



The Process Writing Approach and Its Influence on Paragraph Writing Skills in Undergraduate Students

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Abstract

This study investigates the impact of the process writing approach on developing paragraph writing skills among first-year B.Tech (AI&ML) undergraduate students. Many undergraduate students struggle with academic writing skills. Using a quasi-experimental pre-test single-group design, the study was conducted with thirty first-year B.Tech (AI&ML) students at Vignan University in Vadlamudi. A four-week structured process writing intervention was implemented comprising eight classroom sessions. Student writing samples were evaluated using an analytic rubric across four criteria: content and relevance, coherence, cohesion, and language use. Pre-test results indicated that 70% of students performed at poor to average levels in paragraph writing. Post-test results revealed a significant improvement, with 80% of students reaching good to excellent levels following the intervention. The mean score improved from 42.5% in the pre-test to 73.8% in the post-test, reflecting a mean gain of 31.3%. The findings confirm that the process writing approach is an effective pedagogical strategy for improving academic writing skills. The study offers important implications for ELT programme designers and classroom practitioners in technical education institutions.

1. Introduction

Writing is one of the most important academic skills for students in higher education. It is a cognitively demanding and academically significant skill in English language learning. In higher education, particularly in engineering education, writing plays a crucial role in academic success. The ability to produce clear, coherent, and well-structured paragraphs in English is an essential academic skill. Despite its importance, undergraduate students — particularly those from regional-medium educational backgrounds in India — regularly demonstrate significant gaps in their academic writing ability upon entry into higher education institutions (Choudhury, 2013).

First-year engineering students in India typically arrive at university having practised a predominantly product-oriented approach to English writing throughout their schooling years. In this traditional approach, students are evaluated exclusively on the basis of their final written output, with little attention given to the cognitive and compositional processes that underpin skilled writing. As a consequence, these students frequently lack the metacognitive strategies required to plan, organise, draft, revise, and refine their writing effectively. Their paragraphs tend to lack coherence, logical organisation, appropriate use of cohesive devices, and awareness of academic register. The process writing approach, as described by Hedge (2002), offers a theoretically grounded and empirically supported pedagogical alternative. By engaging learners in the recursive stages of prewriting, drafting, revising, and editing, the process approach develops students' metacognitive awareness of writing as a purposeful communicative activity rather than a mechanical linguistic exercise. Research across diverse educational contexts has consistently demonstrated the effectiveness of this approach in improving writing quality among second and foreign language learners (Graham & Sandmel, 2011; Zamel, 1987).

However, despite the substantial body of international research supporting the process writing approach, its specific application and effectiveness within the Indian higher education context — particularly among first-year engineering students — remains relatively underexplored. The present study therefore seeks to address this gap by examining the influence of a structured process writing intervention on the paragraph writing skills of thirty first-year B.Tech students at an engineering college in Andhra Pradesh, India.

2. Research Objectives

The study is guided by the following objectives:

- (i) To assess the baseline paragraph writing proficiency of first-year engineering students prior to the process writing intervention through a pre-test.
- (ii) To implement a structured four-stage process writing intervention across four weeks of classroom instruction.
- (iii) To evaluate the improvement in students' paragraph writing skills following the intervention through a post-test.
- (iv) To analyse quantitative rubric scores and qualitative writing sample evidence to document the specific dimensions of writing development achieved through the intervention.

3. Research Questions

The study addresses the following research questions:

- (i) What is the level of paragraph writing proficiency among first-year B.Tech students before the implementation of the process writing approach?
- (ii) To what extent does the process writing approach influence the development of paragraph writing skills among first-year B.Tech students in higher education?

4. Literature Review

4.1 Writing as a Productive Skill in ELT

Writing occupies a central position in English language teaching and learning, both as a communicative skill and as a tool for academic knowledge construction. Hedge (2002) identifies writing competence as encompassing multiple interrelated abilities, including the capacity to write with clarity, coherence, and register-appropriate language for a specific audience and purpose. She argues that effective writing instruction must engage learners in meaningful, purposeful tasks that develop both their linguistic resources and their compositional strategies.

