

Implementing an Evidence-Based Writing Approach to Enhance Academic Writing Skills: A Case Study of Undergraduates at Srinakharinwirot University

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Abstract

The purpose of this study was to investigate the effectiveness of applying an Evidence-Based Writing (EBW) approach in developing academic writing competence among undergraduate students. The participants consisted of 26 undergraduates enrolled in the course Communicative Writing for Teachers during the second semester of the 2024 academic year at Srinakharinwirot University. The research employed a quasi-experimental design with a one-group pretest-posttest model. The EBW approach was implemented through instructional activities that emphasized information retrieval, critical reasoning, and the use of credible evidence to support written arguments. Data were collected using pre- and post-writing tests, classroom observation, and reflective journals. The results revealed a statistically significant improvement in students' academic writing performance after the intervention, particularly in text organization, coherence, and the effective use of supporting evidence. Moreover, the students expressed positive perceptions toward the EBW approach, indicating that it enhanced their analytical thinking, academic confidence, and awareness of evidence-based argumentation. The findings suggest that the Evidence-Based Writing approach can serve as a pedagogically effective model for improving academic writing skills in higher education contexts.

Keywords: evidence-based writing, academic writing, pre-service teachers

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Introduction

Academic writing represents a foundational pillar of higher education, functioning as a primary vehicle for knowledge construction and scholarly communication (Hyland, 2009; Swales & Feak, 2012). However, a major pedagogical challenge involves guiding novice writers through the cognitive transition from expressive, “opinion-based” writing to rigorous, “evidence-based” discourse. University-level scholarship demands that claims be systematically substantiated by empirical data, established theories, and credible external sources (Cumming, 2001). This shift requires students to develop sophisticated rhetorical strategies, such as synthesizing conflicting perspectives and articulating logical warrants (Ferris & Hedgcock, 2014). Without explicit scaffolding, undergraduate writers frequently struggle to bridge this divide, resulting in compositions that lack empirical depth and persuasive authority.

To address these challenges, Evidence-Based Writing (EBW) instruction—which utilizes research-validated pedagogical strategies—has proven highly effective. According to Graham and Perin (2007), explicit strategy instruction that breaks the writing process into systematic phases significantly improves compositional fluency. A persistent hurdle in this process is “cognitive overload,” the mental fatigue students experience when simultaneously managing source comprehension, logical structuring, and grammatical accuracy. To mitigate this, visual scaffolding techniques such as Argument Mapping are invaluable. Dwyer et al. (2012) demonstrated that requiring students to visually diagram the relationships between primary claims, evidence, and logical warrants *before* drafting reduces cognitive load and enhances critical thinking, actively preventing a reliance on superficial rhetoric.

Beyond cognitive structuring, the transition to evidence-based writing requires the cultivation of an “Academic Identity.” Wingate (2015) argues that academic literacy is not merely a standalone language skill, but an integrated process of knowledge construction. Without a structured understanding of how to ethically synthesize external sources, novice writers frequently resort to patchwriting (Pecorari, 2008). Within the context of Thai higher education, these issues are particularly pronounced. Empirical studies indicate that Thai undergraduates often rely on subjective prose and beautiful but unsubstantiated rhetoric, a habit stemming from a traditional educational background that historically emphasized rote learning over critical argumentation (Intaraprasert, 2014; Kongpetch, 2006).

This pedagogical deficit presents a profound risk when observed among pre-service teachers, specifically those majoring in Thai Language Education. As future educators, these individuals are tasked with cultivating the foundational literacy and critical thinking skills of the next generation. If pre-service teachers do not possess a robust command of evidence-based discourse and a secure scholarly identity, they will remain unequipped to foster these essential competencies in their future classrooms. Furthermore, while extensive research has investigated evidence-based writing interventions within English as a Second/Foreign Language (ESL/EFL) contexts, a significant empirical gap persists regarding its systematic application in first-language (L1) academic writing within Thai higher education.

