



Outdoor Learning for EFL Descriptive Writing Among Vocational Engineering Students: A Quasi-Experimental Study

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ABSTRACT

Developing descriptive writing skills remains a major challenge for English as a Foreign Language (EFL) learners, particularly in vocational higher education where instruction is often dominated by conventional classroom practices. Although outdoor learning is promising, empirical evidence regarding its effectiveness in improving descriptive writing among vocational engineering students is limited. This study investigated the effectiveness of outdoor learning in enhancing EFL descriptive writing skills among Industrial Engineering students at Politeknik Aceh Selatan, Indonesia. A quantitative quasi-experimental pretest-posttest control group design was employed with 48 students divided into experimental and control groups. Data were gathered through writing tests and perception questionnaires, then analyzed using descriptive statistics, the Wilcoxon Signed-Rank Test, the Mann-Whitney U Test, and effect size analysis. The findings revealed that students in the outdoor learning group demonstrated substantially greater improvement than those in conventional instruction. The experimental group's mean increased from 64.79 to 83.25, while the control group improved from 66.25 to 77.13. Significant improvements were confirmed within the experimental group ($Z = -4.302$, $p < .001$), alongside significant posttest differences between groups ($U = 3.000$, $Z = -5.925$, $p < .001$). Large effect sizes were identified for both tests ($r = .878$ and $r = .855$). Furthermore, questionnaire results indicated that students perceived outdoor learning as highly effective in stimulating creativity, motivation, and engagement, supporting its integration into English language instruction for engineering students.

INTRODUCTION

Writing proficiency is widely recognized as a fundamental competency in English as a Foreign Language (EFL) education, enabling learners to construct knowledge and participate effectively in academic and professional discourse. Among the various genres, descriptive writing plays an essential role in developing students' capacity to observe, structure, and convey information systematically. These competencies are particularly vital in vocational higher education, where engineering students must describe technical objects, operational processes, and field observations using accurate and coherent language. Consequently, strengthening descriptive writing skills has become a primary objective of vocational English pedagogy (Mauludin et al., 2026).

Despite its importance, developing EFL descriptive writing remains a persistent challenge for vocational engineering students. Learners frequently encounter difficulties in idea generation, structural organization, technical vocabulary selection, and grammatical execution. These challenges are heavily exacerbated by conventional, teacher-centered instruction that relies on rigid textbook exercises and offers limited exposure to authentic, real-world technical contexts. As a result, students routinely produce descriptive texts that lack specificity, coherence, and contextual depth. This pedagogical mismatch is corroborated by (Mauludin & Airlangga, 2023) who demonstrated that vocational learners are most motivated by hands-on, practical support such as explicit instructions, direct task assistance, and industry-aligned feedback rather than passive classroom instruction. Without shifting toward contextualized, practical ESP learning environments, students will continue to struggle in producing professional-grade technical writing.

A promising pedagogical solution to bridge this gap is outdoor learning, which finds strong theoretical backing in Kolb's (1984) Experiential Learning Theory and social constructivism. Experiential Learning Theory posits that meaningful acquisition occurs through a continuous cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 2013). When applied to descriptive writing, outdoor learning provides immediate, sensory-rich interactions with real-world objects and environments. This concrete experience





serves as a catalyst for idea generation and linguistic expression, allowing knowledge to be actively constructed through contextual interaction rather than passively received.

Empirical research has increasingly supported the benefits of outdoor learning in language instruction. Previous studies demonstrate that outdoor activities enhance students' descriptive writing achievement, vocabulary acquisition, structural organization, and overall learning engagement (Hadi et al., 2021) (Piala et al., 2021). However, existing literature displays critical limitations. Most studies have predominantly focused on elementary or secondary school contexts, relied on small sample sizes, or employed qualitative and classroom action research designs. More importantly, research on outdoor learning tailored specifically to vocational engineering education where descriptive writing requires accurate representation of technical phenomena and workplace applications remains scarce. Furthermore, previous investigations have relied almost exclusively on statistical significance testing (p-values), paying little attention to the practical magnitude of instructional impact through effect size analysis.

