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# Digital Literacy and Writing Proficiency: Integrating Networking Email in Higher Education for EFL Classroom

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## Abstract

This research investigates the use of the Networking Email Strategy (NES**)** as a pedagogical tool to enhance writing skills among firstsemester Department of Public Administration students at Universitas Muhammadiyah Makassar (Unismuh Makassar) in the 2024/2025 academic year in an English as a Foreign Language (EFL) context. The objective is to examine the strategy's impact on five core writing components: content, organization, vocabulary, language use, and mechanics. A preexperimental, onegroup pretest–posttest design (N = 32) was applied involving pre-tests and post-tests over three instructional treatments using email writing tasks. Students engaged in real-time communication, received feedback, and revised their drafts through structured email exchanges. Results demonstrated a significant improvement in students' writing performance, with notable gains in vocabulary and organization. The post-test scores revealed that email-based writing fostered greater engagement, critical thinking, and grammatical accuracy. Students transitioned from informal, disorganized writing to more coherent, structured compositions. Findings align with literature suggesting that authentic writing contexts promote metacognitive development and linguistic competence. Additionally, the intervention supported digital literacy, empowering students to utilize technology responsibly for academic communication. This study provides empirical evidence supporting the integration of digital tools in language instruction, particularly in resource-limited educational settings. It suggests that email communication is a cost-effective, scalable strategy for improving both writing proficiency and digital skills. The implications are vital for educators seeking innovative methods to enhance student engagement and performance in EFL writing.

**Keywords:** Networking Email Strategy (NES); EFL instruction; digital literacy; higher education; language learning technology

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## 1. Introduction

English writing proficiency has emerged as a pivotal skill in global education, especially within the framework of English as a Foreign Language (EFL) instruction. In today's globalized context, writing in English is not only fundamental for academic achievement but also essential for participation in international communication, commerce, and professional development. The importance of mastering English writing is emphasized in numerous national education systems, including Indonesia, where English is taught from elementary to tertiary levels. However, despite its compulsory status in the Indonesian National Curriculum, many students continue to struggle with effective written expression. This challenge is particularly evident among nonEnglishmajor undergraduates in the Department of Public Administration, where students often exhibit low writing performance due to a lack of exposure to formal academic genres, motivation, and authentic practice opportunities.

The complexity of writing in a second or foreign language lies in its multidimensional demands. It encompasses grammatical accuracy, coherence, vocabulary range, organizational structure, and mechanics, each of which must be simultaneously developed. According to Brown & Abeywickrama (2010), writing is often the most demanding skill to acquire among the four language domains listening, speaking, reading, and writing especially for learners at lower proficiency levels. These difficulties are magnified in the Indonesian context, where English is primarily used for limited functions such as tourism, business, and academic tasks, thus reducing learners' opportunities for meaningful and authentic language use. Studies have shown that learners frequently encounter problems in organizing ideas, initiating written paragraphs, and using appropriate grammar and vocabulary, which hampers the development of proficient writing skills (Hamad et al., 2024; AMALIA et al., 2021; Rosmiaty et al., 2023; Nagao, 2022; Yang et al., 2022; Zhai & Razali, 2023).

The challenges faced by EFL learners in Indonesia are both linguistic and contextual. Linguistically, students struggle with subject-verb agreement, tense usage, and syntactic accuracy. Contextually, there is often a lack of instructional

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support, feedback mechanisms, and digital resources that are essential for writing development (Alharthi, 2021; Dewi et al., 2023). These issues are further exacerbated by limited access to authentic writing practices and the scarcity of opportunities for peer and instructor feedback, which are crucial for improvement. The 2013 Indonesian National Curriculum (Kurikulum 2013) mandates writing as a core skill and promotes digital literacy through the integration of technology in instruction, aligning with more recent digitalliteracy expectations (Nabhan & Habók, 2025). Yet, implementation challenges persist due to digital illiteracy among students and teachers, as well as inadequate infrastructure in many educational institutions (Deiniatur & Cahyono, 2024; Ramadhanti et al., 2023).

