

Effects of process-based writing instruction on the quality of senior secondary students' argumentative essays

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Abstract

Writing is widely regarded as one of the most demanding skills for learners in secondary school education. In many classrooms, however, writing instruction still focuses primarily on the final written product rather than the processes through which effective writing develops. This study investigated the effects of process-based writing instruction on the argumentative essay performance of senior secondary school students. A quasi-experimental pre-test-post-test control group design was employed. One hundred and twenty senior secondary school students participated in the study and were divided into experimental and control groups. The experimental group received eight weeks of process-based writing instruction involving stages such as brainstorming, planning, drafting, peer feedback, revision, and editing, while the control group received conventional product-focused instruction. Students' essays were assessed using an analytic rubric measuring argument development, organization, language accuracy, and overall persuasiveness. Findings revealed that students who received process-based instruction significantly outperformed those in the control group. The results highlight the importance of teaching writing as a recursive process that encourages reflection, revision, and meaningful engagement with ideas. The study recommends that English language teachers integrate process-oriented strategies into classroom practice in order to improve students' argumentative writing competence.

Keywords: Process Writing Approach; Argumentative Writing; Secondary School Students; ESL Writing Instruction; Writing Pedagogy

1. Introduction

Writing is widely recognized as a fundamental skill for academic success and intellectual development across educational systems worldwide. Beyond the construction of grammatically correct sentences, effective writing requires learners to generate ideas, organize arguments, evaluate evidence, and communicate meaning in a coherent and purposeful manner (Graham and Perin, 2007; Hyland, 2019). However, despite its central role in schooling, research consistently shows that many students struggle to develop proficient writing skills, particularly when instruction emphasizes correctness over the processes involved in composing texts (Graham, 2018).

Among the various forms of academic writing, argumentative writing presents a distinct challenge for secondary school students. Constructing an effective argument requires the ability to formulate a clear thesis, support claims with relevant and credible evidence, anticipate counterarguments, and maintain logical coherence throughout the text (Andrews, 2010; Crossley et al., 2024). These demands make argumentative writing cognitively complex, and students often experience difficulties in structuring arguments, integrating evidence, and sustaining logical consistency in their essays.

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These challenges are particularly pronounced in many sub-Saharan African educational contexts, including Nigeria, where writing instruction has traditionally been dominated by product-oriented approaches (Akinwamide, 2012; Oyinloye, 2015). In such settings, students are frequently required to produce final drafts with limited guidance on idea generation, drafting, or revision processes. Consequently, learners may perceive writing as a one-step activity, leading to essays that lack depth, coherence, and persuasive strength. Evidence from classroom practices and examination WAEC (2022) reports continues to highlight persistent weaknesses in students' essay writing performance, especially in argumentative tasks.

In response to these challenges, process-based writing instruction has been widely advocated as an alternative pedagogical approach that emphasizes writing as a recursive and developmental activity involving stages such as planning, drafting, revising, and editing (Flower and Hayes, 1981; Hyland, 2003). Empirical studies conducted in various educational contexts suggest that process-oriented instruction can enhance students' writing quality by promoting reflection, feedback, and iterative improvement (Jee and Aziz, 2021; Vo and Hoa, 2024). However, despite growing global evidence, there remains limited context-specific empirical research examining the effectiveness of process-based writing instruction on secondary school students' argumentative writing performance within the Nigerian context. Furthermore, existing studies often focus broadly on writing performance without isolating specific dimensions of argumentative essay quality.

This study therefore seeks to address this gap by investigating the effects of process-based writing instruction on the quality of argumentative essays written by senior secondary school students. Specifically, the study adopts a quasi-experimental design to compare the performance of students exposed to process-based instruction with those taught using traditional product-oriented methods.

1.1. To guide the study, the following research questions are posed

Does process-based writing instruction significantly improve the overall quality of students' argumentative essays compared to traditional instruction?

To what extent does process-based instruction influence specific components of argumentative writing, including argument development, organization, language accuracy, and persuasiveness?

1.2. In line with these questions, the study tests the following hypotheses

- H_{01} : There is no significant difference in the overall argumentative essay quality between students taught using process-based writing instruction and those taught using traditional methods.
- H_{02} : Process-based writing instruction has no significant effect on the individual components of argumentative essay quality.

