

فعالية استراتيجية التعلم القائم على المشروعات في تطوير مهارة الكتابة لدى متعلمي اللغة الإنجليزية كلغة أجنبية

The Effectiveness of a Project-Based Learning Strategy in Developing Writing Skills of EFL Students

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DOI: <https://doi.org/10.56989/benkj.v5i8.1539>

الملخص:

أُجريت هذه الدراسة للتحقق من فعالية استراتيجية التعلم القائم على المشروعات في تطوير مهارة الكتابة لدى متعلمي اللغة الإنجليزية كلغة أجنبية في قسم اللغة الإنجليزية بكلية التربية، جامعة صنعاء. ونظرًا لطبيعة الدراسة، تم استخدام المنهج البحثي شبه التجريبي. كما تم تطبيق تصميم كمي؛ حيث أُجري اختبار قبلي/بعدي في مهارة الكتابة على عينة مكونة من 80 طالبًا. استخدمت الدراسة المتوسطات الحسابية، والانحرافات المعيارية، واختبار "ت" (t -test)، ومربع إيتا (η^2)، ومعادلة "بلاك" لمعدل الكسب لتحليل البيانات. خضع المشاركون لأربع وعشرين جلسة استمرت لفصل دراسي كامل، وأجروا اختبارًا قبل وبعد تطبيق استراتيجية التعلم القائم على المشروعات. كشفت النتائج أن مستوى مهارة الكتابة لدى المشاركين قد تطور بشكل كبير، وأنه كان هناك فرق ذو دلالة إحصائية في درجات المشاركين قبل وبعد استخدام استراتيجية التعلم القائم على المشروعات، مما يشير إلى أن فعالية هذه الاستراتيجية في تنمية مهارة الكتابة لدى المتعلمين كانت عالية جدًا. وهذا يعني أن هذه الاستراتيجية كانت ناجحة جدًا في تطوير مهارة الكتابة لدى المتعلمين في جامعة صنعاء. وبناءً عليه، تم التوصية للمعلمين والمتخصصين وغيرهم بتدريس اللغة الإنجليزية، وخصوصًا مهارة الكتابة، من خلال استراتيجية التعلم القائم على المشروعات.

الكلمات المفتاحية: الفعالية، استراتيجية التعلم القائم على المشروعات، تطوير، مهارة الكتابة، متعلمو اللغة الإنجليزية كلغة أجنبية.

Abstract:

This investigation aimed to ascertain the efficacy of a project-based learning strategy in developing the writing skills of English as a Foreign Language (EFL) learners within the English Department, Faculty of Education, Sana'a University. A quasi-experimental research methodology was employed, consistent with the study's exploratory nature. The quantitative design involved administering a pre- and post-intervention writing skill test to a cohort of 80 students. Data analysis was conducted using descriptive statistics, including means and standard deviations, alongside inferential statistics such as the t-test, Eta squared (η^2), and Blake's gain score.

Participants engaged in twenty-four instructional sessions spanning a full academic semester. Their writing skills were assessed both prior to and following the implementation of the project-based learning strategy. The empirical findings unequivocally demonstrated a substantial improvement in the participants' writing skill levels. Furthermore, a statistically significant difference was observed between the pre- and post-intervention scores, strongly indicating the profound effectiveness of the project-based learning strategy in fostering the development of learners' writing abilities. Consequently, the project-based learning strategy proved highly successful in cultivating writing proficiency among students at Sana'a University. Based on these compelling results, it is strongly recommended that educators, subject matter experts, and other relevant stakeholders adopt the project-based learning strategy for English language instruction, particularly for the development of writing skills.

Keywords: Effectiveness, Project-Based Learning Strategy, Developing, Writing Skill, EFL Students.

1. INTRODUCTION:

When it comes to teaching writing in English as a Foreign Language (EFL), Project-Based Learning (PBL) offers a novel and captivating approach that addresses a problem many language learners perceive as challenging and even frightening (Stoller, 2006; Beckett & Miller, 2006). PBL engages students in meaningful, practical tasks, as opposed to the archaic practices of memorizing vocabulary lists or slogging through grammar drills, which can feel removed from real life and occasionally sap students' enthusiasm (Krahnke, 1987; Richards & Rodgers, 2014). Through the opportunity to use English in authentic contexts, these initiatives help students develop their language proficiency in ways that are both beneficial and fulfilling.