To address these empirical and pedagogical gaps, the present study investigates the effectiveness of outdoor learning in enhancing EFL descriptive writing skills among vocational engineering students using a quasi-experimental pretest-posttest control group design. Beyond testing for statistical significance via non-parametric analysis, this study rigorously evaluates the practical impact of the intervention through effect size measurements. The findings aim to enrich the literature on vocational ESP writing pedagogy, provide robust empirical evidence for experiential outdoor learning, and offer actionable recommendations for English instruction in technical higher education.

LITERATURE REVIEW

Theoretical Foundations of Outdoor Learning

Experiential Learning Theory (Kolb)

Experiential Learning Theory proposed by Kolb (1984) argues that meaningful learning occurs through a continuous cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 2013). Rather than acquiring knowledge solely through classroom instruction, learners construct understanding by directly interacting with authentic environments. In EFL descriptive writing, this experiential process enables students to transform concrete observations into organized written descriptions. Direct exposure to real objects, places, and events enriches idea generation, contextual vocabulary use, and descriptive accuracy, thereby improving the overall quality of students' writing.

Constructivist Learning Theory

Constructivist learning theory posits that knowledge is actively constructed by learners through interaction with their environment rather than passively transmitted by teachers (Taber, 2024) (Suhendi et al., 2021). In language education, outdoor learning provides authentic, real-world contexts in which students actively observe, interpret, and reconstruct information before expressing it through written language. Such experiential learning environments foster deeper cognitive engagement, sensory awareness, and conceptual understanding, thereby making descriptive writing significantly more meaningful and effective than conventional classroom-based instruction (Sulindra et al., 2024)

The implementation of outdoor learning, integrated with place-based learning, experiential learning, and gamification, can create a more authentic EFL learning experience, enhance student engagement and collaboration, build confidence, and improve students' ability to communicate in English within real-world contexts (Fidalgo & Neves, 2026).

Situated Learning Theory

Situated Learning Theory emphasizes that knowledge develops more effectively when learning occurs within authentic social and environmental contexts (Parlar & Soner, 2025). Because descriptive writing requires students to describe real objects and situations accurately, authentic observation becomes an important source of linguistic input. Consequently, outdoor learning creates a contextual learning environment that supports meaningful language production and promotes higher-quality descriptive writing.

EFL Descriptive Writing in Vocational Higher Education

Descriptive writing constitutes one of the fundamental genres in English language learning because it develops learners' ability to communicate observations accurately and systematically. In vocational higher education, descriptive writing extends beyond general language practice by requiring students to describe technical objects, engineering processes, laboratory activities, and workplace environments. Consequently, vocational engineering students need not only grammatical competence but also contextual understanding, technical vocabulary, and observational skills. Conventional classroom instruction often provides limited opportunities to develop these competencies because students rely primarily on textbook materials rather than authentic experiences (Mauludin et al., 2026).

Previous Studies and Research Gap

Previous studies have consistently reported that outdoor learning enhances students' writing performance by promoting authentic learning experiences, increasing learner engagement, and improving idea generation (Hadi et al.,





2021) (Piala et al., 2021). More recent studies have also demonstrated positive effects on creativity, vocabulary development, and paragraph organization (Anggraini, 2025).

Nevertheless, several important gaps remain. First, most studies have focused on primary and secondary school students rather than vocational higher education. Second, previous investigations have rarely examined EFL descriptive writing among engineering students whose writing demands differ substantially from those of general education learners. Third, although statistical significance has frequently been reported, relatively few studies have evaluated the practical magnitude of instructional effectiveness using effect size analysis. Therefore, additional empirical evidence is needed to determine both the statistical and practical effectiveness of outdoor learning in vocational EFL contexts.

Hypothesis Development

H₁: Outdoor learning significantly improves EFL descriptive writing skills among vocational engineering students.

H₂: Vocational engineering students receiving outdoor learning demonstrate significantly higher EFL descriptive writing performance than those receiving conventional classroom instruction.