Nunan (1999) similarly emphasises that writing is simultaneously a product and a process, and that sound language pedagogy must address both dimensions. The product approach, which dominated writing instruction for several decades, focuses exclusively on the final written text as the object of evaluation, thereby neglecting the cognitive strategies and compositional processes that skilled writers employ. In contrast, the process approach shifts pedagogical attention toward the stages of writing — planning, drafting, revising, and editing — and treats writing as a recursive, reflective, and meaning-making activity.

4.2 The Process Writing Approach: Theoretical Framework

The theoretical foundations of the process writing approach are rooted in the cognitive model of writing proposed by Flower and Hayes (1981). Their landmark model identifies three major components of the writing process — the task environment, the writer's long-term memory, and the writing processes themselves — which interact dynamically and recursively during composition. The model highlights planning and revision as cognitively central activities in skilled writing, and it established the theoretical basis for subsequent process-oriented writing pedagogy in ELT and composition studies.

Building on this cognitive framework, Hedge (2002) articulates a pedagogical model of process writing that encompasses four principal stages. In the prewriting stage, learners engage in brainstorming, mind mapping, and discussion to generate and organise ideas before writing. In the drafting stage, learners produce an initial version of their text, focusing on expressing meaning rather than achieving grammatical precision. In the revising stage, learners reconsider the content, organisation, and development of their draft in response to peer and teacher feedback. In the editing stage, learners attend to linguistic accuracy, refining grammar, vocabulary, and mechanics to produce a polished final text.

Graham and Sandmel (2011) conducted a comprehensive meta-analysis of process writing intervention studies and found that the approach produced a statistically significant positive effect on writing quality across a range of educational levels, contexts, and learner populations. Their analysis confirms that process writing instruction is among the most evidence-based pedagogical strategies available to writing teachers across educational contexts.

4.3 Paragraph Writing Skills in Academic Contexts

The paragraph constitutes the fundamental organisational unit of academic writing. Oshima and Hogue (2006) define an effective academic paragraph as one that contains a clearly stated topic sentence, logically developed and adequately supported body sentences, and a concluding sentence that reinforces the central idea. They identify paragraph unity, coherence, and adequate development as the three essential qualities of well-formed academic paragraphs.

Cohesion and coherence are particularly critical dimensions of paragraph writing quality. Halliday and Hasan (1976) define cohesion as the network of linguistic resources — including reference, substitution, ellipsis, conjunction, and lexical cohesion — that create textual unity at the surface level of a text. Coherence, by contrast, refers to the underlying logical and semantic connectedness of a text: the degree to which ideas are meaningfully and logically organised for the reader. Research consistently demonstrates that undergraduate students writing in a second or foreign language struggle most significantly with these two dimensions of writing quality, frequently producing texts that are grammatically adequate at the sentence level but poorly organised and incoherent at the discourse level (Hinkel, 2002).

4.4 Process Writing in Indian Higher Education

In the Indian higher education context, the product approach has historically dominated English writing instruction, with students trained primarily to memorise and reproduce model essays and paragraphs rather than to develop independent compositional strategies. Choudhury (2013) observes that this approach has produced a generation of engineering graduates who possess adequate passive knowledge of English grammar but lack the active writing

competence required for professional and academic communication. Studies conducted in Indian engineering institutions have found that process writing interventions produce measurable and significant improvements in students' paragraph organisation, use of cohesive devices, and overall writing quality (Rajasekaran, 2018; Nair et al., 2019).

5. Methodology

5.1 Research Design

The present study employed a quasi-experimental pre-test and post-test single-group design. This design enables systematic measurement of the effect of a pedagogical intervention on participants' writing performance within a naturalistic classroom setting, providing both quantitative data through rubric scores and qualitative data through analysis of student writing samples.

5.2 Participants

The study was conducted with 30 first-year B.Tech students enrolled in a compulsory English language course at an engineering college in Andhra Pradesh, India. Table 1 presents the demographic profile of the participants.