PBL encourages students to engage in practical writing tasks such as essays, reports, and presentations—activities that are directly related to their projects and actual communication needs—with an emphasis on problem-solving, teamwork, and learning by doing (Thomas, 2000; Larmer, Mergendoller, & Boss, 2015). In addition to teaching writing conventions, this method keeps students motivated by allowing them to witness the fruits of their labor (Bell, 2010). PBL aligns with our understanding of how people learn languages best—through meaningful input, active use, and authentic interaction—by allowing students to take the initiative and communicate for legitimate purposes (Swain, 2000; Ellis, 2003).

The advantages of PBL are supported by research. Students who worked on projects, for instance, wrote more clearly and appropriately for various contexts than those who followed more conventional lessons, according to Sheppard and Stoller (1995). Real-world projects expose students to English as it is actually used and give them a sense of the various types of writing (Beckett & Slater, 2005). Another important component of PBL is teamwork; when students work together, they frequently feel less anxious about writing in a foreign language and gain

confidence from supporting and learning from one another (Fernández Dobao, 2012; Mishan, 2021).

Additionally, PBL maintains students' interest throughout the entire process and makes them feel more accountable for their own learning (Dörnyei, 2001; Ushioda, 2013). Students feel a sense of pride and ownership, since the process—researching, composing, revising, and sharing their work—is comparable to what actual authors do (Krajcik & Blumenfeld, 2006; Bransford, Brown, & Cocking, 2000). Furthermore, PBL fosters creativity, critical thinking, and problem-solving abilities, all of which are highly valued in today's society, alongside grammar and vocabulary (Trilling & Fadel, 2009).

Teachers are essential to the success of PBL. They provide direction, assist in overseeing group projects, and offer insightful feedback that truly aids in students' development (Larmer et al., 2015). PBL is not without its difficulties, of course. Assessment can be challenging, projects can take longer, and teachers might require additional training. However, these obstacles can be overcome with careful preparation and continuous support (Condliffe et al., 2017).

To put it briefly, Project-Based Learning is a dynamic, student-centered alternative for more conventional approaches to teaching writing in EFL classes. Through the integration of motivation, teamwork, and practical application, PBL enhances students' writing abilities while also improving their overall language proficiency, self-confidence, and communication skills. For this reason, PBL is a particularly effective method for anyone studying English as a second language.

1.2. STUDY QUESTION:

1. What is the effectiveness of using the project-based learning strategy on the development of EFL students' writing skills (five components)?

2. What is the effect size of using the project-based learning strategy on EFL students' writing skill components; (content – organization – vocabulary – language use and mechanics)?

2. LITERATURE REVIEW:

Project-Based Learning (PBL) is a multifaceted teaching approach that has been defined in various ways by scholars, all emphasizing its focus on engaging, real-world tasks. It is characterized by an educational approach where students acquire knowledge and develop skills through sustained engagement with authentic, intricate challenges, as articulated by the Buck Institute for Education (BIE, 2019). Complementing this perspective, Moss and Van Duzer (1998) define PBL as an instructional methodology that contextualizes learning by presenting students with practical problems to solve or tangible products to create.

Thomas (2000) highlights that PBL centers learning around projects, while Kotti (2008) underscores its foundation in the principle of "learning by doing," asserting that knowledge is acquired through practical experimentation and the completion of tasks. Overall, PBL is a student-centered approach that emphasizes hands-on, meaningful learning as a way to build essential skills.

Writing proficiency, a critical skill for communication and self-expression, aligns well with the principles of PBL. Writing proficiency involves the ability to use appropriate grammar, syntax, and vocabulary to communicate effectively. As defined by Kolln and Gray (2017), it is the capacity to construct coherent and meaningful texts, while Bachman (1990) highlights the importance of clarity and coherence. Writing is more than just crafting sentences; it requires resolving challenges related to language use, organization, and content (Flower & Hayes, 1981). Furthermore, Bereiter and Scardamalia (1987) describe writing as the process of transforming

ideas into written form, while Halliday (1989) emphasizes its role in sharing ideas, thoughts, and emotions. Effective writing requires the integration of multiple components, including content, organization, language use, vocabulary, and mechanics.

One essential component of writing is content, which refers to the substance or subject matter of a text. Content includes the ideas, details, and arguments that the author wants to convey. According to Hyland (2019), strong content is accurate, unique, relevant, and well-developed. Effective content directly addresses the writing task or prompt and demonstrates critical thinking through analysis, synthesis, and evaluation. In academic writing, content quality is often assessed based on the strength of arguments and the integration of evidence (Swales & Feak, 2012). In professional settings, content must align with organizational goals and meet audience expectations. Ensuring relevance, depth, and critical engagement allows writers to produce content that communicates meaning effectively and achieves their purpose.