MATERIALS AND METHODS

Research Design

This study employed a quantitative quasi-experimental research design using a pretest-posttest control group design to investigate the effectiveness of outdoor learning in enhancing EFL descriptive writing skills among vocational engineering students. A quasi-experimental approach was selected because the participants were assigned to existing classes rather than randomly allocated to treatment conditions. Both groups completed identical pretests and posttests, allowing comparisons of learning gains within and between groups following the instructional intervention (Capili & Anastasi, 2025) (Andri Wicaksono, 2022).

Participants

The participants consisted of 48 Industrial Engineering students enrolled in an English course at Politeknik Aceh Selatan, Indonesia. Twenty-four students were assigned to the experimental group and twenty-four to the control group. Because the study involved only two intact classes available during the semester, total sampling was employed. The participants had relatively similar academic backgrounds and were enrolled in the same semester, ensuring comparable instructional experiences before the intervention (Ranta & Zavialova, 2022)

Instructional Procedure

Table 1. Instructional Procedure

Stage	Experimental Group	Control Group
Pretest	Descriptive Writing Test	Descriptive Writing Test
Meeting 1	Outdoor Observation	Conventional Lecture
Meeting 2	Vocabulary Development	Classroom Discussion
Meeting 3	Collaborative Writing	Individual Writing
Meeting 4	Peer Review	Teacher Feedback
Posttest	Descriptive Writing Test	Descriptive Writing Test

Table 1 summarizes the instructional procedures during the research intervention, which consisted of four meetings. The experimental group implemented the outdoor learning method comprising outdoor observation, vocabulary development, collaborative writing, and peer review while the control group received conventional classroom instruction consisting of lectures, class discussions, individual writing, and teacher feedback, with both groups beginning with a pretest and concluding with a posttest.

Instruments

Data were collected using two research instruments. First, students completed descriptive writing tests administered before and after the intervention. The writing tasks required students to produce descriptive texts based on authentic observation topics. Students' writing performance was evaluated using an analytic scoring rubric covering content, organization, vocabulary, grammar, and mechanics. Second, a structured questionnaire employing a five-point Likert scale was administered to examine students' perceptions of outdoor learning (Gizachew, 2026) (Sugiyono, 2021).

Data Analysis

Descriptive statistics, including mean and standard deviation, were first computed to summarize students' writing performance across pre-test and post-test measures (Maria et al., 2024). To evaluate data normality, the Shapiro-Wilk test was conducted because each participating group consisted of fewer than fifty participants ($n < 50$), a condition under which this test provides high statistical power. Additionally, homogeneity of variance between groups was assessed using Levene's test. Because the assumptions of normality and homogeneity of variance were not fully satisfied, non-parametric inferential analyses were employed. Specifically, the Wilcoxon Signed-Rank Test was



performed to examine within-group differences, whereas the Mann-Whitney U Test was conducted to compare post-test writing performance between the experimental and control groups (Mishra et al., 2019).

To evaluate the practical significance of the outdoor learning intervention beyond null-hypothesis significance testing, the non-parametric effect size (r) was calculated using the formula $r = \frac{Z}{\sqrt{N}}$ where Z is the standardized test statistic and N represents the total number of observations. Following Cohen's (1988) criteria adapted for non-parametric measures (Zhang, 2023), the magnitude of r was interpreted as small ($0.10 \leq 0.30$), medium ($0.30 \leq 0.50$), or large (≥ 0.50).

Ethical Considerations

In alignment with the ethical framework outlined by (Hasan et al., 2021), participation in this study was entirely voluntary without any coercion. Prior to data collection, all respondents received a comprehensive explanation of the research objectives and provided informed consent. To uphold ethical standards, integrity, and subject protection, the confidentiality of participants' identities and research data was strictly maintained across all stages of the project, with all collected data being utilized exclusively for academic research purposes. And then the research steps carried out in this study are designed through the following workflow;