2. Literature Review

2.1. Challenges in Argumentative Writing

Argumentative writing is widely regarded as one of the most cognitively demanding forms of academic writing because it requires learners to construct claims, provide supporting evidence, address counterarguments, and maintain logical coherence throughout a text. Research consistently shows that secondary school students struggle with these demands, particularly in organizing ideas and integrating evidence effectively. For instance, Steve Graham and Dolores Perin (2007) found that many students produce essays that lack clear structure and logical progression, especially when they are not provided with explicit instructional support. Similarly, Kyle Crossley et al. (2024) report that students often demonstrate limited ability to sustain arguments and appropriately incorporate supporting evidence.

These challenges extend beyond linguistic competence to include cognitive and procedural difficulties. According to John R. Hayes (2012), effective writing involves the coordination of multiple cognitive processes—such as planning, translating, and reviewing—which many learners fail to manage effectively. As a result, students often engage in minimal planning and revision, leading to underdeveloped arguments and weak coherence. Empirical studies further indicate that ineffective writing behaviours, particularly the absence of structured revision, are strongly associated with lower-quality argumentative texts (Graham, 2018).

However, while the literature clearly documents students' difficulties in argumentative writing, it often treats writing performance as a broad construct without sufficiently examining specific dimensions such as persuasiveness,

coherence, and argument development. In addition, much of the existing research is concentrated in Western and Asian educational contexts, raising questions about the applicability of these findings to sub-Saharan African settings. In Nigeria, for example, writing instruction is frequently shaped by examination-oriented practices and large classroom sizes, which may exacerbate students' difficulties in developing strong argumentative skills (Akinwamide, 2012; Oyinloye, 2015). Despite these contextual realities, there remains limited empirical evidence that systematically examines how these challenges manifest in Nigerian secondary school classrooms.

2.2. Process-Based Writing Instruction

In response to the limitations of product-oriented approaches, process-based writing instruction emphasizes writing as a recursive and developmental activity, shifting attention from the final product to the processes that generate it (Flower and Hayes, 1981; Hyland, 2003). This approach is grounded in the idea that students develop stronger writing skills when they are guided through structured stages and provided opportunities for feedback and revision.

- According to Flower and Hayes (1981), the stages of process-based writing typically include:
- Prewriting – Generating and organizing ideas before drafting (Hyland, 2003).
- Planning – Outlining the structure of the essay to establish logical flow and coherence.
- Drafting – Producing the initial version of the text, focusing on ideas rather than language accuracy.
- Revising – Improving the content, organization, and clarity of arguments based on self-reflection or feedback.
- Editing – Correcting grammatical, mechanical, and stylistic errors to polish the final essay.

These stages are recursive rather than linear, allowing students to revisit earlier steps as they refine their ideas and improve their essays. Empirical evidence suggests that explicitly guiding students through these stages enhances their ability to organize arguments, integrate evidence, and produce coherent and persuasive writing (Graham, 2018; Jee and Aziz, 2021; Vo and Hoa, 2024).

Nevertheless, the effectiveness of process-based instruction is not uniformly supported across all studies. Some research indicates that while process-oriented approaches improve aspects such as idea development and organization, they may have limited impact on higher-order skills such as metacognitive regulation and critical evaluation (De Smedt et al., 2020). Furthermore, differences in implementation—such as the level of teacher guidance, the quality of feedback, and the integration of complementary instructional approaches—have led to variations in outcomes. For instance, studies that combine process-based instruction with explicit strategy teaching or genre-based approaches often report stronger improvements than those relying solely on process stages.

These inconsistencies suggest that the success of process-based writing instruction is contingent on contextual and pedagogical factors. However, despite the growing body of international evidence, there is still a lack of rigorous empirical studies examining how this approach functions within the Nigerian secondary school context. In particular, few studies have employed quasi-experimental designs to compare process-based and traditional instructional methods while simultaneously examining specific components of argumentative writing quality.

The foregoing review indicates that while substantial research has documented the challenges students face in argumentative writing and the potential benefits of process-based instruction, important gaps remain. Existing studies often adopt broad measures of writing performance, with limited attention to the distinct components that constitute effective argumentative essays, such as argument development, coherence, language accuracy, and persuasiveness. Moreover, inconsistencies in prior findings highlight the need for more context-sensitive investigations that account for variations in instructional practices. Most importantly, there is a notable scarcity of empirical research conducted within the Nigerian secondary school context using rigorous quasi-experimental designs. This limits the extent to which existing findings can inform classroom practice in similar educational environments.