To address this empirical and pedagogical gap, this study implements an Evidence-Based Writing Approach—a scaffolded, three-phase pedagogical model comprising systematic information retrieval, critical reasoning via argument mapping, and rhetorical integration. Conducted as a case study of 26 undergraduate pre-service teachers at Srinakharinwirot University, this research investigates how a structured EBW influences student performance

across four core writing domains: organization, coherence, evidence integration, and academic language use. By unpacking the cognitive and rhetorical growth of these future educators, this study seeks to contribute to a comprehensive framework for writing instruction that bridges information literacy with advanced academic prose.

Objective

To investigate the effects of the Evidence-Based Writing Approach on the development of academic writing skills among Thai language pre-service teachers.

Research Hypotheses

Undergraduate pre-service teachers who undergo the Evidence-Based Writing pedagogical intervention will achieve statistically significantly higher post-test scores in academic writing skills compared to their pre-test scores at the .05 level of significance.

Methodology

Research Design

This study adopted a quasi-experimental design, specifically utilizing a one-group pretest-posttest design to evaluate the effectiveness of the Evidence-Based Writing Approach in enhancing the academic writing competence of pre-service teachers. The experimental design is structurally represented as follows:

Participants

The target group of this study consisted of 26 first-year undergraduate pre-service teachers majoring in Thai Language Education within the Faculty of Education at Srinakharinwirot University. No random sampling techniques were employed in this research; instead, this entire intact classroom was specifically designated as the target group. The participants were all enrolled in the compulsory “Communicative Writing for Teachers” course during the academic semester in which the study was conducted. This specific cohort was selected as the target group because, as future language educators, mastering logical argumentation and evidence-based communication is crucial to their professional pedagogical toolkit.

Research Instruments

The research instruments developed and validated for this study were categorized into two main groups:

Intervention Instruments

The primary intervention instrument consisted of a comprehensive series of instructional lesson plans based on the EBW framework implemented over a full academic semester. The pedagogical activities were structured into three sequential phases across six sub-steps.

Phase 1: Information Retrieval: Focusing on academic database navigation, source credibility evaluation, and the compilation of an “Evidence Pool” containing relevant empirical statistics and theories.

Phase 2: Critical Reasoning & Mapping: Guiding students to construct visual “Argument Maps” linking their primary claims to gathered evidence via logical warrants, thereby mitigating opinion-based rhetoric.

Phase 3: Rhetorical Integration: Transforming visual outlines into formal academic prose through data synthesis, appropriate selection of reporting verbs, and peer review processes aligned with APA 7th edition standards.

Data Collection Instruments

Academic writing performance tests administered as identical parallel forms for both pre-test and post-test conditions.

An Analytical Scoring Rubric (30-point maximum score) measuring proficiency across four distinct domains: Organization (logical paragraph structure), Coherence and Cohesion (effective text linking), Evidence Integration (scholarly citation and synthesis), and Language Use (academic tone and lexical accuracy).

Student Reflective Journals collected weekly to document qualitative shifts in cognitive processing and academic identity development.

Data Collection Procedure

Data collection was executed systematically through three distinct chronological phases.

Pre-intervention Phase

Prior to the treatment, the purpose of the study was explained, and participants completed the pre-test to establish baseline academic writing scores.

Intervention Phase

The researcher administered the EBW pedagogical framework over the course of one semester, providing instructional scaffolding and continuous feedback during each phase of writing.

Post-intervention Phase

Upon completion of the semester, participants completed the post-test under identical testing parameters, and their cumulative reflective journals were gathered for qualitative profiling.

Data Analysis

The collected data underwent mixed-methods analysis as follows:

Quantitative Data

Scores derived from the pre-test and post-test were analyzed using descriptive statistics, including Mean and Standard Deviation (S.D.). A Paired Samples t-test was subsequently performed to evaluate statistically significant differences between pre- and post-test scores at a .05 alpha level.