Another critical aspect of writing is organization, which refers to the logical arrangement and sequencing of ideas within a text. Organization includes both the overall structure of the writing and the internal coherence of paragraphs (Oshima & Hogue, 2006). Most texts follow a basic structure of introduction, body, and conclusion, providing readers with a clear path to follow. Effective organization ensures coherence, where ideas flow logically, and cohesion, where transitions and connectors link ideas seamlessly. Different writing genres demand varying organizational patterns, such as chronological order, cause-effect, or problem-solution structures (Reid, 1993). A well-organized text enhances readability and ensures that the writer's ideas are communicated effectively.

Language use, which encompasses grammar and syntax, is another fundamental component of writing. It reflects the writer's ability to construct sentences accurately and appropriately. Effective language use involves a combination of sentence types—simple, compound, and complex—to maintain reader interest and ensure clarity. Errors in grammar, such as incorrect verb tense or subject–verb agreement, can hinder comprehension and undermine the writer's credibility (Weigle, 2002). Additionally, the language must be appropriate for the audience, context, and purpose of the text. For second–language writers, proficiency in grammar is often a key indicator of writing competence. Research has shown that targeted grammar instruction can lead to measurable improvements in writing quality (Ferris, 2013). Mastery of language use is essential for producing clear, professional, and engaging texts.

Vocabulary, the range and accuracy of words used in writing, is equally important in creating impactful texts. A diverse and precise vocabulary enables writers to communicate complex ideas effectively (Nation, 2013). Key aspects of vocabulary include range, which refers to the variety of words used; accuracy, which ensures correct contextual usage; and appropriateness, which involves selecting words suitable for the audience and purpose. Additionally, understanding word collocations—terms that naturally occur together—enhances the fluency and naturalness of writing. Developing vocabulary is a continuous process supported by reading, instruction, and feedback. Writers with a rich vocabulary are better equipped to produce sophisticated texts, as lexical diversity is strongly associated with writing quality (Laufer & Nation, 1995).

The final component of writing is mechanics, which refers to the technical conventions of writing, such as capitalization, punctuation, spelling, and formatting (Heaton, 1990). Proper mechanics ensure that the text is easy to read and understand, enhancing clarity and professionalism.

Errors in mechanics can detract from the writer's credibility and hinder effective communication. In academic and professional contexts, adherence to established style guides (e.g., APA or MLA) is often required to maintain consistency and standardization. Mastery of mechanics allows writers to present their ideas in a polished and professional manner, reinforcing the overall quality of their work.

To conclude, proficiency in writing is a complex capability that demands meticulous consideration of several integrated elements: the substance of the content, the structure of the piece, the application of language, the selection of vocabulary, and the conventions of mechanics. The interplay of these aspects is crucial in producing texts that are not only clear and logically structured but also compelling. The pedagogical strategy of "Project-Based Learning" (PBL) provides a dynamic and pragmatic framework for developing these fundamental writing competencies through its emphasis on authentic, real-world assignments and a learner-centered methodology. By encouraging collaborative effort, fostering ingenuity, and promoting the meaningful use of skills, PBL serves to elevate writing proficiency while also empowering learners with the essential communication tools for enduring success.

3. METHODOLOGY OF THE STUDY:

The primary objective of this research was to investigate the effectiveness of the project-based learning strategy in developing EFL learners' writing skills at Sana'a University. Given the investigative nature of this inquiry, the researchers employed a quasi-experimental design incorporating qualitative research methodologies. The study engaged eighty participants through a comprehensive assessment framework utilizing pre-intervention and post-intervention evaluations during the second academic semester of 2024/2025. The initial assessment was administered at the commencement of the semester, preceding the implementation of project-

based learning interventions, while the concluding evaluation took place upon semester completion, following the conclusion of all project-based learning activities. Throughout the intervention period, participants were systematically organized into nine collaborative units, with each unit comprising six individual members working collectively on assigned projects.

3.1 SAMPLE OF THE STUDY:

This investigation involved a cohort of 80 participants, all of whom were second-year students in the English Department at the Faculty of Education, Sana'a University, Republic of Yemen. The research was conducted throughout the entire of the second academic semester during the 2024–2025 academic year.

