing, whereas the pre-writing group showed more general, anticipatory noticing. Both groups viewed the intervention positively. Results indicate stronger outcomes for post-writing exposure to model texts, theorized through an integration of the Output Hypothesis, Noticing Hypothesis, and scaffolding. The proposed LENS Model (Learner-Elicited Noticing and Scaffolding) frames writing development as a recursive cycle: initial output primes cognitive readiness, and model comparison elicits focused noticing of gaps, which scaffolds revision. Presenting models after a writing attempt is an effective feedback strategy for developing L2 persuasive writing. The findings recommend incorporating post-writing model-text comparison into ESL writing instruction to promote deeper noticing and improve persuasive writing performance, particularly in higher education contexts with large class sizes.

Keywords: model texts, noticing hypothesis, persuasive writing, second language writing, feedback timing

1. Introduction

The development of advanced academic writing skills, particularly in persuasive genres, remains a central yet challenging objective in second language (L2) higher education. A key component of this development is timely and meaningful feedback. However, in many educational contexts, high student-to-teacher ratios make the provision of detailed, individualized written corrective feedback (WCF) difficult to sustain. As a result, feedback practices often become limited to surface-level error correction rather than comprehensive guidance on rhetorical organization and argument development (Bitchener & Storch, 2016; Kang, 2022). Recent classroom-based research further indicates that although WCF can contribute to improvements in linguistic accuracy, its effectiveness depends strongly on task design and the degree to which learners actively engage with the feedback provided (Mao et al., 2024). These challenges have encouraged researchers to explore scalable instructional approaches capable of supporting both linguistic and rhetorical development in L2 writing.

One such approach involves the pedagogical use of model, or exemplar, texts. By exposing learners to well-constructed examples of the target genre, model texts can clarify rhetorical expectations and illustrate effective linguistic and organizational choices. In this way, model texts may function as a form of implicit feedback that allows learners to compare their own writing with successful examples of the genre. The potential effectiveness of model texts is supported by several key theories in second language acquisition (SLA). Schmidt's Noticing Hypothesis proposes that conscious attention to linguistic form is a necessary condition for learning (Godfroid, 2019). Within the present study, noticing serves as the cognitive mechanism through which learners identify gaps between their own writing and the model text, thereby facilitating language development and revision. Model texts can facilitate this process by directing learners' attention to salient linguistic and discourse features. From a sociocultural perspective, Vygotsky's theory emphasizes the role of the Zone of Proximal Development (ZPD) and scaffolding in learning, suggesting that guidance from a more knowledgeable source can support learners in achieving higher levels of performance (Lantolf, Poehner & Swain, 2020). According to Lantolf, Xi and Minakova (2020), within this framework, model texts can function as mediating tools that provide scaffolded support when learners actively engage with them. Accordingly, scaffolding in the current study is operationalized through learners' interaction with model texts, which offer strategic guidance for improving organization, language use, and overall text quality without replacing learners' own problem-solving processes. In addition, Swain's Output Hypothesis highlights the importance of language production, arguing that the act of producing language pushes learners to process linguistic forms more deeply and often reveals gaps in their knowledge (Swain & Watanabe, 2019). In the context of this study, requiring learners to complete an initial draft before accessing the model text creates opportunities for output-induced noticing, enabling them to recognize discrepancies between their own production and the target model. These theoretical perspectives explain how model texts facilitate writing development: output generates awareness of learning needs, noticing directs learners' attention to linguistic and rhetorical gaps, and scaffolding provides the support necessary to transform that awareness into improved writing performance.

Despite this strong theoretical grounding, a key pedagogical variable remains underexplored: the timing of model-text exposure (Kim & Bowles, 2019; Kang, 2020). Specifically, it is unclear whether learners benefit more from examining model texts before writing, as a guide for planning and structuring their compositions, or after writing, as a reflective resource for identifying discrepancies between their own texts and a target model. These two approaches reflect different theoretical orientations. Pre-writing exposure is often associated with input-processing perspectives, which suggest that learners benefit from receiving clear input prior to production in order to guide their language use and reduce cognitive load (Coyle & Larios, 2020). In contrast, post-writing exposure aligns more closely with sociocultural and output-oriented perspectives, which argue that learning is most effective when support is provided after learners attempt production and encounter difficulties within their ZPD (Huang & Zhang, 2022). Recent research has strengthened support for model texts as an effective form of feedback, demonstrating their potential to enhance learners' noticing, revision, and overall writing quality, particularly when students compare their own drafts with exemplar texts during the revision process (Wu, Qie & Wang, 2023; Nguyen, Dao & Nguyen, 2024). Likewise, a recent systematic review concluded that model-text feedback consistently promotes writing development while highlighting the need for further research on instructional variables, including the timing of model presentation across different writing contexts (Nguyen et al., 2024). Nevertheless, empirical research examining this issue remains limited, and much of the existing evidence is based on relatively simple writing tasks, leaving uncertainty regarding the role of timing in more complex academic writing contexts.

The challenge is particularly pronounced in persuasive writing, which requires learners to develop not only grammatical accuracy but also a range of sophisticated rhetorical abilities. Effective persuasive essays involve formulating a clear and debatable thesis, constructing logical arguments supported by evidence, anticipating counterarguments, and employing metadiscourse to guide readers through the text (Stapleton & Wu, 2015). Recent research further demonstrates that persuasive and argumentative writing remain among the most demanding academic genres for EFL learners because they require the simultaneous integration of linguistic accuracy, rhetorical organization, critical thinking, and audience awareness (Mallahi, 2024; Zhang & Zhang, 2023). Moreover, studies have shown that many tertiary-level EFL learners continue to struggle with organizing arguments, constructing persuasive claims, and applying genre-specific rhetorical conventions effectively, despite receiving formal writing instruction (Söğüt, Civan & Atasever Belli, 2024; Thaksanan & Chaturongakul, 2023). For Arab learners of English as a foreign language (EFL), the development of these rhetorical conventions may be further complicated by differences between local rhetorical traditions and the expectations of English academic discourse (Connor, Nagelhout & Rozycki, 2008). These findings underscore the need for instructional approaches that explicitly support learners in recognizing, comparing, and applying the rhetorical and linguistic features of effective persuasive writing. Consequently, identifying instructional strategies that effectively promote learners' noticing of both linguistic and rhetorical features is essential for improving persuasive writing performance.

These pedagogical challenges are particularly evident in the Gulf Cooperation Council (GCC) region, where rapidly expanding higher education sectors frequently operate with large class sizes that limit opportunities for individualized feedback. The GCC EFL context is characterized by the high instrumental value of English in education, employment, and international communication, despite relatively limited exposure outside formal learning environments. Arabic, the dominant first language in the region, differs substantially from English in rhetorical organization and grammatical structure (Al-Issa, 2017), which may influence how learners approach argumentative writing in English. In addition, instructional traditions in some contexts have historically emphasized product-oriented learning approaches, which may shape how students interpret and use model texts (Al-Khalil, 2021). Within Bahrain, educational reforms have increasingly emphasized improving English proficiency and aligning graduate skills with labor-market demands (Lantolf et al., 2020). These developments create a relevant context for investigating scalable instructional strategies such as model-text-based feedback. However, limited local research has examined how such approaches function within Bahraini EFL classrooms.