Qualitative Data

Textual data from the student reflective journals were subjected to qualitative content analysis and thematic coding. This analysis aimed to contextualize quantitative gains by mapping changes in students' deep cognitive processing and the internal alignment of their scholarly identities.

Results

Quantitative Results

The quantitative findings of this study outline the impact of the Evidence-Based Writing (EBW) approach on the academic writing performance of the target group. To evaluate the hypothesis, a Paired Samples t-test was conducted to compare the pre-test and post-test academic writing scores of the 26 pre-service teachers. The academic writing skills were evaluated based on a maximum possible score of 30.

The descriptive and inferential statistical analysis results are summarized in Table 1 below.

Table 1

Comparison of Pre-test and Post-test Academic Writing Scores (N = 26)

Test	N	Mean	S.D.	t	Sig
Pre-test	26	16.42	1.50	41.56	.001**
Post-test	26	25.65	1.35		

*Significance at the .05 level

As illustrated in Table 1, the target group's pre-test mean score was 16.42 (S.D. = 1.50), indicating a moderate baseline competence in academic writing prior to the pedagogical intervention. Following the implementation of the structured EBW framework, the post-test mean score increased significantly to 25.65 (S.D. = 1.35). The descriptive data demonstrates a substantial mean gain score of 9.23 points.

Furthermore, inferential statistical analysis confirms that this post-intervention improvement is highly statistically significant, with a t-value of 41.56 ($p < .05$). Therefore, the research hypothesis is strongly supported; the undergraduate pre-service teachers achieved significantly higher post-test academic writing scores after participating in the Evidence-Based Writing pedagogical intervention at the .05 level of significance.

Qualitative Results

To complement the quantitative findings, a thematic analysis of the target group's weekly reflective journals was conducted. The qualitative insights elucidate the cognitive and pedagogical transformations experienced by the pre-service teachers throughout the Evidence-Based Writing intervention. Two major themes emerged from the qualitative data: 1) Cognitive Deep Processing via Argument Mapping, and 2) The Evolution of an Academic Identity.

Theme 1: Cognitive Deep Processing via Argument Mapping

Prior to the intervention, the student teachers reported high levels of cognitive anxiety when confronted with academic writing, primarily due to a lack of structured ideation. The introduction of visual “Argument Mapping” in Phase 2 served as a pivotal cognitive scaffold. Students noted that breaking down dense academic information into a visual hierarchy of claims, evidence, and logical warrants effectively minimized their “cognitive overload.”

One student reflected in their journal:

I used to experience severe writer's block when staring at a blank page because I didn't know how to organize my thoughts. However, constructing an Argument Map acted like a cognitive compass. It allowed me to separate information retrieval from the actual drafting process, making the execution of academic prose systematic and manageable.

Furthermore, the requirement to explicitly state a “Warrant”—explaining *why* a particular statistic or theory supported their assertion—forced students to transition from descriptive, opinion-based writing to deep analytical commentary.

Theme 2: The Evolution of Academic Identity

The qualitative data revealed a profound shift in how the pre-service teachers perceived their own roles within scholarly discourse. Initially, participants viewed writing assignments as passive compliance tasks. However, through the systematic sourcing, evaluation, and synthesis of empirical literature, students began to internalize an “Academic Identity.” They moved away from heavily emotional and opinionated rhetoric toward objective, evidence-backed argumentation.

Another participant articulated this transformation:

In my previous essays, I relied entirely on my personal feelings and beautiful but empty phrasing because I thought that was what good Thai writing was about. The EBW approach completely changed my perspective. I now feel like a legitimate scholar. My voice has genuine rhetorical power not because it sounds poetic, but because it is anchored in validated empirical evidence.

This shift is crucial for their future profession. As future Thai language educators, developing this academic identity ensures that they will enter their future classrooms equipped with the critical thinking and scientific literacy required to foster evidence-based competencies in the next generation of learners.