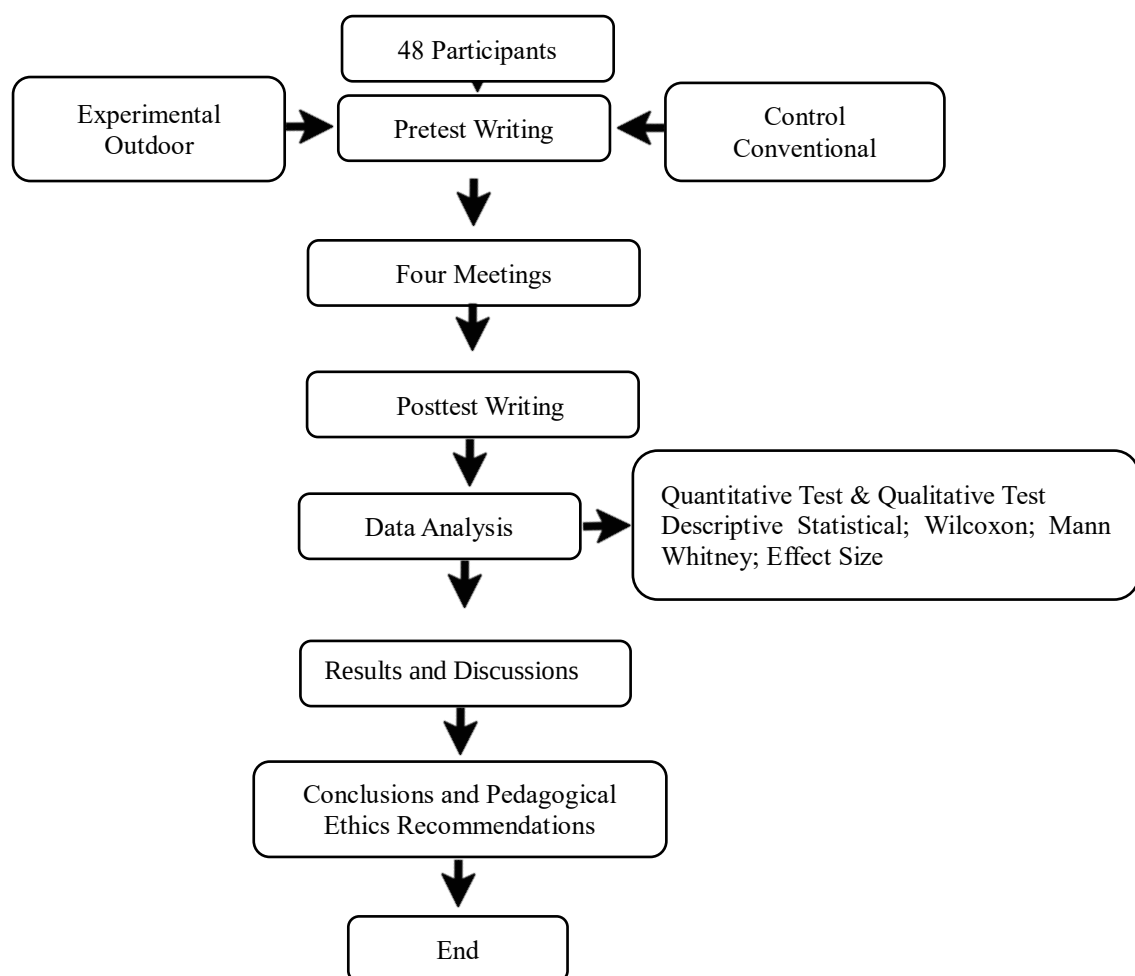


Figure 1. Research Workflow

This research workflow employs a quasi-experimental pretest-posttest control group design, in which both the control and experimental groups initially underwent a writing pretest. Subsequently, the experimental group received an outdoor learning treatment over four meetings, whereas the control group received conventional classroom instruction. Upon completion of these stages, both groups took a writing posttest, after which the data were analyzed using quantitative and qualitative statistical tests, including descriptive statistics, the Wilcoxon test, the Mann-Whitney test, and effect size analysis, to draw research conclusions.