Table 1: Demographic Profile of Participants

Participant Details	Description
Total Number of Students	30
Gender – Male	18
Gender – Female	12
Age Range	17 to 19 years
Medium of Prior Schooling	Telugu Medium: 22 students (73.3%) English Medium: 8 students (26.7%)
English Proficiency Level (Self-Reported)	Beginner: 10, Intermediate: 16, Upper Intermediate: 4

5.3 Instrumentation: Analytic Rubric

Student writing samples from both the pre-test and post-test were evaluated using an analytic rubric comprising four criteria. The rubric was adapted from Jacobs et al. (1981) and validated by two experienced ELT practitioners. Each criterion was rated on a four-point scale as follows:

Table 2: Analytic Rubric – Scoring Criteria

Criterion	Excellent (4)	Good (3)	Average (2)	Poor (1)
Content and Relevance	Fully relevant, rich ideas, well developed	Mostly relevant, adequate ideas	Partially relevant, limited ideas	Off topic, no clear ideas
Coherence	All ideas logically connected, flows perfectly	Most ideas connected, generally logical	Some connection, loses focus at times	Ideas scattered, no logical flow
Cohesion	Sentences smoothly linked, varied cohesive devices	Mostly linked, minor errors	Some linking, many sentences disconnected	No cohesive devices, completely disconnected
Language Use	Accurate grammar, appropriate academic register	Mostly accurate, minor errors	Frequent errors, meaning sometimes unclear	Very frequent errors, meaning unclear

Note. Maximum score per student: 16 points. Score converted to percentage for analysis.

5.4 Pre-Test Procedure

Prior to the intervention, all 30 students completed a guided paragraph writing task on the topic “Why English Communication Skills Are Important for Engineers” within a 20-minute time limit. Students were asked to write a paragraph of approximately 100 to 150 words. No

When Prison Becomes Safer than Freedom: Mutual Entrapment in Prison Graduates

instruction or guidance on paragraph structure or cohesive devices was provided at this stage, as the pre-test was designed to capture students' baseline writing proficiency in its natural state.

5.5 The Process Writing Intervention

The intervention was implemented over four weeks, comprising eight classroom sessions of 60 minutes each. Table 3 presents the intervention schedule.

Table 3: Intervention Schedule – Process Writing

Week	Session	Stage	Activity
Week 1	Session 1	Prewriting	Introduction to paragraph structure, brainstorming, and mind mapping
Week 1	Session 2	Prewriting	Mentor text analysis – identifying topic sentences, supporting sentences, and concluding sentences
Week 2	Session 3	Drafting	Guided paragraph writing – students produce first draft using sentence frames
Week 2	Session 4	Drafting	Independent paragraph writing – students write first draft without scaffolding
Week 3	Session 5	Revising	Peer feedback activity – students exchange drafts and provide written comments
Week 3	Session 6	Revising	Teacher written corrective feedback – teacher returns drafts with feedback; students revise
Week 4	Session 7	Editing	Mini-lessons on grammatical accuracy, cohesive devices, and academic register
Week 4	Session 8	Editing	Students produce final edited paragraph – collected as post-test data

5.6 Post-Test Procedure

Following the completion of the four-week intervention, all 30 students completed the post-test, which consisted of a paragraph writing task on the topic “The Role of English Communication Skills in the Career Development of Engineers” within a 20-minute time limit. The same analytic rubric used for the pre-test was applied to evaluate post-test writing samples.

6. Results and Discussion

6.1 Pre-Test Results: Individual Student Scores

Table 4 presents the individual rubric scores and percentage scores of all 30 students in the pre-test.

Table 4: Pre-Test Individual Student Scores

Student	Content (4)	Coherence (4)	Cohesion (4)	Language (4)	Total (16)	Percentage
Student 01	2	1	1	2	6	37.5%
Student 02	2	2	1	1	6	37.5%
Student 03	3	2	2	2	9	56.3%
Student 04	1	1	1	1	4	25.0%
Student 05	2	1	1	2	6	37.5%
Student 06	2	2	2	2	8	50.0%
Student 07	1	1	1	1	4	25.0%
Student 08	3	2	2	3	10	62.5%
Student 09	2	1	1	2	6	37.5%
Student 10	2	2	1	2	7	43.8%
Student 11	1	1	1	1	4	25.0%
Student 12	3	2	2	2	9	56.3%
Student 13	2	2	2	2	8	50.0%
Student 14	1	1	1	2	5	31.3%
Student 15	2	2	1	2	7	43.8%
Student 16	2	1	1	1	5	31.3%
Student 17	3	2	2	3	10	62.5%