Conclusion and Implication

Conclusion

The primary objective of this research was to investigate the effectiveness of the Evidence-Based Writing Approach in enhancing the academic writing skills of undergraduate pre-service Thai language teachers. The empirical findings robustly support the research hypothesis, demonstrating a highly significant improvement in students' academic writing

performance post-intervention ($t = 41.56, p < .05$). This substantial gain aligns with previous studies indicating that explicit, scaffolded writing frameworks significantly enhance novice writers' abilities to construct formal academic discourse (Ferris & Hedgcock, 2014; Hyland, 2009).

Beyond the statistical gains, the qualitative data reveals that the EBW approach successfully facilitates Cognitive Deep Processing. By structurally requiring students to retrieve, map, and evaluate empirical evidence before they begin the drafting process, the intervention effectively forces students into higher-order thinking. Consistent with the findings of Dwyer et al. (2012), the use of visual argument mapping minimizes cognitive overload, allowing students to focus on logical synthesis. This scaffolded requirement actively prevents reliance on superficial, opinion-based rhetoric (Cumming, 2001), ensuring that students engage more critically and analytically with the academic material. Consequently, the students not only improved their structural writing mechanics but also successfully cultivated a scholarly identity anchored in objective, evidence-backed argumentation, effectively bridging the gap highlighted by Pecorari (2008).

Pedagogical Implications

The findings of this study offer critical implications for higher education pedagogy, particularly within the realm of teacher preparation programs. Traditional writing instruction often isolates grammatical fluency from research skills. However, this study demonstrates that to produce highly competent educators, writing instruction for future teachers must explicitly integrate Information Literacy with Rhetorical Mastery. This echoes Wingate's (2015) assertion that academic literacy must be taught as an integrated process of knowledge construction rather than a standalone language skill.

If pre-service teachers are expected to cultivate critical thinking and evidence-based communication in their future classrooms, they must first master these advanced competencies themselves (Borg, 2015). Therefore, university curricula should move beyond basic expressive writing and formally embed structured, evidence-based frameworks—like the EBW Approach—into language education programs to ensure the professional and pedagogical competence of the next generation of teachers.

Recommendations for Future Research

Based on the findings and the scope of the current study, several recommendations for future research can be made to further advance the understanding of evidence-based writing in higher education:

1. **Implementation of Controlled Experimental Designs:** While the one-group pretest-posttest design yielded highly significant results, future studies should employ a randomized controlled trial (RCT) or a quasi-experimental design with a designated control group. This would help isolate the effects of the Evidence-Based Writing Approach from other external variables and strengthen the internal validity of the findings.
2. **Longitudinal Tracking into Teaching Practicum:** Since the target group consists of pre-service teachers, a critical next step is to investigate the transferability of these skills. Future research should conduct longitudinal studies tracking these participants into their actual teaching practicums or early career placements. This would determine

whether mastering the EBW approach translates into their ability to effectively teach critical thinking and evidence-based writing to their future students.

3. **Expansion Across Diverse Academic Disciplines:** This study focused specifically on Thai Language Education majors. Future researchers should replicate this intervention across different disciplines within teacher education (such as Science, Social Studies, or Mathematics Education) to assess whether the EBW framework is universally effective or requires subject-specific modifications.
4. **Integration of Digital Argument Mapping Tools:** As the qualitative findings highlighted the cognitive benefits of visual argument mapping, future studies could explore the integration of specific educational technologies or digital mapping software. Investigating how digital environments enhance information retrieval, synthesis, and peer collaboration within the EBW framework would be highly relevant in the modern digital learning landscape.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that Grammarly, an AI-assisted writing software, was used in proofreading and refining the language used in the manuscript. The usage was limited to correcting grammatical and spelling errors and rephrasing statements for accuracy and clarity. The author further declares that, apart from Grammarly, no other AI or AI-assisted technologies have been used to generate content in writing the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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