This study therefore seeks to address these gaps by examining the effects of process-based writing instruction on the specific dimensions of argumentative essay quality among senior secondary school students, using a quasi-experimental design to provide contextually relevant empirical evidence.

3. Theoretical Framework

3.1. Process Writing Theory

Process Writing Theory conceptualizes writing as a recursive, multi-stage cognitive activity, in which effective texts emerge through iterative cycles of planning, drafting, revising, and editing (Flower and Hayes, 1981; Hyland, 2003). The

theory emphasizes that writing is not a single, linear act but a developmental process in which learners progressively refine their ideas and expression. In this framework, the stages of writing—prewriting, planning, drafting, revising, and editing—are interdependent. Prewriting involves generating and organizing ideas, establishing the foundation for coherent arguments. Planning entails outlining the essay structure to ensure logical flow, while drafting focuses on articulating ideas in written form without immediate concern for perfection. Revising allows learners to reorganize content, clarify arguments, and improve coherence, and editing addresses grammar, mechanics, and stylistic accuracy to produce a polished text.

This theory directly informs the design of process-based writing instruction as the independent variable of the study. Each stage provides a structured cognitive framework through which students develop the skills necessary for high-quality argumentative writing. By engaging with these stages iteratively, students are expected to enhance the development of arguments, coherence of ideas, language accuracy, and overall persuasiveness in their essays. Process Writing Theory thus provides the cognitive rationale for the intervention, explaining how deliberate engagement in staged writing tasks can systematically improve the dependent variable, which is the quality of students' argumentative essays.

3.2. Social Constructivist Theory

Social Constructivist Theory (Vygotsky, 1978) emphasizes that learning is fundamentally social and collaborative, occurring most effectively when learners interact with peers, instructors, and more knowledgeable others. Knowledge construction arises from dialogue, feedback, and shared problem-solving, which in the context of writing involves peer discussion, review, and teacher guidance. These interactions provide opportunities for learners to critically evaluate their ideas, refine reasoning, and enhance clarity and coherence.

In relation to the current study, Social Constructivist Theory underpins the collaborative components of process-based writing instruction, including peer feedback and teacher conferencing. Such interactions complement the cognitive stages of writing by providing social scaffolding, enabling students to identify weaknesses in their arguments, reorganize ideas, and strengthen persuasive elements. This theory provides the social rationale for how engagement with others contributes to improvements in argumentative writing quality, the dependent variable, highlighting that writing development is influenced not only by individual cognitive processes but also by meaningful interaction and guided support.

Integrating Process Writing Theory and Social Constructivist Theory offers a comprehensive framework for understanding how structured, collaborative writing instruction can improve essay quality. While Process Writing Theory explains the cognitive mechanisms through which learners refine their ideas across recursive stages, Social Constructivist Theory emphasizes the social and interactive processes that enhance reflection and reasoning. Together, these perspectives justify the design of process-based writing instruction as the independent variable and clarify its expected effects on the dependent variable, argumentative writing quality, which encompasses argument development, coherence, language accuracy, and overall persuasiveness. The integration of cognitive and social dimensions underscores that writing improvement is both a developmental and interactive process, providing a theoretical foundation for the study's intervention and research hypotheses.

4. Methodology

4.1. Research Design

This study employed a quasi-experimental pre-test–post-test control group design to examine the effect of process-based writing instruction on the argumentative essay quality of senior secondary school students. The quasi-experimental design was chosen because random assignment was not feasible in the natural classroom setting. By including a pre-test, the design allows for the control of initial differences in students' writing abilities and enables a clear assessment of the instructional intervention's impact.

4.2. Participants and Sampling

A total of 120 senior secondary school students from three purposively selected public schools participated in the study. Participants were aged 15 to 18 years ($M = 16.4$, $SD = 0.85$) and included 65 females and 55 males. All students were in Senior Secondary School III and had prior exposure to formal essay writing. Students were assigned to experimental ($n = 60$) and control ($n = 60$) groups, ensuring comparability in age, gender, and previous writing experience. Purposive sampling was used to select schools with active English programs and willingness to participate, while within-school assignment ensured balanced groups.

4.3. Instrument

Students completed two argumentative essay tasks, administered as a pre-test and post-test. Essays were evaluated using a four-category analytic rubric adapted from Jacobs et al. (1981), assessing argument development, organization and coherence, language accuracy, and overall persuasiveness. Content validity was confirmed through expert review by English education lecturers, and a pilot test ensured the rubric captured meaningful variations in essay quality. Inter-rater reliability was established by having two independent raters score a subset of essays, yielding an intraclass correlation coefficient of 0.87, indicating high agreement.