In Bahrain, universities are increasingly expected to equip graduates with strong communication and critical thinking skills, as emphasized in national development initiatives such as the Bahrain Economic Vision 2030. At the same time, employers in the region continue to report deficiencies in graduates' written communication abilities, highlighting the need for scalable and pedagogically sound approaches to writing instruction (Abou-El-Kheir & MacLeod, 2017; Bahrain Polytechnic, 2022). Although this challenge is particularly salient in Bahrain and the wider GCC, similar concerns have been reported in many higher education contexts worldwide, where increasing student enrolments, limited instructional resources, and large class sizes continue to constrain the provision of individualized writing feedback (Hyland & Hyland, 2019; Lee, 2020). Consequently, the need for scalable feedback approaches extends beyond the GCC and represents a common challenge in second language writing instruction internationally. Investigating effective feedback alternatives, such as model-text-based instruction, is therefore particularly relevant within this context, with the potential to inform writing pedagogy in other higher education settings facing comparable instructional constraints.

To address these interconnected theoretical, pedagogical, and contextual gaps, this study examines the role of model-text timing in L2 persuasive writing instruction. Specifically, it compares the effectiveness of pre-writing versus post-writing exposure to model texts in enhancing learners' noticing and persuasive writing performance. The study is guided by the following research objective and question.

Research Question: How effective is pre-writing versus post-writing exposure to model texts in enhancing noticing and persuasive writing aptitude of Bahraini higher education L2 learners?

Research Objective: To compare the effectiveness of pre-writing versus post-writing exposure to model texts in enhancing noticing and persuasive writing aptitude of Bahraini higher education L2 learners.

Through a convergent mixed-methods design, the study also seeks to illuminate the cognitive processes underlying learners' engagement

with model texts. It examines how learners notice linguistic and rhetorical features in model texts and how this noticing influences their subsequent revisions and overall writing development. Based on the findings, the study proposes the LENS Model (Learner-Elicited Noticing and Scaffolding), an evidence-based pedagogical framework that synthesizes insights from SLA theory into a cyclical model for writing instruction and feedback.

This study advances the field in four key ways. First, it provides the first direct comparison of pre-writing versus post-writing model-text exposure in persuasive writing contexts, addressing a critical gap identified in prior research. Second, while previous studies have drawn separately on the Output Hypothesis, the Noticing Hypothesis, or sociocultural perspectives to explain second language writing development, there remains no unified pedagogical framework that explicitly integrates these complementary perspectives to explain how model-text feedback promotes learning, particularly in relation to the timing of model-text exposure. Existing research has therefore provided valuable theoretical insights but limited guidance on how these processes interact during writing and revision. To address this gap, it proposes the LENS Model, an original pedagogical framework that synthesizes Output, Noticing, and Sociocultural theories into a recursive writing cycle, thereby offering a coherent explanation of how initial language production, gap noticing, and scaffolded revision operate together to facilitate writing development. The model also provides teachers and researchers with a practical conceptual framework for designing and evaluating model-text-based writing instruction. Third, it offers qualitative evidence distinguishing diagnostic gap noticing from anticipatory noticing as qualitatively different cognitive processes, revealing that post-writing noticing involves deeper engagement with discourse-level features rather than surface-level attention alone. Fourth, this study extends model-text research to the under-investigated Gulf region by focusing on Bahraini EFL learners, an Arabic-speaking population that often encounters challenges in English persuasive writing due to cross-cultural rhetorical differences. By examining this context, the study contributes empirical evidence from a setting that has received limited attention in the L2 writing literature. In addition, it responds to national higher education priorities by exploring scalable feedback approaches suitable for large-class environments, where providing extensive individualized written corrective feedback can be difficult.

2. Literature Review

2.1 Theoretical Underpinnings: A Tripartite Foundation

The use of model-text feedback in L2 writing can be explained through three complementary SLA perspectives. Schmidt's Noticing Hypothesis posits that input must be consciously attended to in order to become intake for learning (Lantolf, Xi & Minakova, 2020; Leow, 2020). Later syntheses emphasize that deeper learning occurs when learners engage in metalinguistic reflection while processing feedback (Suga, 2024), while process-tracing studies using eye-tracking confirm the importance of attention and noticing in L2 development (Poehner & Leontjev, 2020). In writing contexts, model texts can therefore function as a focused source of linguistic and rhetorical input, provided learners actively attend to relevant features.

Vygotsky's Sociocultural Theory further frames learning as mediated through interaction with a more knowledgeable other within the Zone of Proximal Development (ZPD) (Swain & Watanabe, 2019). In this sense, model texts may function as a form of scaffolding, offering structured examples that support learners in achieving tasks beyond their current ability (Li & DeKeyser, 2021). Swain's Output Hypothesis complements this perspective by highlighting the role of language production in prompting syntactic processing and metalinguistic reflection (Kang, 2020; Kinginger, 2020). Producing output can reveal gaps in learners' linguistic knowledge, potentially making subsequent exposure to model texts more salient and cognitively meaningful. These perspectives suggest that the effectiveness of model texts may depend not only on their instructional value but also on the timing of their presentation relative to learners' production. Taken together, these three theoretical perspectives describe complementary stages of the same learning process rather than competing explanations. The Output Hypothesis explains how producing an initial draft creates awareness of learners' linguistic limitations, the Noticing Hypothesis explains how comparison with a model text directs attention to these gaps, and Sociocultural Theory explains how the model text functions as scaffolded support that enables learners to bridge the gap between current and desired performance. This integrated perspective provides the theoretical foundation for the present study, which examines whether the timing of model-text exposure influences how these interconnected cognitive and instructional processes unfold during persuasive writing.

2.2 The Challenge of L2 Persuasive Writing

Persuasive writing is a complex academic genre requiring the integration of rhetorical, linguistic, and organizational competencies. Effective persuasive texts typically include a clear thesis, logically developed arguments, engagement with counterarguments, and the strategic use of cohesive and metadiscourse markers (Abou-El-Kheir & MacLeod, 2017). However, L2 learners frequently struggle to develop coherent arguments, often producing texts that lack elaboration or follow rhetorical patterns influenced by their first language (Hyland, 2019). Recent studies continue to show that persuasive and argumentative writing remain among the most challenging academic genres for EFL learners because they require the simultaneous coordination of language accuracy, critical thinking, rhetorical organization, and audience awareness (Mallahi, 2024; Söğüt et al., 2024). Furthermore, the rapid integration of artificial intelligence (AI)-assisted writing tools and other digital technologies has transformed writing instruction, offering learners greater access to automated feedback and language support while simultaneously highlighting the importance of active cognitive engagement, critical evaluation, and independent revision in L2 writing development (Yan & Zhang, 2024; Godwin-Jones, 2023).