These participants were randomly selected. First, they were divided into two groups. Second, these participants had completed studying writing three times; two courses in level one and a third course in the first term, so they were already familiar with the basics of English writing skill; Consequently, the implementation of a Project-Based Learning (PBL) strategy was deemed appropriate for their instruction, with the aim of assessing its efficacy in the development of their writing skills. Over the course of the study, participants engaged in a total of 24 PBL sessions. For the purpose of these sessions, the participants were organized into nine distinct groups, each comprising six individuals. They cooperated, discussed, interviewed, presented and then wrote their projects together.

3.3 INSTRUMENTS OF THE STUDY:

These instruments used in this study were the pretest and posttest for writing skills, as mentioned previously. This instrument was deliberately selected to achieve the objectives of this research. The writing skills test was designed to assess the effectiveness of EFL learners' writing skills at Sana'a University.

3.3.1. TEST:

The research utilized a pre-test/post-test assessment approach to collect empirical data by administering writing skills assessments before and after the implementation of the project-based learning approach. Participants underwent these assessments at two distinct time points: first, before the program's implementation, and later, after its completion. This assessment framework was specifically designed to evaluate the effectiveness of the project-based program in improving writing skills.

The test consisted of three questions: question one, (writing an essay), question two, (finding five errors from a passage — a multi-error paragraph), and question three, (finding the errors in five short passages — Specific paragraph errors). The test included a scoring criterion to assess the learners' performance in writing skills accordingly. The scoring criterion was adopted from Jacobs et al.'s (1981) scoring profile.

4. RESULTS AND DISCUSSION:

Building upon the aforementioned objectives, the core purpose of this study was to determine the efficacy of the project-based learning strategy in fostering the writing skills of EFL students enrolled at Sana'a University, as well as to gauge their attitudes toward its implementation. The data collected from the English language learners were analyzed, specifically using means and standard deviations. Consistent with the research questions delineated earlier, the outcomes of this study underwent comprehensive analysis and subsequent discussion, structured around the following points:

4.1 THE HOMOGENEITY OF THE EXPERIMENTAL AND CONTROL GROUPS:

After selecting the study sample and assigning them to the experimental and control groups, it became important for the researcher to examine whether the two groups were homogeneous and equivalent in their

writing performance before the treatment. Therefore, the writing pretest was administered to determine whether there was a statistically significant difference in the mean scores of the participants' writing performance. For that purpose, an independent-samples test was used to compare the scores of the participants of the experimental and the control groups. The results obtained from the two groups (experimental and control) in the pretest were compared as shown in Table 1.

4.1. A. THE HOMOGENEITY OF THE EXPERIMENTAL AND CONTROL GROUPS (OVERALL):

TABLE 1. The Homogeneity of the Experimental and Control Groups (Overall)

Writing Components	Group	No.	Mean	SD	(t) Value	DF	Sig.
Total	Experimental	40	7.15	0.51	0.418	78	.670
	Control	40	7.19	0.40			

Table 1, presented previously, illustrates the descriptive statistics—specifically the means and standard deviations, pertaining to the writing skills of the participating learners. A review of this table reveals a notable similarity in the overall writing performance between the experimental group ($M = 7.15$, $SD = 0.51$) and the control group ($M = 7.19$, $SD = 0.40$). This finding indicates that, prior to the implementation of the project-based learning strategy, both groups exhibited comparable levels of writing skill, thereby confirming their initial homogeneity. To provide a more granular understanding of the learners' pre-intervention writing skill across its various components, the subsequent table presents the relevant data:

4.1.B. LEARNERS' LEVEL OF WRITING SKILL (COMPONENTS) BEFORE USING THE PROJECT-BASED LEARNING STRATEGY:

TABLE 2. EFL Learners' Level of the Components of Writing Skill Before Using Project-Based Learning Strategy.

Writing Components	Group	No.	Mean	SD	(t) Value	DF	Sig.
Content	Experimental	40	13.61	1.05	0.080	78	.930
	Control	40	13.60	0.79			
Organization	Experimental	40	7.23	0.51	0.914	78	.360
	Control	40	7.34	0.54			
Language Use	Experimental	40	7.20	0.44	0.586	78	.560
	Control	40	7.25	0.30			
Vocabulary	Experimental	40	5.54	0.96	0.634	78	.520
	Control	40	5.66	0.78			
Mechanics	Experimental	40	2.15	0.21	1.155	78	.250
	Control	40	2.10	0.17			
Total	Experimental	40	7.15	0.51	0.418	78	.670
	Control	40	7.19	0.40			

Table 2 shows clearly that the two groups were homogeneous. The statistical mean and standard deviation of the experimental group ($M = 7.15$, $SD = 0.51$) was almost the same as the control group ($M = 7.19$, $SD = 0.40$). Moreover, the significance level was (0.68) which was higher than the level of (0.05). Consequently, both groups were equal in their level of writing skills before the treatment began.