4.4. Procedure

The study was conducted over eight weeks. The experimental group received process-based writing instruction that emphasized brainstorming, outlining, drafting, peer and teacher feedback, and revision. The control group received traditional instruction, focusing on studying model essays and producing single-draft essays without structured feedback. Instructors followed standardized lesson plans to ensure consistency. Pre-test essays were collected and scored before instruction, and post-test essays were collected and scored after eight weeks using the same rubric.

4.5. Data Analysis

Data were analyzed using analysis of covariance (ANCOVA) to compare post-test scores between the experimental and control groups while controlling for pre-test scores. ANCOVA was selected because it adjusts for initial differences in writing ability, reduces error variance, and provides a robust evaluation of the intervention's effect. Descriptive statistics were used to summarize essay performance, and effect sizes were calculated to assess practical significance.

5. Results

The study examined the effect of process-based writing instruction on the overall quality of argumentative essays and specific components of writing, including argument development, organization and coherence, language accuracy, and persuasiveness.

Descriptive statistics indicated substantial gains for students in the experimental group. The experimental group had a pre-test mean of 52.3 (SD = 6.4) and a post-test mean of 78.5 (SD = 5.2), whereas the control group had a pre-test mean of 51.8 (SD = 6.1) and a post-test mean of 60.2 (SD = 6.5). These results suggest that process-based instruction was associated with larger improvements in overall essay performance. Table 1 presents descriptive statistics and adjusted post-test means obtained from ANCOVA, and Figure 1 illustrates the pre-test and post-test comparison between groups.

Table 1 Descriptive Statistics and Adjusted Post-test Means for Overall Argumentative Essay Scores

Group	N	Pre-test Mean (SD)	Post-test Mean (SD)	Adjusted Post-test Mean (ANCOVA)
Experimental	60	52.3 (6.4)	78.5 (5.2)	77.9
Control	60	51.8 (6.1)	60.2 (6.5)	60.7

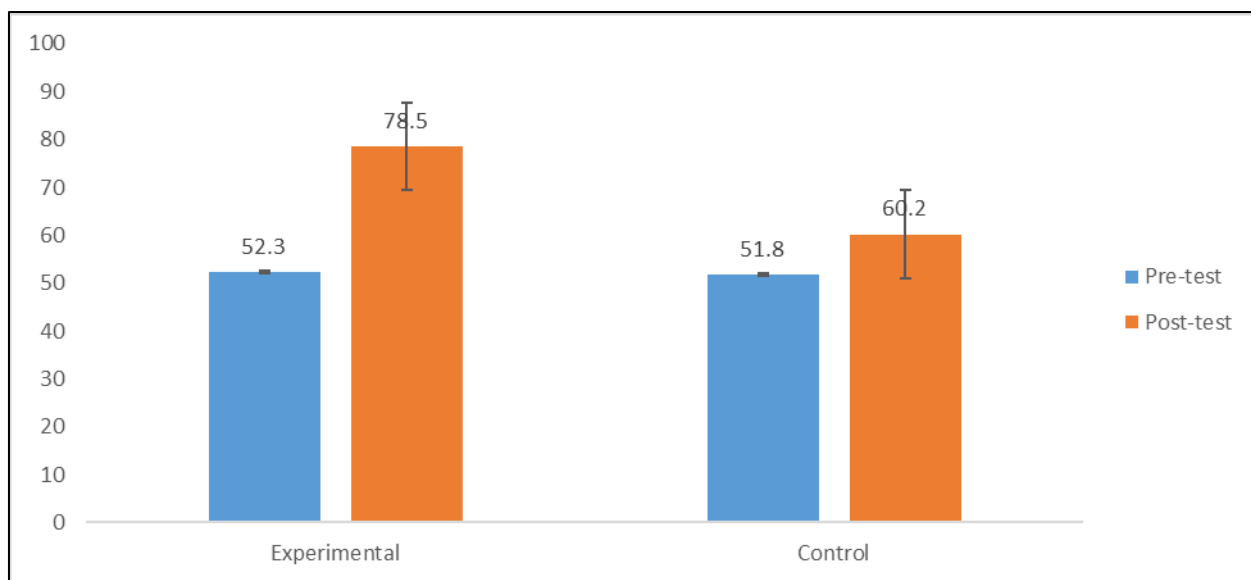


Figure 1 Pre-test and post-test overall scores for experimental and control

An analysis of covariance (ANCOVA), controlling for pre-test scores, revealed a statistically significant effect of instruction type on overall essay quality, $F(1, 117) = 42.76$, $p < .001$, $\eta^2 = .27$, indicating a large effect. These findings support the rejection of the null hypothesis (H_{01}) and confirm that process-based instruction significantly improved overall argumentative essay quality compared with traditional instruction.