Model texts have been proposed as a useful instructional tool because they illustrate how multiple linguistic and discourse features operate together to construct an argument. Nevertheless, learners may focus primarily on surface features without fully understanding the rhetorical

mechanisms that produce coherence and persuasion. Recent genre-analytic research further shows that successful argumentative writing depends on the strategic deployment of rhetorical moves and stance markers across contexts (Du et al., 2023). Within this evolving technological landscape, model-text-based instruction remains particularly valuable because it encourages learners to analyze, compare, and internalize effective rhetorical practices, thereby complementing technology-enhanced writing environments through active noticing and reflective learning. This highlights the need for instructional approaches that support learners in noticing both linguistic and rhetorical aspects of model texts.

2.3 Model Texts as Written Corrective Feedback: Evolution and Conceptual Gaps

Research on model texts as a form of written corrective feedback has progressed from early text reconstruction tasks to more genre-based applications. Hanaoka (2007) demonstrated that comparing learners' initial writing with model texts facilitated the noticing of linguistic features and their subsequent incorporation into revisions, particularly when the noticed features addressed problems learners had identified during their initial writing attempts. Subsequent research has supported the pedagogical value of model texts for highlighting specific linguistic features, including grammar and lexical patterns (Stapleton & Wu, 2015; Huang & Zhang, 2022). More recent studies have also shown that model texts can support rhetorical development in argumentative writing contexts.

However, existing research remains fragmented. Many studies focus on isolated linguistic features or limited writing tasks rather than extended argumentative essays (Nguyen et al., 2024; Wu et al., 2023). Moreover, while some studies examine model texts before writing and others after writing, direct comparisons of timing remain scarce, particularly in authentic higher education EFL contexts and persuasive writing settings (Nguyen et al., 2024; Mallahi, 2024). Table 1 summarizes key studies and their limitations.

Table 1. Synthesis of key studies on model-text feedback

Study	Task Type	Timing Focus	Key Finding	Noted Limitation
Hanaoka (2007)	Single Paragraph/Picture Description	Comparison vs. No Comparison	Comparison led to more noticing & uptake.	Single paragraph, controlled task.
Coyle et al. (2020)	Opinion Paragraph	Pre-Writing	Pre-writing model aided planning & complexity.	Limited genre; timing not compared.
Kang (2020)	Argumentative Writing	Post-Writing	Effective for lexical & grammatical features.	Calls for research on timing.
Kang (2022)	Essay Writing	Post-Writing	Model texts effective for rhetorical moves.	Does not compare with pre-writing.

Overall, prior research reveals several unresolved issues. First, many studies rely on short or controlled writing tasks rather than extended persuasive essays. Second, research on model-text feedback in GCC EFL contexts remains limited. Third, few studies directly compare pre-writing and post-writing model exposure, leaving the optimal timing unclear. Finally, much of the literature measures noticing or feature uptake rather than examining how noticing processes relate to broader improvements in writing quality.

3. Method

3.1 Research Design

This study employed a quasi-experimental, pre-test/post-test control group design with a concurrent embedded mixed-methods strategy (QUAN + qual) (Creswell & Clark, 2018). The design was quasi-experimental due to the use of intact classes to maintain ecological validity and minimize disruption to the learning environment. The primary quantitative data (writing scores, questionnaire responses) were supplemented by embedded qualitative data (reflective notes) to provide a richer understanding of the cognitive process of noticing. This design allows for triangulation, where the qualitative data helps explain the mechanisms behind the quantitative outcomes, thereby strengthening the validity of the conclusions regarding the impact of timing.

A methodological challenge in noticing research concerns how the construct is operationalized and measured. Studies have employed several approaches, including think-aloud protocols, which provide detailed concurrent data but may alter cognitive processes and are difficult to implement in classroom settings (R ́́esz, Michel & Lee, 2019). Stimulated recall interviews offer retrospective insights but are susceptible to memory limitations. Another widely used approach involves analyzing learner annotations or written reflections, which provide evidence of consciously noticed features (Kang, 2020). In the present study, noticing was captured through guided reflective notes. This method allows learners to document features they observe in model texts while encouraging comparative reflection between their own writing and the model. Such reflections offer insight into the quality of noticing, particularly whether learners identify gaps between their production and the model. To complement this process data, changes in writing performance between pre- and post-tests provide evidence of uptake, thereby linking noticing processes to observable improvements in writing.

3.2 Participants and Context

The participants were 100 undergraduate students enrolled in a required English communication course at Bahrain Polytechnic. Two intact classes were randomly assigned as the Control Group (Pre-Writing Model, n=50) and the Experimental Group (Post-Writing Model, n=50). To ensure group comparability beyond random assignment, key demographic and proficiency variables were documented, as shown in Table 2.

A cluster sampling approach was employed due to the institutional organization of students into intact classroom groups. In higher education settings where random assignment of individual students is not feasible, cluster sampling allows researchers to select naturally occurring

groups while preserving the ecological validity of classroom-based interventions. Accordingly, two intact sections of the same English communication course were selected and then randomly assigned to either the control condition (pre-writing model exposure) or the experimental condition (post-writing model exposure).

The sample size ($N = 100$) was determined based on both practical and statistical considerations. First, the two intact classes available during the semester contained approximately 50 participants each, reflecting the standard class size in the institution. Second, previous quasi-experimental L2 writing studies investigating model-text feedback have typically used sample sizes ranging from 40 to 120 participants, which are considered adequate for detecting medium to large effects using parametric statistical tests such as t-tests and mixed-design ANOVA. The resulting sample size provided sufficient statistical power to detect meaningful differences between instructional conditions while maintaining ecological validity in a real classroom context.

Participants were required to meet several inclusion criteria: (1) enrollment in the target English communication course during the semester of data collection; (2) Arabic as their first language; (3) an institutional English proficiency level equivalent to CEFR B2; and (4) regular class attendance throughout the intervention period. Participants who were absent during either the pre-test or post-test writing sessions or who did not complete the reflective notes were excluded from the final dataset. This was to ensure the integrity and completeness of the data used in the analysis.

Table 2. Participant demographic profile by group

Characteristic	Control Group (n=50)	Experimental Group (n=50)
Mean Age (SD)	19.5 (0.9)	19.5 (0.8)
Gender (Male/Female)	28 / 22	27 / 23
L1	Arabic (100%)	Arabic (100%)
Mean Years of English Study (SD)	10.3 (1.6)	10.4 (1.5)
Institutional CEFR Level	B2 (Upper-Intermediate)	B2 (Upper-Intermediate)

All participants provided informed consent. Ethical approval was granted by Bahrain Polytechnic Research Committee, ensuring confidentiality and the right to withdraw.