4.2. THE RESULTS RELATED TO THE FIRST QUESTION: STUDENTS' ACHIEVEMENT AFTER CONDUCTING THE PROJECT-BASED LEARNING PROGRAM (EXPERIMENTAL & CONTROL GROUPS):

Question one: "What is the effectiveness of using the project-based learning strategy on the development of EFL students' writing skill five components?"

To respond to this question, a comprehensive writing assessment was developed and subsequently administered to both the experimental and control groups, prior to and following the intervention. The resultant data were then subjected to statistical analysis using the SPSS software package. Specifically, the mean scores from the post-intervention

assessment for the experimental and control groups were compared using an independent samples t-test, while the pre- and post-intervention mean scores within the experimental group were analyzed via a paired samples t-test.

4.2.A. LEARNERS' OVERALL LEVEL OF WRITING SKILL AFTER USING THE PROJECT-BASED LEARNING STRATEGY (EXPERIMENTAL & CONTROL GROUPS):

To determine the t-value and the statistical significance of the difference between the mean scores of the experimental and control groups on the comprehensive post-writing skill assessment, an independent samples t-test was conducted. Prior to this analysis, Levene's test was applied to examine the homogeneity of variances. The appropriate results from the independent samples t-test were subsequently selected based on the outcome of Levene's test, as presented in Table 3.

Table (3): Results of the Independent-Sample t-test (Control – Experimental) of the Post-Writing Skill Test (Overall Post-Test Score).

Writing Skills	Group	No.	Mean	SD	(t) Value	DF	Sign.
	Experimental	40	18.15	1.22	17.63	78	0.000
	Control	40	10.62	2.40			

The results in the preceding table display the outcomes of the independent samples t-test conducted to evaluate the statistical significance of the difference in mean scores between the experimental and control groups on the post-intervention assessment of overall writing skills. The analysis yielded a t-value of 17.63 with 78 degrees of freedom and a significance level of 0.000. Since this p-value is lower than the predetermined alpha level of 0.05, the findings indicate a statistically significant difference in the mean scores between the two groups.

Looking at the performance averages, we find that the experimental group achieved a mean of ($M = 18.15$) with a standard deviation of ($SD =$

1.22), while the control group's mean performance was ($M=10.62$) with a standard deviation of ($SD = 2.40$). This indicates that the performance differences were in favor of the experimental group.

These results indicate that the project-based learning strategy positively and effectively influenced the development of overall writing skills among the participants of the experimental group. The noticeable increase in the mean score of this group reflects the extent to which they benefited from the strategy, compared to the control group, which was not exposed to the same experimental treatment. Therefore, it can be concluded that implementing this educational strategy played a vital role in enhancing students' writing performance.

4.2.B. LEARNERS' OVERALL LEVEL OF WRITING SKILL BEFORE/AFTER USING THE PROJECT-BASED LEARNING STRATEGY (EXPERIMENTAL) GROUP:

To ascertain the t-statistic and the statistical significance of the observed difference between the mean scores of the experimental group on the pre-intervention and post-intervention writing skill assessments, specifically concerning the overall test score, a paired-samples t-test was employed. This analysis was conducted to evaluate the impact of the implementation of the project-based learning strategy. The results of this statistical procedure are visually represented in Table 4.

Table (4): Results of the Paired-Samples t-test (Pretest and Posttest) for the Experimental Group on the overall writing skill.

Writing Skills	Test	No.	Mean	SD	(t) Value	DF	Sign
	Pre	40	7.15	0.51	66.16	39	.000
	Post	40	18.15	1.22			

The table above presents the results of a paired-samples t-test, which aimed to reveal the significance of the differences between the mean scores of the experimental group on the overall writing skill test before and after

the implementation of the project-based learning strategy. The calculated t -value was 66.16, with 39 degrees of freedom, and the significance level was 0.000, which is less than the adopted significance level of 0.05. This indicates statistically significant differences between the mean scores of the pre-test and post-test for the experimental group.

The table shows that the group's mean score on the pre-test was ($M = 7.15$) with a standard deviation of ($SD = 0.51$), while it increased on the post-test to ($M = 18.15$) with a standard deviation of ($SD = 1.22$), confirming a significant improvement in student performance after using the strategy.