RESULTS

Students' Perceptions of Outdoor Learning





Students reported highly positive perceptions toward the implementation of outdoor learning. Across all questionnaire items, respondent achievement levels ranged from 79,17% to 90,00%, indicating Good to Very Good perceptions. The highest-rated items reflected students' agreement that outdoor learning enhanced idea generation, increased learning motivation, reduced classroom boredom, and provided more meaningful learning experiences. Although grammar improvement received the lowest rating, it remained within the good category, suggesting that outdoor learning primarily strengthened students' creativity, observation, and organization of ideas rather than grammatical accuracy alone.

Descriptive Statistics

Descriptive statistics indicated substantial improvement in students' descriptive writing performance following the implementation of outdoor learning. The experimental group's mean score increased from 64.79 in the pretest to 83.25 in the posttest, representing an average gain of 18.46 points. In contrast, the control group's mean increased from 66.25 to 77.13, corresponding to an improvement of 10.88 points. Moreover, the reduction in standard deviation observed in both groups suggests that students' writing performance became more consistent after instruction, particularly in the experimental group. These descriptive findings provide preliminary evidence that outdoor learning produced greater learning gains than conventional classroom instruction.

Assumption Testing

Prior to hypothesis testing, assumption tests were conducted. The Shapiro-Wilk test indicated that three of the four datasets were not normally distributed ($p < .05$). Furthermore, Levene's test revealed unequal variances between groups ($p < .001$). Therefore, the assumptions for parametric testing were not satisfied, and non-parametric analyses were employed.

Hypothesis Testing

The Wilcoxon Signed-Rank Test demonstrated statistically significant improvement in descriptive writing performance in both instructional groups. The experimental group exhibited significant gains following outdoor learning ($Z = -4.302$, $p < .001$), whereas the control group also improved after conventional instruction ($Z = -4.290$, $p < .001$). Nevertheless, the magnitude of improvement observed in the experimental group was substantially greater, indicating that outdoor learning provided additional instructional benefits beyond those achieved through traditional classroom teaching.

Comparison of posttest scores using the Mann-Whitney U Test revealed a statistically significant difference between the two instructional groups ($U = 3.000$, $Z = -5.925$, $p < .001$). These findings indicate that students receiving outdoor learning outperformed those receiving conventional instruction, thereby supporting the effectiveness of outdoor learning for enhancing EFL descriptive writing skills.

Effect Size

Beyond statistical significance, effect size analysis demonstrated that the instructional intervention produced substantial practical effects. The Wilcoxon effect size reached $r = .878$, while the Mann-Whitney effect size was $r = .855$, both of which fall within Cohen's (1988) large effect category. These findings indicate that outdoor learning not only generated statistically significant improvements but also produced meaningful educational benefits in practical classroom contexts.

DISCUSSION

Part 1

Why did outdoor learning improve descriptive writing?

The significant improvement observed in the experimental group may be explained through Experiential Learning Theory proposed by Kolb (1984). According to this theory, meaningful learning develops through a continuous cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. During outdoor learning, students directly observed authentic objects and environments before transforming their observations into descriptive texts. These authentic experiences provided richer cognitive input than conventional classroom instruction, enabling students to generate ideas more easily and produce more detailed descriptions.

Unlike students who relied primarily on textbook materials, the experimental group experienced authentic situations that stimulated sensory perception, contextual vocabulary acquisition, and idea organization. Consequently, descriptive writing became not merely a language exercise but also a process of interpreting real experiences through written communication.

Part 2

From a constructivist perspective, learning occurs when learners actively construct knowledge through interaction with their environment rather than passively receiving information from teachers. Outdoor learning provided opportunities for students to construct meaning independently by observing real-world phenomena, discussing their





findings with peers, and organizing those experiences into coherent descriptive texts. This process encouraged deeper cognitive engagement, which may explain the substantial improvement in students' descriptive writing performance.

Part 3

The present findings are consistent with those reported by (Hadi et al., 2021), who found that outdoor learning significantly enhanced descriptive writing through authentic observation activities. Likewise, (Piala et al., 2021) demonstrated improvements in vocabulary development and paragraph organization following outdoor project-based learning. The current study extends these findings by providing empirical evidence from vocational engineering students, a population that has received limited attention in previous outdoor learning research.