3.3 Instruments and Materials

1. **Writing Tasks:** Two parallel persuasive essay prompts were developed on different, socially relevant topics. The prompts were piloted with a separate cohort of 10 B2-level participants to ensure clarity, appropriate difficulty, and equivalent time requirements (45 minutes). Topic equivalence was crucial to ensure that post-test gains reflected improved writing skill, not familiarity with a specific topic.
2. **Model Texts:** A high-quality, B2-level model essay (approx. 300 words) was created for each prompt, demonstrating strong organization (clear thesis, topic sentences, conclusion), coherence (transition signals), grammatical range, and academic vocabulary. Three experienced EFL writing specialists validated the models for linguistic accuracy, rhetorical effectiveness, and level appropriateness, achieving a Content Validity Index (CVI) of 0.93. The models were designed to be aspirational yet attainable, showcasing features within the learners' ZPD.
3. **Analytical Rubric:** A 20-point rubric adapted from Jacobs et al. (2019) assessed writing aptitude across four 5-point subscales: Organization, Coherence, Grammatical Accuracy, and Vocabulary.

To minimize the influence of intervening variables, both groups received identical instructional content, writing tasks, class duration, and teacher guidance throughout the intervention. The same instructor taught both groups using standardized lesson plans to ensure consistency in instructional delivery. Participants completed equivalent persuasive writing tasks under identical classroom conditions and within the same time limit. The only instructional difference between the two groups was the timing of model-text exposure: the control group analyzed the model text before writing, whereas the experimental group compared their completed draft with the model text after writing. In addition, the model texts were matched for genre, length, rhetorical structure, and linguistic complexity, while the writing prompts were piloted to establish comparable levels of difficulty. To reduce measurement bias, all writing scripts were assessed using the same analytic rubric, and inter-rater reliability procedures were employed to ensure consistent scoring. These controls were implemented to strengthen the internal validity of the study and to ensure that observed differences could be attributed primarily to the timing of model-text exposure.

To ensure transparency, the full descriptor set for the Coherence subscale is presented in Table 3. Similar detailed descriptors existed for the other three subscales.

Two independent raters, both experienced EFL instructors, were trained in a 3-hour norming session using a benchmark set of 15 essays not included in the study. They discussed scoring until consensus was reached on the application of the rubric. Inter-rater reliability for the study's main scoring was excellent (Cohen's Kappa = .92). The use of an analytic rubric, as opposed to a holistic one, was deliberate to detect nuanced changes in specific dimensions of writing, providing a finer-grained picture of where the intervention had the greatest impact. Contemporary research on analytic rating scales supports this choice, noting their greater diagnostic precision and construct validity in L2 writing assessment (Zhang & Hyland, 2022).

Table 3. Analytical rubric – coherence subscale descriptors

Score	Descriptor
5	Excellent. Ideas are presented in a clear, logical order. Excellent use of a wide range of cohesive devices (transitions, pronouns, repetition) to guide the reader smoothly through the argument.
4	Good. Ideas are generally logical. Good use of several cohesive devices, though some connections may be slightly awkward.
3	Adequate. Basic logical order is present but may jump between ideas. Relies on simple connectors (and, but, so). Reader may need to infer some links.
2	Fair. Logical progression is often difficult to follow. Limited or inaccurate use of cohesive devices, causing strain for the reader.
1	Poor. Ideas appear random or disjointed. Little to no use of cohesive devices.
4.	Reflective Notes Template: A guided worksheet prompted noticing with two sections: (a) “List 3-5 things you notice in the model text that make it effective,” and (b) “Compare the model to your own writing. What is one thing the model does that you did not do, or did differently?” The second prompt was critical for the experimental group to instigate gap-focused comparison. For the control group, who had not yet written on the topic, this prompt served to project a hypothetical comparison, which theoretically elicits a different cognitive process.
5.	Perception Questionnaires: Tailored 5-point Likert scale questionnaires (1=Strongly Disagree, 5=Strongly Agree) gauged each group’s perceptions. Each questionnaire contained 15 items across four sub-factors: Perceived Effectiveness (e.g., “The model text helped me understand what a good persuasive essay looks like”), Noticing (e.g., “The model text helped me notice specific grammatical structures that need to be used in my persuasive writing.”), Cognitive Engagement (e.g., “Comparing my writing to the model made me think deeply about my mistakes”), and Attitudes (e.g., “I enjoy writing more after using a model text.”). The questionnaires were tailored slightly; the experimental group’s items explicitly referenced ‘comparing,’ while the control group’s referenced ‘analyzing before writing.’

3.4 Procedure

The intervention spanned three weeks, and the procedure for each group is summarized in Figure 1 and described below. In Week 1 (Pre-Test), all participants completed Writing Task A under controlled pen-and-paper exam conditions for 45 minutes. This task served as the pre-test. The initial writing task was identical for both groups to ensure that any subsequent differences could be attributed to the intervention rather than prior writing experience. It should be noted, however, that the control group received the model text before completing Writing Task A.

In Week 2 (Intervention), the procedures differed between the two groups. The control group followed a pre-writing model condition, in which they received and analyzed the model text before completing Writing Task A. After completing the writing task and following their exposure to the model, they completed reflective noticing notes. In contrast, the experimental group followed a post-writing model condition. Participants in this group first completed Writing Task A and then received the model text for the same task, which they compared with their own essays. After the intervention and exposure to the model text, they completed the reflective noticing notes. This sequence was designed to encourage comparative, gap-focused noticing, which is central to the study’s hypothesis.

In Week 3 (Post-Test), all participants completed Writing Task B on a new topic under the same controlled conditions as the pre-test. This task served as the immediate post-test and was intended to measure participants’ ability to transfer what they had learned to a new writing task rather than merely revise or replicate the original one. The use of a new topic was therefore a critical design feature to assess transferable skill development rather than the memorization or reproduction of model-specific content.

3.5 Data Analysis

A detailed, multi-stage analysis plan was implemented to examine the study data. Quantitative data were analyzed using SPSS v.28, while qualitative data were examined using NVivo. These analytical tools enabled the systematic analysis of both numerical results and qualitative reflections, allowing for a comprehensive interpretation of the findings.

3.5.1 Quantitative Analysis

Descriptive statistics were first calculated to summarize the data. Specifically, means and standard deviations were computed for all pre-test, post-test, and gain scores. These statistics provided an overview of participants’ performance across the different testing stages and offered an initial comparison between the control and experimental groups.

To examine improvement within each group, paired-samples t-tests were conducted to assess the significance of changes from pre-test to post-test. This analysis enabled the study to determine whether participants demonstrated statistically significant improvement in their writing performance after the intervention. The results therefore indicated the extent to which each group benefited from the instructional procedures implemented during the study.