These results clearly demonstrate the effectiveness of the project-based learning strategy in developing overall writing skills in the experimental group. The substantial statistical differences between the means of the two tests (pre and post) favored the post-test, reflecting the direct positive impact of the implemented strategy. This improvement is evidence that the students acquired advanced writing skill as a result of the experimental treatment, which reinforces the importance of integrating such modern strategies into the educational process.

4.3. RESULT OF THE SECOND QUESTION:

In response to the second question, which investigates the effect size of the project-based learning strategy on developing English as a Foreign Language (EFL) writing skills, specifically across its components of content, organization, vocabulary, language usage, and mechanics, among students in the English Department at the Faculty of Education, Sana'a University, for the experimental group, the following insights are presented:

In order to ascertain the effect size associated with the disparity in mean scores for the experimental group, specifically comparing their performance on the post-test of writing proficiency assessed across the content, organization, language usage, vocabulary, and mechanics, with their pre-test scores, following their instruction via the project-based

learning strategy, the impact and effectiveness of the independent variable were determined using two separate computational approaches:

4.3.A. THE FIRST METHOD: USING THE ETA SQUARED (η^2) CALCULATION EQUATION, AS SHOWN IN THE FOLLOWING TABLE:

Table (5) Shows the Value (η^2) and Its Corresponding (d) Value, and the Effect Size.

Independent V.	Dependent Vs.	(η^2) Value	(d) Value	Size E.
Project-based learning strategy	Content	0.97	11.58	Large
	Organization	0.99	19.9	Large
	Language Use	0.99	19.9	Large
	Vocabulary	0.99	19.9	Large
	Mechanics	0.92	6.86	Large
	Average	0.99	19.9	Large

The analysis of the data reveals that the project-based learning strategy has had a remarkably significant impact on students' writing skills. (η^2) values, which indicate the proportion of variance in the dependent variable (writing skill) explained by the independent variable (project-based learning strategy), range from (0.92) to (0.99). These exceptionally high values suggest that the strategy accounts for a substantial portion of the improvement observed in students' writing abilities.

Further illustrating this impact are the effect size (d) values, which range from (6.86) to (19.9). In educational research, d value of (0.80) is already considered a large effect size, so these outcomes underscore the extraordinary influence of the strategy. Analyzing each writing skill component individually highlights this effect even more clearly.

For the content component, the η^2 value reached (0.97) and the d value was (11.58), indicating a powerful effect. Students demonstrated enhanced ability to organize ideas and develop content in a logical and coherent manner. In the area of organization, the η^2 value was (0.99) and

the d value soared to (19.9), further reflecting the strategy's strong influence. Students became more proficient at arranging ideas and establishing logical connections between sentences and paragraphs.

Language use also showed substantial improvement, with both the η^2 and d values reaching (0.99) and (19.9), respectively. This suggests that students became more accurate in their use of grammatical structures and linguistic forms. Similarly, for vocabulary, the η^2 and d values were also (0.99) and (19.9), indicating that students were able to use a more varied and contextually appropriate vocabulary. Even in the mechanics component, which had the lowest values in the table ($\eta^2 = 0.92$, $d = 6.86$), the effect was still significant, suggesting that students improved their use of punctuation and spelling.

When considering the total writing skill, the (η^2) value was (0.99) and the (d) value reached 19.9, confirming the comprehensive effectiveness of the project-based learning strategy. These results align with existing literature, which emphasizes that project-based learning promotes active engagement and encourages students to apply their knowledge in real-world contexts.

In summary, the findings clearly demonstrate that the project-based learning strategy is highly effective in enhancing all components of writing skills among students learning English as a foreign language. This supports the study's hypotheses and underscores the importance of adopting project-based learning in English language instruction.

4.3.B. THE SECOND METHOD: USING BLAKE'S GAIN EQUATION TO MEASURE THE EFFECTIVENESS OF USING THE PROJECT-BASED LEARNING STRATEGY IN DEVELOPING WRITING SKILL AMONG STUDENTS IN THE EXPERIMENTAL GROUP:

Effectiveness here means "the average score of students who achieved the required level in writing skill components: content, organization, language use, vocabulary, mechanics.

To measure effectiveness, the researcher used Blake's gain equation, as shown in the following table:

Table (6) Shows the Pre and Posttests Mean Scores for Experimental and Control Groups on Writing Skill Components Test and Blake's Adjusted Gain Ratio.