Part 4

An important contribution of this study lies in the inclusion of effect size analysis in addition to conventional significance testing. Although statistical significance indicates whether differences exist, effect size provides information regarding the magnitude of educational impact. The large effect sizes obtained in both the Wilcoxon ($r = .878$) and Mann-Whitney ($r = .855$) analyses indicate that outdoor learning produced not only statistically significant improvements but also substantial practical benefits for EFL descriptive writing instruction. Such findings strengthen the pedagogical value of outdoor learning beyond mere statistical interpretation.

Part 5

These findings have important implications for English language teaching in vocational higher education. English lecturers may consider integrating outdoor learning into descriptive writing instruction because authentic observation appears to facilitate idea generation, vocabulary development, and learner engagement. Furthermore, curriculum developers may incorporate contextual learning experiences into vocational English courses to strengthen students' ability to communicate technical information in real-world settings.

Part 6

Future studies should examine whether outdoor learning is equally effective for other writing genres, including argumentative, narrative, and academic writing. Longitudinal investigations involving multiple universities and different vocational disciplines would also provide stronger evidence regarding the long-term effectiveness and generalizability of outdoor learning in EFL contexts.

CONCLUSIONS

This study provides empirical evidence that outdoor learning constitutes an effective pedagogical approach for enhancing EFL descriptive writing skills among vocational engineering students. Compared with conventional classroom instruction, outdoor learning produced significantly greater improvements in students' descriptive writing performance, as demonstrated by the Wilcoxon Signed-Rank Test, the Mann-Whitney U Test, and large effect sizes. These findings indicate that authentic learning experiences obtained through direct observation facilitate richer idea generation, improve vocabulary use, strengthen paragraph organization, and increase students' engagement during the writing process.

Beyond statistical significance, this study demonstrates that outdoor learning yields meaningful educational benefits in vocational higher education. Students not only achieved higher writing scores but also reported greater motivation, creativity, confidence, and active participation throughout the instructional process. Accordingly, outdoor learning should be viewed not merely as an alternative instructional activity but as a pedagogical strategy capable of creating authentic language-learning experiences that support the development of descriptive writing competence in EFL classrooms.

Theoretical Implications

The present study contributes to the growing body of literature on EFL pedagogy by providing empirical support for Experiential Learning Theory within vocational higher education. The findings suggest that direct interaction with authentic environments facilitates meaningful language construction, thereby extending previous research on contextual learning and descriptive writing. Furthermore, the inclusion of effect size analysis strengthens the methodological contribution by demonstrating not only statistical significance but also the practical magnitude of outdoor learning in EFL writing instruction.

Practical Implications

The findings provide practical implications for English lecturers, curriculum developers, and higher education institutions. English instructors are encouraged to integrate structured outdoor learning activities into descriptive writing courses to promote authentic observation, contextual vocabulary acquisition, and learner engagement. Curriculum developers may also incorporate experiential learning activities into vocational English programs to better prepare engineering students for workplace communication requiring accurate technical descriptions.





Policy Implications

At the institutional level, vocational higher education institutions should consider incorporating contextual learning strategies into English curricula as part of broader efforts to strengthen students' communication competencies required by industry and professional practice. Such initiatives align with current educational reforms emphasizing student-centered, experiential, and competency-based learning.

Limitations

Several limitations should be acknowledged. First, the study involved participants from only one vocational higher education institution, which may limit the generalizability of the findings. Second, the intervention focused exclusively on descriptive writing; therefore, the effectiveness of outdoor learning for other writing genres remains unknown. Third, the relatively short intervention period prevented examination of long-term learning retention.

Future Research

Future studies are encouraged to investigate the effectiveness of outdoor learning across different writing genres, educational disciplines, and cultural contexts. Longitudinal studies involving multiple universities and larger participant samples would strengthen the external validity of the findings. In addition, future research could integrate outdoor learning with artificial intelligence-assisted writing, mobile learning technologies, or digital collaborative platforms to explore innovative approaches for enhancing EFL writing instruction in vocational education.

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