Group Stage	Control	Experimental
	Treatment (Model introduced before writing)	
1		
2	Writing Task A: Persuasive Essay (both groups) (organization, coherence, grammar & vocabulary)	
3		Treatment (Model introduced after writing)
4	Writing Task B: Persuasive Essay (both groups) (organization, coherence, grammar & vocabulary)	
5	Control Group Questionnaire	Experimental Group Questionnaire

Figure 1. Schematic of the research procedure for control and experimental groups

To compare performance between the two groups, independent-samples t-tests were used to analyze the gain scores. Gain scores were calculated by subtracting the pre-test scores from the post-test scores for each participant. This comparison allowed the researcher to determine whether the magnitude of improvement differed significantly between the control and experimental groups.

In addition, a 2×2 mixed-design Analysis of Variance (ANOVA) was conducted to examine the interaction between time (pre-test vs. post-test) and group (control vs. experimental). This analysis was selected to determine whether changes over time varied depending on the instructional condition. Examining the interaction effect provided a deeper understanding of how the intervention influenced writing development across the two groups.

Effect sizes were also calculated to determine the magnitude of the observed differences. Cohen's d was computed for all t-test analyses. In addition, partial eta-squared (η^2) values were calculated for the ANOVA effects to provide further insight into the practical significance of the findings. For the questionnaire data, descriptive statistics were calculated for the overall score and the four sub-factors. Means and standard deviations were used to summarize participants' responses to the questionnaire items. Independent-samples t-tests were then conducted to compare the perceptions of the control and experimental groups and to identify any statistically significant differences between them.

3.5.2 Qualitative Analysis

Data from the reflective notes were imported into NVivo. Reflexive thematic analysis (Braun & Clarke, 2021) was conducted in six phases, following established qualitative analytic procedures for coding, pattern development, and theme validation (Coyle & Larios, 2020). Analysis focused on identifying patterns in the focus (global vs. local features) and nature (anticipatory vs. comparative/gap-focused) of noticing. To enhance trustworthiness, an audit trail was maintained, and a second researcher reviewed a 20% sample of the coded data, achieving 90% agreement on theme assignment.

4. Results

4.1 Persuasive Writing Aptitude

Descriptive statistics for pre-test, post-test, and gain scores are presented in Table 4. A notable and statistically significant initial difference existed: the control group had a higher mean pre-test score (64.73) than the experimental group (51.20) ($p < .01$). This baseline difference necessitated the primary use of gain scores and the mixed ANOVA for between-group comparisons.

Table 4. Descriptive statistics for writing scores (total aptitude)

Group	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Gain (SD)
Control (n=50)	65.01 (5.21)	69.32 (5.02)	4.31(4.15)
Experimental (n=50)	52.34 (6.78)	65.89 (5.88)	13.55(6.02)

4.1.1 Within-Group Improvement

Paired-samples t-tests revealed that both groups improved significantly from pre- to post-test (Control: $t^*(49)=5.11$, $*p<.001$, $*d*=0.48$; Experimental: $t^*(49)=12.84$, $*p<.001$, $*d*=1.91$). The effect size for the experimental group's improvement was "very large," indicating a substantial practical impact of the intervention on its own. In contrast, the control group's improvement, while statistically significant, yielded only a "small-to-medium" effect size. This initial analysis confirms that both conditions led to some degree of learning, but the magnitude of change differed dramatically between them.

4.1.2 Between-Group Differences on Gains

An independent-samples t-test on gain scores confirmed that the experimental group's improvement was significantly greater than that of the control group ($t(98) = 6.85$, $p < .001$, Cohen's $d = 1.37$, indicating a large effect). This finding suggests that post-writing exposure to model texts was substantially more effective than pre-writing exposure in enhancing overall persuasive writing performance. Furthermore, this pattern was observed across all four writing subscales—Organization, Coherence, Grammar, and Vocabulary—indicating that the experimental intervention's advantage extended beyond individual linguistic features to encompass broader dimensions of writing performance.

4.1.3 Interaction Effects

The mixed-design ANOVA revealed statistically significant Time $\times$ Group interaction effects for the Total Score ($F(1,98)=102.47$, $*p<.001$, $\eta^2=.611$) and for all subscales ($*p<.001$ for each). This significant interaction is the strongest quantitative evidence, indicating that the pattern of change over time was fundamentally different for the two groups. Specifically, the interaction confirms that the experimental group showed a steeper trajectory of improvement from pre-test to post-test when compared directly to the control group. The large partial eta squared value further underscores that a substantial portion of the variance in the total score change can be attributed to the group assignment.

4.2 Detailed Subscale Performance

The superiority of the post-writing model condition was consistent across all measured dimensions of writing. Table 5 presents the gain scores and effect sizes for each subscale, illustrating the broad-based impact of the intervention, with particularly strong effects on discourse-level features (Coherence and Organization). This consistency across subscales reinforces the robustness of the main findings. It suggests that the experimental treatment fostered global writing development rather than improving only isolated mechanical skills.

Table 5. Gain scores and effect sizes by subscale

Subscale	Control Group Gain (SD)	Experimental Group Gain (SD)	Cohen's $*d^*$ (Between Groups)	Interpretation
Organization	1.12 (1.40)	3.41 (1.71)	1.41	Very Large
Coherence	0.99 (1.19)	3.68 (1.48)	2.71	Very Large
Grammar	1.05 (1.21)	3.05 (1.59)	1.39	Large
Vocabulary	1.15 (1.30)	3.41 (1.62)	2.01	Very Large

The differential impact on subscales is noteworthy. While both groups improved in Grammar and Vocabulary, the experimental group's gains in the higher-order, discourse-related subscales of Organization and Coherence were disproportionately larger than those of the control group. These statistical findings provide a direct answer to the study's research question by demonstrating that post-writing exposure to model texts was more effective than pre-writing exposure in enhancing learners' persuasive writing aptitude. Specifically, the significantly greater gains achieved by the experimental group across all four writing dimensions, together with the large effect sizes reported in Table 5, indicate that the timing of model-text exposure substantially influenced learning outcomes. This suggests that the post-writing model exposure was particularly effective in helping learners notice and internalize the structural and logical frameworks of persuasive writing, which are often more challenging to teach and learn than discrete linguistic points. The especially strong improvements in Organization and Coherence further indicate that post-writing model-text comparison supported learners in developing higher-order rhetorical skills rather than merely improving sentence-level language accuracy. Therefore, these findings suggest that requiring learners to produce an initial draft before engaging with a model text promotes deeper learning and leads to more comprehensive improvements in persuasive writing performance.

4.3 Nature of Noticing: Qualitative Findings

To understand the cognitive processes underlying the quantitative results, a thematic analysis was conducted on the 200 reflective notes (100 participants $\times$ 2 notes). This analysis sought to uncover how each group engaged with the provided models, revealing distinct, group-specific patterns in the quality of their noticing. The stark contrast in these cognitive processes, which are detailed below, provides a rich, process-oriented explanation for the significant differences in writing gains. The key themes and their characteristics are summarized in Table 6.