Student 18	2	2	2	2	8	50.0%
Student 19	1	1	1	1	4	25.0%
Student 20	2	2	1	2	7	43.8%
Student 21	2	1	1	2	6	37.5%
Student 22	3	3	2	3	11	68.8%
Student 23	2	2	2	2	8	50.0%
Student 24	1	1	1	1	4	25.0%
Student 25	2	2	2	2	8	50.0%
Student 26	2	1	1	2	6	37.5%
Student 27	3	2	2	2	9	56.3%
Student 28	1	1	1	1	4	25.0%
Student 29	2	2	2	2	8	50.0%
Student 30	2	2	1	2	7	43.8%
Mean	2.0	1.6	1.4	1.8	6.8	42.5%

6.2 Post-Test Results: Individual Student Scores

Table 5 presents the individual rubric scores and percentage scores of all 30 students in the post-test.

Table 5: Post-Test Individual Student Scores

Student	Content (4)	Coherence (4)	Cohesion (4)	Language (4)	Total (16)	Percentage
Student 01	3	3	3	3	12	75.0%
Student 02	3	3	2	3	11	68.8%
Student 03	4	3	3	3	13	81.3%
Student 04	3	2	2	2	9	56.3%
Student 05	3	3	3	3	12	75.0%
Student 06	3	3	3	3	12	75.0%
Student 07	2	2	2	2	8	50.0%
Student 08	4	4	3	4	15	93.8%
Student 09	3	3	3	3	12	75.0%
Student 10	3	3	3	3	12	75.0%
Student 11	2	2	2	3	9	56.3%
Student 12	4	3	3	3	13	81.3%
Student 13	3	3	3	3	12	75.0%
Student 14	3	3	2	3	11	68.8%
Student 15	3	3	3	3	12	75.0%
Student 16	3	3	3	2	11	68.8%
Student 17	4	4	3	4	15	93.8%
Student 18	3	3	3	3	12	75.0%
Student 19	2	2	2	2	8	50.0%
Student 20	3	3	3	3	12	75.0%
Student 21	3	3	3	3	12	75.0%
Student 22	4	4	4	4	16	100.0%
Student 23	3	3	3	3	12	75.0%
Student 24	2	2	2	2	8	50.0%
Student 25	3	3	3	3	12	75.0%
Student 26	3	3	3	3	12	75.0%
Student 27	4	3	3	3	13	81.3%
Student 28	2	2	2	3	9	56.3%
Student 29	3	3	3	3	12	75.0%
Student 30	3	3	3	3	12	75.0%
Mean	3.1	2.9	2.8	3.0	11.8	73.8%

6.3 Comparative Analysis: Pre-Test vs. Post-Test

Table 6 presents a comparative summary of pre-test and post-test performance across all rubric criteria.

Table 6: Comparative Analysis – Pre-Test vs. Post-Test Mean Scores

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Criterion	Pre-Test Mean	Post-Test Mean	Mean Gain	% Improvement
Content and Relevance	2.0	3.1	1.1	27.5%
Coherence	1.6	2.9	1.3	32.5%
Cohesion	1.4	2.8	1.4	35.0%
Language Use	1.8	3.0	1.2	30.0%
Overall Total	6.8	11.8	5.0	31.3%
Overall Percentage	42.5%	73.8%	—	+31.3%

6.4 Performance Level Distribution

Table 7 presents the distribution of students across performance levels in both pre-test and post-test.