Writing Components	Experimental G.		Control G.		Total mark of the test	Experiment al Blake's Percentage	Control Blake's Percentag e
	Prete st Mean	Postte st Mean	Prete st Mean	Postte st Mean			
Content	13.61	26.94	13.60	17.18	30	1.25	0.33
Organi.	7.23	18.51	7.34	10.96	20	1.85	0.46
Language U	7.20	18.45	7.25	10.77	25	1.08	0.34
Vocabulary	5.54	22.84	5.66	11.62	20	2.07	0.41
Mechanics	2.15	4.02	2.10	2.59	5	1.03	0.27
Average	35.73	90.76	35.95	53.12	100	1.41	0.54

The results presented in the previous table highlight the effectiveness of the project-based learning strategy in developing students' writing skills. This effectiveness was measured using Blake's gain equation, which assesses the degree of improvement achieved by the experimental group compared to the control group. The findings reveal that the experimental group, which was exposed to the project-based learning strategy, demonstrated a clear and noticeable improvement across all components of writing skills, including content, organization, language use, vocabulary, and mechanics. Specifically, the Blake's adjusted gain ratio for the

experimental group consistently fell within Blake's defined effective range (between 1 and 2), underscoring the strategy's positive impact.

A closer analysis of Blake's adjusted gain ratio for each writing component further illustrates the strategy's effectiveness. For the content component, the ratio reached 1.25, indicating that students became more adept at presenting clearer and more comprehensive ideas in their writing. In terms of organization, the ratio was an impressive 1.85, reflecting substantial improvement in students' ability to logically and coherently structure their ideas. The language use component showed a ratio of 1.08, suggesting that students enhanced their correct use of grammatical rules, which points to a better grasp of English grammar. Vocabulary improvement was particularly notable, with a ratio of 2.07, indicating significant growth in students' ability to use diverse and appropriate vocabulary. Even the mechanics component, with a ratio of 1.03, showed that students made progress in their use of punctuation and spelling. Overall, the total gain ratio for the experimental group stood at 1.41, confirming that the project-based learning strategy was effective in comprehensively improving students' writing skills.

When comparing the experimental group to the control group, the results are even more striking. The experimental group achieved high Blake's adjusted gain ratios—greater than 1 in all skill components—clearly demonstrating the effectiveness of the project-based learning strategy. In contrast, the control group showed only limited improvement, with much lower gain ratios across all components, indicating that traditional learning methods were considerably less effective.

Therefore, there are many studies that go in line with this study, that highlights the beneficial effects of project-based learning (PjBL) on the writing abilities of English as a Foreign Language (EFL) students. In a study

at Debre Markos University, Abebaw et al. (2025) observed notable improvements in students' writing performance following the introduction of PjBL, with participants feeling positive about its impact on their writing, idea development, and teamwork. In a similar vein, Nurul et al. (2025) pointed out that, for PjBL to effectively enhance undergraduate writing skills, it is essential to involve students actively and connect learning to real-life situations. Echoing these results, Taufik et al. (2024) found that students perceived PjBL as having a broad, positive effect on their writing capabilities. Together, these studies indicate that PjBL not only boosts writing achievement, but also encourages greater engagement, cooperation, and relevant language practice among EFL learners.

To conclude, the collected data compellingly demonstrate that the project-based learning strategy markedly augmented the writing skills of the experimental group participants, encompassing every facet under assessment. This outcome substantiates the perspective that project-based learning serves as a highly impactful and efficient method for fostering the development of writing skills among English as a Foreign Language students, thereby proving more effective than traditional teaching strategies.

5. FINDINGS:

The present study investigated the effectiveness of the project-based learning strategy in developing the writing skills of English as a Foreign Language (EFL) students at the English Department, Faculty of Education, Sana'a University. In addition, it explored students' attitudes towards this modern instructional strategy.

The findings revealed a significant enhancement in the writing skills of students who were instructed using the project-based learning strategy, compared to their peers who received traditional instruction. The experimental group demonstrated notable improvements across all writing

skill components, including content, organization, grammar, vocabulary, and mechanics. Blake's adjusted gain ratios confirmed the effectiveness of this approach, with higher ratios in the experimental group for all components.

Beyond measurable skill development, the study also found that students developed positive attitudes towards project-based learning. They reported increased motivation, greater autonomy, and heightened engagement, all of which contributed to a richer educational experience. The strategy fostered a learning environment characterized by teamwork, discussion, and critical thinking, and allowed students to express themselves more confidently and accurately in written English.