Table 6. Thematic analysis of reflective notes on noticing

Group	Primary Theme	Nature of Noticing	Characteristic Quote
Control (Pre-Writing)	Anticipatory Blueprinting	General, decontextualized, feature-listing. Focus on "what to include."	"The model has three main arguments. I will also write three points."
	Template Reliance	Model as a fixed structure to replicate.	"The model made it easy for me to understand what to write and the structure to follow."
Experimental (Post-Writing)	Diagnostic Gap-Finding	Comparative, self-referential, problem-oriented. Focus on "what I lacked."	"In my essay, I just stated my opinion. The model starts with a general question to hook the reader. I didn't do that."
	Strategic Uptake	Noticing linked to specific plans for revision/improvement.	"My paragraphs are just separate ideas. The model uses words like 'Firstly' and 'In addition' to connect everything. I need to learn these connectors."
	Depth of Processing	Not just identifying a gap, but analyzing why the model's feature was effective.	"The model's conclusion doesn't just repeat the thesis, it summarizes the main points and ends with a strong final thought. It makes the argument feel complete. I need to structure my conclusion to do the same."

The control group's noticing was anticipatory and general. Participants listed discrete features of the model as items to later incorporate, treating it as a blueprint. This orientation is illustrated by one participant's reflection: "The essay has three main reasons with examples. I will use the same structure when I write my essay" (Control Participant C18). This suggests that learners viewed the model primarily as a planning guide rather than a tool for evaluating their own writing. The experimental group's noticing was fundamentally reflective, comparative, and gap-focused. Participants directly juxtaposed the model with their own produced output, engaging in explicit "noticing-the-gap" that was frequently accompanied by metacognitive awareness and intent for future application. One participant reflected, "After comparing my essay with the model, I noticed that I gave my opinion but did not explain my reasons clearly. The model supported every point with evidence, but I did not" (Experimental Participant E27). This illustrates learners' ability to identify specific weaknesses in their own writing. This diagnostic awareness frequently led to concrete revision intentions. As one participant explained, "I need to use transition words like 'however' and 'therefore' because my ideas were not connected like the model essay" (Experimental Participant E34). Such comments indicate that learners moved beyond simply identifying differences to planning specific improvements. An emergent theme in the experimental group's notes, termed "Depth of Processing," indicated a more profound analysis, where participants evaluated the function and effect of the model's rhetorical and linguistic choices. For instance, one participant wrote, "The conclusion in the model does not only repeat the ideas. It reminds the reader why the argument is important. I need to make my conclusion stronger instead of just ending the essay" (Experimental Participant E12). Such responses demonstrate deeper rhetorical awareness rather than simple feature recognition. This finding resonates with Coyle and Roca de Larios's (2020) identification of multiple cognitive engagement strategies learners employ when comparing their writing to models, ranging from surface-level identification of differences to deeper analysis of textual functions (Miles, Huberman & Saldaña, 2020). The qualitative data thus provides a process-oriented explanation for the quantitative outcomes: the superior gains of the experimental group can be traced to a more engaged, self-referential, and diagnostic cognitive activity during the feedback phase. This finding resonates with Coyle and Larios's (2020) identification of multiple cognitive engagement strategies learners employ when comparing their writing to models, ranging from surface-level identification of differences to deeper analysis of textual functions. The experimental group's 'depth of processing' theme exemplifies what Coyle and Larios (2020) termed 'elaborative processing', where learners not only notice gaps but also analyze the functional purpose of model features.

4.4 Data Triangulation: Linking Processes to Outcomes

A powerful convergence exists between the quantitative and qualitative results. The experimental group's very large gains in Coherence are directly explained by the qualitative theme of Diagnostic Gap-Finding. Their reflective notes were saturated with comments on connective devices and logical flow—features they noticed were missing in their own drafts. For example, one student's gap-noticing ("I didn't use words like 'however' to show contrast") directly corresponds to the Coherence construct measured by the rubric. Similarly, the moderate gains in Grammar for the control group align with their Anticipatory Blueprinting, which often focused on sentence-level vocabulary and grammar examples rather than discourse structure. Furthermore, the emergent theme of "Depth of Processing" in the experimental group's notes helps explain the particularly large gains in Organization and Coherence; their analysis went beyond simple identification to understanding the function of discourse features, leading to more effective integration. This triangulation strengthens the internal validity of the study, as it demonstrates that the differential writing outcomes are logically connected to the differential cognitive processes elicited by the two timing conditions.

4.5 Learner Perceptions

Questionnaire results indicated that both groups perceived the model-text activity positively. There was no significant difference in the overall perception score (Control=4.15, Experimental=4.30; $t^*(98)=1.52$, $p^*=.132$). A breakdown by sub-factor showed a non-significant trend: the experimental group reported slightly higher Cognitive Engagement ($M=4.45$ vs. 4.14) and Future Behavioral Intent ($M=4.38$ vs. 4.10), while the control group rated Perceived Usefulness slightly higher ($M=4.20$ vs. 4.12). This pattern suggests that while both found the

task useful, the post-writing condition may have fostered a deeper sense of personal engagement and intention to apply learning, consistent with the gap-focused noticing it elicited.

5. Discussion

The convergent quantitative and qualitative data provide a robust and clear answer to the research question: Post-writing exposure to model-text-based WCF is significantly more effective than pre-writing exposure in enhancing the persuasive writing aptitude of Bahraini EFL learners. The experimental group's substantial gains, characterized by large effect sizes and a distinct improvement trajectory, demonstrate the pedagogical power of sequencing. The qualitative data on noticing offer a compelling explanation for this differential effectiveness.

5.1 Reconciling Theoretical Tensions: The Output-First Pathway Validated

This study set out to test a theoretical tension between input-first and output-first pathways for using model texts. The findings offer strong empirical validation for the output-first, socioculturally-informed pathway. The pre-writing model, representing the input-first approach, led to modest gains, likely because it provided a schema that reduced complexity but did not necessarily trigger deep cognitive restructuring. In contrast, the dramatic success of the post-writing condition underscores the synergistic power of sequencing output before input. It empirically demonstrates how Swain's Output Hypothesis and Schmidt's Noticing Hypothesis operate in tandem: production creates the "gap," which then focuses attention during input processing, making noticing more acute and personally relevant (Kang, 2020; Lantolf, Xi & Minakova, 2020; Leow, 2020). The differential patterns of noticing observed in this study align closely with Hanaoka's foundational finding that learners who compared their writing to models noticed significantly more features than those who simply analyzed models. However, the present study extends Hanaoka's work by demonstrating that this comparative noticing is not merely quantitative but qualitatively different—the experimental group's 'diagnostic gap-finding' represents a deeper level of cognitive processing than the control group's 'anticipatory blueprinting.' This qualitative distinction supports Kim and Bowles's (2019) assertion that output-induced noticing creates more durable learning representations than input-based noticing alone. Furthermore, the experimental group's attention to discourse-level features (coherence, organization) rather than merely surface-level linguistic items addresses a gap identified in previous research, which has predominantly focused on lexical and grammatical uptake (Kang, 2020; Huang & Zhang, 2022). Furthermore, it shows how Vygotsky's scaffolding is most effective when it is responsive—when the "more knowledgeable other" (the model) provides solutions at the precise moment the learner has identified a problem within their ZPD (Swain & Watanabe, 2019; Poehner & Leontjev, 2020). The data suggest that for complex skill development like persuasive writing, responsive scaffolding following struggle is more effective than anticipatory guidance. The findings also contribute to ongoing debates about the role of awareness in SLA (Leow, 2020). The experimental group's reflective notes demonstrate what Suga (2024), in her eye-tracking study, identified as 'output-induced noticing'—a qualitatively distinct form of attention that emerges when learners have personally experienced communicative difficulty. This study provides written evidence of this phenomenon, showing how initial output creates cognitive readiness that transforms subsequent input processing (Leow, 2020; Suga, 2024). This finding has implications for how we conceptualize 'comprehensible input'; it may be most comprehensible and useful not when it is simply clear, but when it is directly relevant to a problem the learner is actively trying to solve.