Component-wise analysis revealed differential effects of instruction type on specific essay elements. Students in the experimental group demonstrated substantial improvements in argument development, organization and coherence, and overall persuasiveness, with smaller gains in language accuracy. In contrast, the control group exhibited only modest improvements, primarily in language accuracy. Component-wise ANCOVA results confirmed significant effects for argument development ($F(1, 117) = 35.42$, $p < .001$, $\eta^2 = .23$), organization ($F(1, 117) = 29.17$, $p < .001$, $\eta^2 = .20$), and overall persuasiveness ($F(1, 117) = 31.05$, $p < .001$, $\eta^2 = .21$), with a smaller effect on language accuracy ($F(1, 117) = 6.82$, $p = .01$, $\eta^2 = .06$). These results led to the rejection of H_{02} , indicating that process-based instruction positively influenced specific components of essay quality. Table 2 summarizes post-test means for each rubric component, and Figure 2 provides a visual representation of component-wise gains.

Table 2 Post-test Means and Standard Deviations for Rubric Components by Group

Rubric Component	Experimental Mean (SD)	Control Mean (SD)
Argument Development	19.4 (2.1)	14.2 (2.5)
Organization and Coherence	19.0 (2.0)	14.8 (2.3)
Language Accuracy	20.1 (1.8)	18.5 (2.0)
Overall Persuasiveness	20.0 (1.9)	15.5 (2.2)