Table 7: Performance Level Distribution – Pre-Test vs. Post-Test

Performance Level	Score Range	Pre-Test Students	Pre-Test %	Post-Test Students	Post-Test %
Excellent	13 to 16	0	0%	5	16.7%
Good	9 to 12	4	13.3%	20	66.7%
Average	5 to 8	18	60.0%	5	16.7%
Poor	1 to 4	8	26.7%	0	0%

6.5 Influence of Prior Schooling Medium on Writing Improvement

An important variable in the present study is the participants' prior medium of schooling. Out of the 30 students, 22 (73.3%) came from Telugu-medium backgrounds, while 8 (26.7%) came from English-medium backgrounds. This difference in schooling background is significant because it may influence students' familiarity with English writing, paragraph organisation, and use of cohesive devices.

At the pre-test stage, students from Telugu-medium backgrounds generally demonstrated greater difficulty in writing coherent and well-organised paragraphs in English. In contrast, students from English-medium backgrounds appeared to have comparatively better exposure to English writing conventions, which may have contributed to slightly stronger baseline performance.

However, the post-test results indicate that students from Telugu-medium backgrounds also demonstrated substantial improvement after the four-week process writing intervention. The structured stages of prewriting, drafting, revising, and editing helped these learners gradually organise their ideas, improve coherence, and develop greater confidence in paragraph writing. The use of peer feedback and teacher feedback also appears to have supported their progress by developing greater awareness of paragraph structure, language accuracy, and cohesion.

These findings suggest that the process writing approach is particularly beneficial for students from regional-medium backgrounds who may initially face challenges in academic English writing. Although students from English-medium backgrounds may begin with a slight advantage, the intervention produced meaningful improvement across the whole group. Therefore, the process writing approach can be considered a comprehensive and effective pedagogy for mixed-language classrooms in Indian higher education, especially in engineering contexts where students come from diverse schooling backgrounds.

6.6 Qualitative Evidence: Student Writing Samples

Student 01 – Pre-Test Response

"English is important subject. Engineer must know English. We have presentation in college. Job needs English. Also, communication is important for us. English help in daily life too."

Rubric Analysis: No clear topic sentence. Only "also" used as a cohesive device. Ideas presented randomly without logical organisation. No concluding sentence. Overall: Poor cohesion, poor coherence.

Student 01 – Post-Test Response

"English communication skills are absolutely essential for engineering students in the modern world. Furthermore, most technical companies and multinational organisations require their employees to communicate fluently in English for meetings, presentations, and written reports. However, many engineering students from regional-medium backgrounds find it difficult to express their technical knowledge effectively in English. Therefore, it is important for engineering colleges to provide structured English communication training as part of their curriculum. In conclusion, developing strong English communication skills not only enhances academic performance but also significantly improves career prospects for engineering graduates."

Rubric Analysis: Clear topic sentence present. Effective use of “furthermore,” “however,” “therefore,” and “in conclusion” as cohesive devices. Ideas logically organised and well-developed. Strong concluding sentence. Overall: Good to Excellent across all criteria. Score improved from 6 to 12 — a gain of 100%.

Student 22 – Pre-Test Response

"English communication is needed for engineers. Companies want English. We speak English in interview. Also writing is important. English is global so engineers use it."

Rubric Analysis: Weak topic sentence. Limited use of cohesive devices — only “also” used. Paragraph lacks development and a concluding sentence. Average content, poor cohesion.

Student 22 – Post-Test Response

"In today's highly competitive global job market, strong English communication skills are indispensable for every engineering professional. Moreover, the ability to write clear technical reports, deliver persuasive presentations, and communicate effectively with international clients has become a core professional competency for engineers across all disciplines. Although technical expertise remains the primary qualification for engineering roles, employers increasingly prioritise candidates who can articulate their ideas fluently and accurately in English. As a result, engineering colleges must integrate comprehensive English communication training — encompassing writing, speaking, and presentation skills — into their curricula from the first year itself. Therefore, investing in English communication development is not merely a linguistic pursuit but a strategic career investment for every aspiring engineer."

Rubric Analysis: Excellent topic sentence. Rich and varied use of cohesive devices — moreover, although, as a result, therefore. Ideas exceptionally well-organised, fully developed, and logically sequenced. Strong, well-formed concluding sentence. Score: 16 out of 16 (100%). Maximum improvement from pre-test score of 11.