The present findings also extend current understandings of second language acquisition by providing empirical evidence that output, noticing, and scaffolding function as interconnected phases within a unified learning process rather than as isolated theoretical constructs. The superior performance of the post-writing group demonstrates that learner-generated output creates the cognitive readiness necessary for meaningful noticing, while comparison with model texts provides responsive scaffolding that supports subsequent revision. In this way, the findings broaden the sociocultural concept of the More Knowledgeable Other (MKO) by showing that a static artefact, such as a model text, can function dynamically as a scaffold when learners engage with it after an initial writing attempt. These findings also have implications for the design of autonomous learning environments and intelligent tutoring systems, where model texts can be strategically introduced after learners submit an initial draft to replicate the effective LENS sequence. Furthermore, the findings lend support to an output-first approach to communicative language teaching, in which learners engage in meaningful production before receiving instructional support. Finally, consistent with Kang's (2022) findings regarding working memory, the effectiveness of the LENS Model may vary according to individual learner characteristics, suggesting a promising direction for future research.

5.2 Addressing the Baseline Difference

A notable feature of the results is the control group's higher pre-test score. It is crucial to argue that this does not undermine the findings. First, the primary analysis used gain scores, which measure improvement from a starting point, thus controlling for initial ability. The experimental group's gain was nearly three times larger. Second, the statistically significant Time $\times$ Group interaction from the mixed ANOVA is particularly telling. This interaction indicates that even starting from a lower point, the experimental group's rate of improvement was so much steeper that it created a different growth trajectory altogether. The extremely large between-groups effect size (Cohen's $d^* = 15.98$ for gain scores) further confirms that the difference in improvement is substantial and cannot be attributed to the baseline. If anything, a higher-achieving control group might be expected to show greater gains, making the experimental group's superior performance even more striking. One could speculate that the experimental group, starting from a lower proficiency level, had more 'room for improvement' and a larger ZPD to be scaffolded. However, the nature of their noticing—focused on high-order discourse features rather than simple errors—indicates that the intervention spurred qualitative development, not just quantitative error reduction.

5.3 The LENS Model: An Evidence-Based Pedagogical Framework

To encapsulate this evidence-based process, we propose the LENS Model (Learner-Elicited Noticing and Scaffolding). Unlike linear, teacher-led approaches, the LENS Model conceptualizes writing development as a self-driven, recursive cycle initiated by the learner's own production.

The conceptual structure of the proposed LENS Model is illustrated in Figure 2. The model conceptualizes writing development as a recursive process in which learner-generated output creates cognitive readiness, comparison with a model text promotes diagnostic noticing, and scaffolded revision supports progressively higher levels of writing performance.

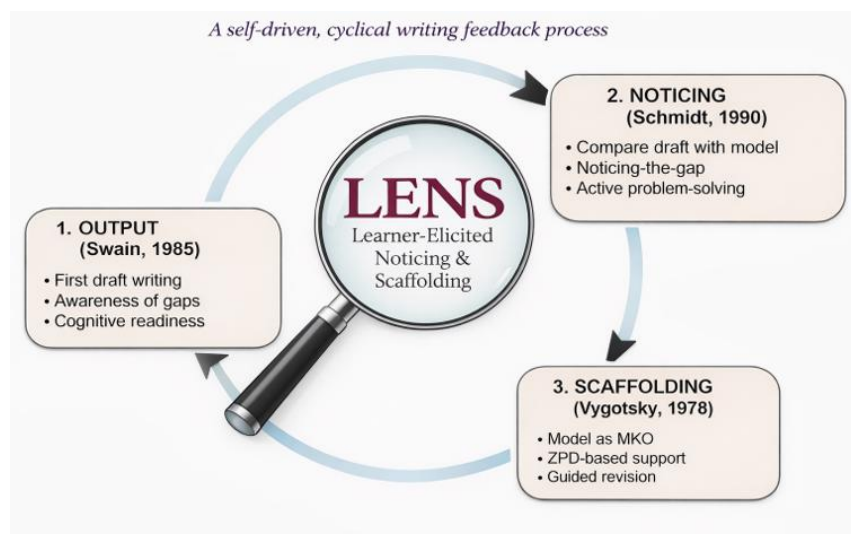


Figure 2. LENS Model for Writing Development

Figure 2 illustrates the cyclical relationship among the three theoretical foundations of the LENS Model. Rather than functioning as independent instructional stages, Output, Noticing, and Scaffolding interact recursively throughout the writing process. Initial output enables learners to externalize their current knowledge and reveal gaps in performance. Comparison with a model text subsequently directs learners' attention to these gaps, promoting deeper diagnostic noticing. Finally, the model text functions as scaffolded support that guides learners in revising and refining their writing. The revised output then becomes the starting point for subsequent cycles, promoting continuous writing development and increasing learner autonomy.

The LENS Model addresses an important gap in the model-text feedback literature. Although previous research has demonstrated the effectiveness of model texts for supporting second language writing (Kang, 2020, 2022), existing studies have generally treated output, noticing, and scaffolding as separate instructional constructs. Consequently, they provide limited explanation of how these complementary learning processes interact during writing development or why the timing of model-text exposure influences learning outcomes. Drawing on the quantitative and qualitative findings of the present study, the LENS Model conceptualizes these processes as sequential and mutually reinforcing stages within a single recursive learning cycle. Rather than viewing model texts simply as instructional exemplars, the model positions them as responsive scaffolds whose effectiveness depends on learners first generating output that creates opportunities for meaningful noticing.

The effectiveness of the LENS Model is supported by the convergent findings of the present study. Quantitatively, learners who followed the output-first sequence achieved significantly greater gains in overall writing performance and across all four writing subskills. Qualitatively, they demonstrated diagnostic gap-finding, strategic uptake, and deeper processing of rhetorical features, whereas learners who received model texts before writing tended to engage in more general, anticipatory noticing. These findings indicate that model texts become substantially more effective when introduced after an initial writing attempt because learners are able to interpret them in relation to authentic communicative needs generated through their own production.