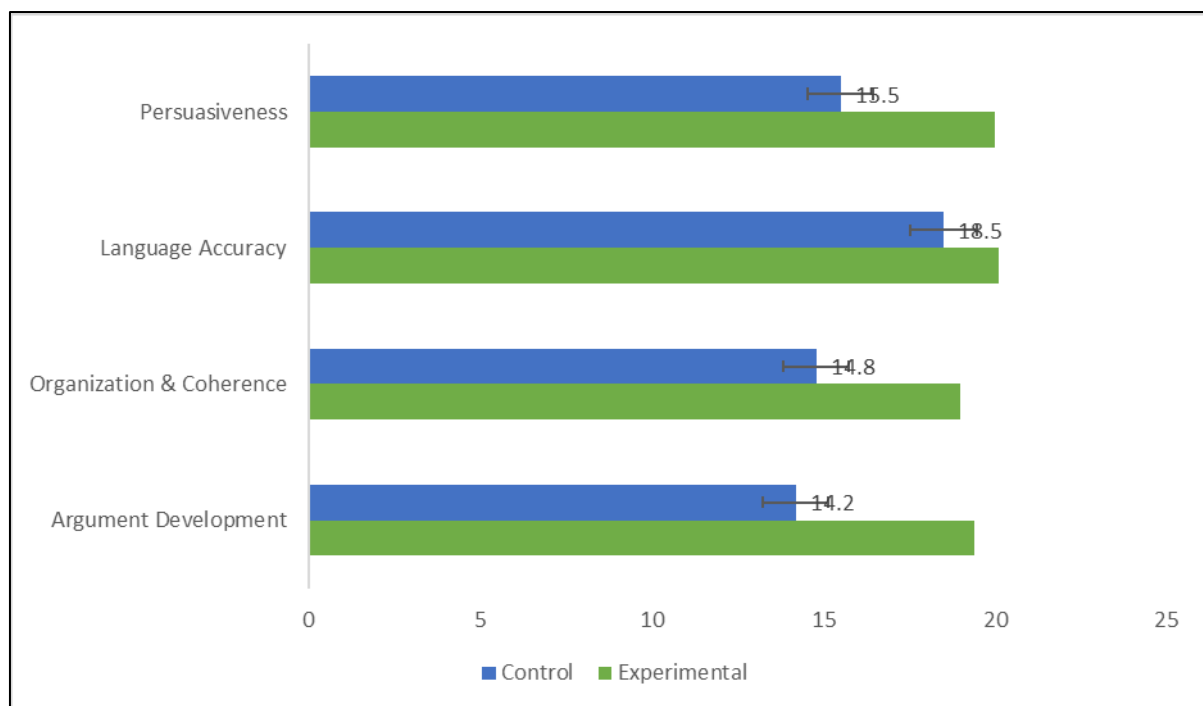


Figure 2 Post-test mean scores for each rubric component by group

6. Discussion

The findings of this study provide strong evidence that process-based writing instruction can significantly improve the argumentative writing skills of secondary school students. The experimental group exhibited marked improvements in thesis clarity and logical argumentation, echoing the findings of Abeje et al. (2025) and Belete and Elias (2021), who reported that iterative drafting and structured feedback fostered coherent, well-supported writing. This outcome also aligns with Flower and Hayes' (1981) cognitive process theory, which emphasizes planning, drafting, and reviewing as essential stages in effective writing. Moreover, the enhancements in organization and persuasiveness observed in the current study are consistent with Peungcharoenkun and Waluyo (2023), who demonstrated that task-based and process-genre approaches strengthen students' ability to engage and convince an audience.

However, the study also highlights areas where gains were more modest, particularly in language accuracy. These findings are in partial agreement with Feng (2025) and Habtamu (2018), who observed that process-based strategies primarily enhance higher-order writing skills, while improvements in grammar and vocabulary tend to be slower. Similarly, Huang et al. (2025) found that even with extensive process-oriented interventions, gains in language mechanics can be limited unless supplemented with explicit instruction. This suggests that while the process approach is highly effective for developing argumentation and structure, additional support may be needed to target surface-level writing skills.

Some findings from previous studies diverge from the current results. For example, Kadmiry (2021) and Anh (2019) reported less pronounced improvements in persuasive writing among EFL students, which may be due to differences in instructional duration, class size, or students' prior proficiency levels. These contrasts indicate that contextual factors, such as school resources, teacher experience, and students' background knowledge, can moderate the effectiveness of process-based instruction (Belete and Elias, 2021; Din et al., 2021).

The study also resonates with social constructivist principles, highlighting the role of interaction and feedback in writing development (Akpan et al., 2020; Bada and Olusegun, 2015). Structured peer and teacher feedback enabled students to co-construct knowledge and refine their arguments collaboratively, supporting Nguyen and Phuong's (2021) assertion that collaborative writing enhances both cognitive and motivational aspects of learning. At the same time, differences in gains across components suggest that process-based instruction may need to be adapted depending on students' prior exposure to writing and linguistic proficiency (Liunokas, 2020; Nam Chi et al., 2024).

From a theoretical standpoint, the findings integrate cognitive and social constructivist perspectives. Improvements in argumentation and organization align with cognitive process theory (Flower and Hayes, 1981), while the benefits of collaborative feedback underscore the social constructivist view that learning is socially mediated (Akpan et al., 2020). This dual alignment strengthens the validity of process-oriented approaches as both cognitively and socially robust instructional strategies.

Nevertheless, the study has limitations that should temper generalizations. The research was conducted in three purposively selected public schools, which may limit applicability to private schools or other educational contexts. The intervention spanned eight weeks, leaving open the question of whether longer or repeated exposure could further enhance language accuracy and writing fluency. Finally, although inter-rater reliability was high (ICC = 0.87), human scoring introduces inherent subjectivity, which could be addressed in future research through automated scoring tools.

7. Conclusion

The study concludes that process-based writing instruction significantly enhances the argumentative essay quality of senior secondary school students. Specifically, students exposed to structured, iterative writing activities including brainstorming, drafting, peer and teacher feedback, and revision demonstrated substantial improvements in argument development, organization, and overall persuasiveness compared to their peers receiving traditional, product-focused instruction. While gains in language accuracy were more modest, the findings suggest that process-oriented strategies are particularly effective for developing higher-order cognitive writing skills.

The results reinforce both cognitive process and social constructivist perspectives, highlighting that effective writing instruction requires recursive planning and collaborative engagement. They also underscore the importance of context, as factors such as prior writing experience, instructional duration, and teacher expertise can moderate the effectiveness of process-based approaches.

In practical terms, educators are encouraged to integrate process-based writing strategies into secondary school curricula to foster critical thinking, logical reasoning, and persuasive communication. Future research should explore longer-term interventions, cross-cultural applicability, and the integration of digital feedback tools to further enhance both higher-order and mechanical writing skills. Overall, the study provides strong empirical support for process-based writing instruction as a viable and effective approach to improving student writing outcomes.

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