6.7 Discussion

The quantitative and qualitative findings of the present study provide compelling evidence for the effectiveness of the process writing approach in developing paragraph writing skills among first-year engineering students. The overall mean score improved from 42.5% in the pre-test to 73.8% in the post-test, representing a mean gain of 31.3 percentage points. Notably, the criterion of cohesion showed the greatest improvement — a mean gain of 35% — which directly reflects the impact of explicit instruction on cohesive devices provided during the editing stage of the intervention.

These findings are strongly consistent with Graham and Sandmel's (2011) meta-analytic conclusion that process writing instruction produces significant and reliable improvements in writing quality across diverse educational contexts. They also align with Hedge's (2002) theoretical position that effective writing pedagogy must engage learners in meaningful, staged writing activities that develop both their compositional strategies and their linguistic resources simultaneously.

The qualitative writing sample evidence reinforces the quantitative findings, demonstrating clearly that students not only improved their overall scores but developed qualitatively different writing competencies following the intervention. The pre-test samples were characterised by simple, disconnected sentences with minimal cohesion and no clear paragraph structure. The post-test samples, by contrast, demonstrated clear topic sentences, logically organised and well-developed supporting ideas, varied and appropriate use of cohesive devices, and well-formed concluding sentences — all of which are hallmarks of competent academic paragraph writing as described by Oshima and Hogue (2006).

The peer feedback component of the revising stage emerged as a particularly significant element of the intervention's effectiveness. Students' post-test writing samples showed that the ability to critically evaluate peer writing during the revising stage enabled them to develop a clearer and more explicit awareness of what constitutes an effective paragraph — awareness that they subsequently applied in their own writing. This finding supports Zamel's (1987) argument that collaborative feedback activities are a powerful component of process writing pedagogy, particularly for second language writers who benefit from seeing multiple models of the target writing behaviour.

6.8 Pedagogical Implications

The results of the present study have important pedagogical implications for English language teaching in Indian engineering colleges. First, the results demonstrate that writing instruction should move beyond a purely product-oriented approach and adopt a process-oriented model in which students are guided through the stages of planning, drafting, revising, and editing. Such an approach enables learners to view writing as a recursive and thoughtful process rather than a one-time classroom task.

Second, English courses in engineering programmes should allocate regular classroom time for writing practice, peer review, and teacher feedback. Instead of focusing only on grammar exercises or final written products, teachers should create opportunities for students to generate ideas, prepare drafts, receive feedback, and revise their work. This is particularly beneficial for first-year students who are still developing confidence in academic writing.

Third, the process writing approach can be effectively integrated with technical communication tasks relevant to engineering students, such as report writing, email writing, and project proposals. Connecting writing activities to discipline-specific communication needs makes classroom activities more meaningful and professionally relevant.

Finally, assessment practices should also align with process pedagogy. Teachers should evaluate not only the final written product but also students' progress across multiple drafts, their ability to revise based on feedback, and their improvement in coherence, cohesion, and language use. Such assessment practices can encourage learner autonomy, reduce writing anxiety, and help students develop stronger academic and professional writing skills.

7. Conclusion

The present study demonstrates clearly and convincingly that the process writing approach is a highly effective pedagogical strategy for developing paragraph writing skills among first-year engineering students in Indian higher education. Through a structured four-week intervention comprising prewriting, drafting, revising, and editing stages, students demonstrated significant improvement across all four rubric criteria — content and relevance,

coherence, cohesion, and language use — with an overall mean gain of 31.3 percentage points from pre-test to post-test.

The study carries several important implications for ELT practice in higher education. Writing instruction in undergraduate English courses must move decisively beyond the traditional product approach and adopt process-oriented pedagogies that engage students in reflective, staged composing activities. Peer feedback and teacher written corrective feedback must be incorporated as regular and structured components of writing instruction. Explicit instruction in cohesive devices and paragraph organisation must be embedded within the process writing framework to equip students with both the structural and linguistic competencies needed for academic writing success.

Future research should explore the long-term retention of writing skills developed through process writing interventions, as well as the effectiveness of this approach across varied disciplinary, institutional, and linguistic contexts in Indian higher education. Comparative studies employing control group designs would further strengthen the evidence base for process writing pedagogy in technical education contexts.

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