Operationalizing the LENS Model in the classroom begins with Phase 1: Output, which serves as the essential catalyst for learning. In this phase, the cycle starts with a timed, first-draft writing attempt on a meaningful topic, and the instructor must frame this draft as a diagnostic and exploratory task rather than a final product. This framing is critical, as it helps reduce student anxiety and emphasizes the draft's true purpose in triggering metacognitive awareness. Following this, Phase 2 involves a structured process of Noticing, where learners engage in a direct comparison between their own text and a provided model. After collecting the drafts, the instructor supplies the model alongside a comparative guide; effective tools for this stage include a dual-column table for side-by-side text analysis, a checklist of rhetorical moves to identify in both texts, or targeted prompts that focus students' attention on specific gaps, such as comparing the placement and effectiveness of a thesis statement. This structured approach moves learners from passive reading to an active, diagnostic analysis of their writing.

In Phase 3, the focus shifts to Scaffolding, where learners use their gap analysis to re-interrogate the model as a toolkit for improvement.

Instructors can guide this transformative step with questions like, "You noticed the model uses 'furthermore' to add ideas. Find two other places it adds ideas. What words does it use?" They can then prompt students to apply their discoveries directly, for instance, by asking them to identify a place in their own draft where they could add an idea and experiment with using one of those newly identified transition words. This process effectively transforms the model from a static exemplar into a dynamic resource for targeted revision. Finally, the cycle continues as the output of this process—a revised draft or a new piece of writing on a related topic—becomes the starting point for another round of noticing and scaffolding, ideally with a different model or a peer model. This recursive nature is key to the LENS Model, as it mirrors the iterative process of authentic writing and allows for layered, cumulative learning that fosters progressive student autonomy.

In addition, the findings have important implications for L2 writing instruction, particularly in large-class settings where individualized written corrective feedback is difficult to provide consistently. The superior performance of learners who experienced post-writing model-text exposure suggests that writing instruction should move beyond the traditional input-first sequence towards an output-input-output cycle. Rather than presenting model texts before writing as planning templates, instructors should encourage learners to produce an initial draft, compare it systematically with a model text, and then revise their work based on identified gaps. Implementing this sequence requires syllabi to allocate sufficient time for drafting, guided comparison, and reflective revision as integral stages of the writing process.

Moreover, these findings further suggest that successful implementation of the LENS Model requires corresponding changes in teacher preparation and curriculum design. Rather than using model texts solely as exemplars for imitation, teachers should be trained to facilitate structured comparison and guide learners through diagnostic gap analysis, which emerged in the present study as a key mechanism underlying deeper cognitive engagement. Similarly, curriculum developers and materials writers should consider incorporating LENS-style learning cycles into writing resources by providing carefully selected model texts alongside comparative worksheets and guided noticing activities. Such resources would make the approach more accessible for instructors while promoting consistent implementation across different instructional contexts.

Furthermore, the findings demonstrate that the recursive structure of the LENS Model is well suited to technology-enhanced writing environments. Learning Management Systems and digital writing platforms can preserve the output-first sequence by automatically releasing model texts only after learners submit an initial draft. Annotation, comparison, and AI-assisted feedback tools can then support learners in identifying rhetorical and linguistic gaps while maintaining the learner-centred principles underpinning the LENS Model. Consequently, technology should be viewed as a means of enhancing rather than replacing responsive feedback, making the model particularly suitable for higher education contexts characterized by large class sizes and limited opportunities for individualized instruction.

Beyond its pedagogical application, the LENS Model contributes theoretically by providing an integrated explanation of how output, noticing, and sociocultural scaffolding operate as interdependent rather than isolated mechanisms of second language writing development. The model therefore extends existing conceptualizations of model-text feedback by identifying instructional timing as a central mechanism that shapes learners' cognitive engagement with feedback. Practically, it offers teachers a scalable framework for promoting deeper learner reflection and self-regulated revision without increasing the demand for individualized written corrective feedback. The recursive nature of the model also makes it adaptable to technology-enhanced learning environments, where model texts, peer exemplars, or AI-assisted feedback can be strategically introduced following learners' initial writing attempts while preserving the output-first sequence that underpins effective noticing.

The transferability of the present findings also merits consideration. Although the study was conducted with Bahraini EFL undergraduates at a single higher education institution, the instructional challenges it addresses—such as large class sizes, limited opportunities for individualized feedback, and the need to improve persuasive writing—are common across many ESL and EFL contexts. Accordingly, the pedagogical principles underpinning the LENS Model, particularly the output-noticing-scaffolding sequence, may be transferable to similar higher education settings. However, further research across different educational contexts, proficiency levels, and writing genres is needed to establish the broader generalizability of the findings.

6. Conclusion

This study investigated whether the timing of model exposure influences the effectiveness of model-based writing instruction in EFL contexts. The findings demonstrate that post-writing model exposure leads to significantly greater improvements in writing performance than pre-writing exposure by promoting gap-focused noticing and deeper cognitive engagement with linguistic and rhetorical features. This finding aligns with theoretical perspectives arguing that mediation is most effective when it is responsive to learners' self-identified needs within their zone of proximal development.

The study's primary contribution is the proposed LENS Model (Learner-Elicited Noticing and Scaffolding), which synthesizes key theories of second language acquisition into a practical, recursive framework for writing instruction. Pedagogically, the model offers a scalable alternative to individualized written corrective feedback in large-class contexts by transforming model texts from pre-writing templates into post-writing, responsive scaffolds. The findings also provide theoretical support for integrating output, noticing, and scaffolding into a unified learning cycle while offering practical guidance for curriculum design, teacher education, and technology-enhanced writing instruction.

Although the findings provide strong support for the proposed model, they should be interpreted in light of several limitations. The study was conducted in a single institutional context, examined only one cycle of the LENS Model, and did not include a delayed post-test to

assess long-term retention. Future research should therefore investigate the model across different educational contexts, learner proficiency levels, writing genres, and longitudinal designs, while also exploring its integration with AI-supported and other technology-enhanced writing environments.

Use of Generative AI

The authors used generative AI solely for limited language editing and editorial assistance during manuscript preparation. All research design, data collection, analysis, interpretation, references, and scholarly conclusions are the sole responsibility of the authors. The manuscript has been reviewed to ensure compliance with the journal's AI policy regarding authorship, originality, reference integrity, and academic accountability.

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Author contributions

Hasan Shaikh Husain: Conceptualization, methodology, investigation, data collection, formal analysis, visualization, and writing—original draft preparation. Seriaznita Mat Said: Supervision, conceptualization, methodology, validation, writing—review and editing. Both authors have read and approved the final version of the manuscript.

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Data sharing statement

No additional data are available.

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Link to Research/Supplementary Data

https://liveutm-my.sharepoint.com/:w/g/personal/mohamed_hasan_live_utm_my/IQDvERaJi1m2Q41GD5CDeXZkARBc5BYuj9Lh9OvhsJByMk?e=TKfCcv