A key conclusion is the strong correlation between the development of writing skills and the growth of positive attitudes towards learning, highlighting the holistic benefits of project-based learning. Students not only improved their technical writing abilities but also became more self-assured and proactive participants in their education. This finding underscores the value of integrating modern, student-centered approaches in language instruction.

The study's results align with previous research, confirming the positive impact of project-based learning on language proficiency and student motivation (Abebaw et al., 2025; Nurul et al., 2025; Taufik et al., 2024). However, this study stands out as the first, to the researcher's knowledge, to specifically examine the relationship between writing skill development and attitudes towards project-based learning among university students in Yemen. This expands the existing body of literature and supports the call for a shift toward innovative teaching strategies in EFL contexts.

Several factors contributed to the effectiveness of the project-based learning strategy in this study. Firstly, it shifted the traditional roles of teachers and students: teachers acted as facilitators, while students

became active, responsible participants in their own learning. This decentralization increased student motivation and accountability, as supported by Sari et al. (2023). Secondly, the projects were designed to be relevant to real-life situations, making the learning process more meaningful and directly connected to students' experiences. This approach, as noted by Wardani et al. (2021), is particularly suitable for university students, who benefit from engaging with authentic contexts and higher-order thinking tasks.

The collaborative and interactive classroom environment further enhanced learning outcomes. Students engaged in group discussions, brainstorming, and teamwork, which cultivated a supportive atmosphere for generating and refining ideas. Gustiani et al. (2021) emphasized the importance of such environments in moving students from passive knowledge acquisition to practical application.

Another significant contributor was the strategy's adaptability to individual differences. By offering a variety of projects, the approach accommodated students' diverse abilities, interests, and learning speeds, allowing each student to progress according to their unique strengths. This flexibility helped students deepen their understanding of English, improve their use of vocabulary and grammar, and connect new knowledge to prior experiences.

Moreover, this pedagogical approach promoted the enhancement of advanced intellectual capabilities, specifically encompassing skills in analysis, synthesis, and evaluation. Students learned to approach writing tasks from multiple perspectives, producing coherent and organized texts that reflected critical engagement with the material.

In summary, this investigation revealed that the implementation of project-based learning substantially enhanced the writing skills of English as a

Foreign Language (EFL) students at Sana'a University, particularly across the domains of content, organization, language usage, vocabulary, and mechanics. Participants exhibited considerable advancements in their ability to structure ideas coherently, employ suitable terminology, and apply grammatical conventions with precision.

The strategy also nurtured positive attitudes, self-confidence, and motivation, transforming the learning environment into one that is interactive, engaging, and student-centered. By moving beyond traditional methods, project-based learning enabled students to apply linguistic concepts in meaningful ways, thereby supporting the development of both language proficiency and essential life skills. The findings advocate for the broader adoption of project-based learning strategies in EFL instruction, particularly at the university level, where students are poised to benefit most from such innovative educational approaches.

6. CONCLUSION:

To conclude, the findings of this study offer compelling evidence regarding the effectiveness of the project-based learning strategy in cultivating the writing skills of EFL students at Sana'a University. The systematic administration of writing skills assessments to both the experimental and control groups post-intervention, coupled with pre- and post-intervention testing of the experimental group, produced statistically significant outcomes. Notably, the experimental cohort exhibited superior performance compared to the control group in the post-test across all evaluated dimensions of writing, encompassing content, organization, language use, vocabulary, and mechanics. Moreover, the experimental group displayed a marked and statistically significant enhancement in their writing skills from the pre-test to the post-test, thereby affirming the beneficial influence of the implemented strategy on their developmental trajectory.

The analysis showed that the effect size of the project-based learning strategy was substantial, not only in enhancing students' overall writing skills and their specific components but also in fostering more positive attitudes towards learning. The majority of students expressed strong agreement regarding the effectiveness of this approach, as reflected in a high overall mean attitude score ($M = 4.35$ out of 5, with a relative weight of 87%). These findings highlight that project-based learning can serve as a powerful tool for improving English writing skills and promoting greater engagement and motivation among EFL students.

Overall, the results underscore the value of integrating project-based learning strategies into English language instruction at the university level, as they lead to measurable improvements in students' writing abilities and cultivate positive attitudes towards the learning process. This study affirms the need for educators to adopt innovative, student-centered approaches that not only develop language proficiency but also encourage active participation and autonomy in the classroom.

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