Compounding these issues is the digital divide, which significantly influences students' engagement with writing tasks. While digital tools offer potential in enhancing student outcomes, many novice teachers lack sufficient training and access to incorporate technology effectively into their pedagogy (Hidayat et al., 2022). Students, too, vary in their familiarity and comfort with digital platforms, particularly email, blogs, and online collaborative tools. Internet and email literacy are foundational for engaging with contemporary writing tasks, yet a lack of exposure inhibits learners from using such platforms effectively. This becomes particularly problematic in regions where educational resources are unevenly distributed and infrastructural disparities are pronounced.

Despite these barriers, research increasingly points to the efficacy of digital tools in improving EFL writing. Tools such as blogs, social networking platforms, collaborative writing apps, and grammar checkers have demonstrated significant promise. Students participating in digital storytelling and blog-based assignments show increased motivation and creativity, which positively impacts their writing quality (Castillo-Cuesta et al., 2021; Hartina et al., 2024). Platforms such as Padlet and Canva, which facilitate peer interaction, have also been shown to enhance engagement and provide opportunities for feedback and shared learning (Ramadhani et al., 2023; Rahayu, 2021). Furthermore, applications like Grammarly support students in identifying and correcting grammatical errors, fostering independent learning and improved language accuracy (Utami & Mahardika, 2023; Barrot, 2020).

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The pedagogical rationale for integrating Information and Communication Technology (ICT) into writing instruction is grounded in its ability to facilitate multimodal and student-centered learning environments. ICT tools promote autonomy, critical thinking, and collaboration among learners, aligning with 21st-century educational goals (Nabhan & Habók, 2025). They provide learners with immediate feedback and allow them to experiment with different writing genres and styles. Moreover, digital platforms support the inclusion of multimedia elements that can enrich writing content and foster deeper engagement. Collaborative digital writing activities, such as shared documents or email correspondence, cultivate communication skills and offer authentic contexts for language use (Quraishi et al., 2024; Cintamulya et al., 2023).

In Indonesia, the implementation of the 2013 National Curriculum reflects a national commitment to incorporating digital literacy and writing skills as core competencies. The curriculum emphasizes that students must not only master conventional writing forms but also be capable of navigating and producing digital texts (Puad & Ashton, 2022; Khasanah & Mistinurasih, 2023). Research supports this approach, indicating that technology-enhanced writing instruction can significantly improve grammar, vocabulary, organization, and overall compositional abilities (Kamaluddin & Rusnilawati, 2022; Shofiah et al., 2024). Furthermore, collaborative writing through digital platforms has been found to enhance students' critical thinking and ability to structure ideas logically.

Building upon these insights, the present study investigates the use of a Networking Email Strategy (NES) as a targeted approach to improve the English writing skills of firstsemester students in the Department of Public Administration at Unismuh Makassar. Email writing offers a structured yet flexible environment for practicing writing in English, integrating real-world communication skills with academic objectives. Despite the growing emphasis on email communication in the professional domain, many students remain unfamiliar with its conventions and lack the digital literacy to use it effectively for academic purposes. This study seeks to address that gap by implementing email-based writing tasks aligned with curriculum goals and digital literacy standards.

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Previous studies have explored various digital writing tools, but limited research has specifically focused on the pedagogical integration of email for enhancing writing among nonEnglishmajor students in the Department of Public Administration. Email writing tasks offer unique benefits, such as the development of formal communication skills, grammatical precision, and logical coherence. Moreover, the asynchronous nature of email allows students to revise their work, reflect on feedback, and build confidence in their writing abilities. Email also serves as a bridge between academic writing and real-world communication, preparing students for workplace demands.

Within this context, the present study identifies a gap in the literature: while digital tools have been widely examined in EFL instruction, the use of email as a structured writing platform in Indonesian higher education particularly within Public Administration programs remains underexplored. Existing studies have demonstrated the utility of blogs and collaborative documents, but there is limited empirical evidence on how email communication can be harnessed to improve analytic writing components (content, organization, vocabulary, language use, and mechanics). This study attempts to fill that gap by examining the effectiveness of the Networking Email Strategy (NES) in a controlled instructional setting.

The objective of this study is to investigate whether the use of the Networking Email Strategy (NES) can significantly improve the English writing ability of firstsemester Department of Public Administration students at Unismuh Makassar (N = 32) in the 2024/2025 academic year. By focusing on measurable improvements across five key writing components, we provide empirical evidence to support the integration of email writing into EFL instruction. This research is timely and relevant, as it aligns with national educational reforms and addresses the urgent need for effective digital writing pedagogy. The novelty of the study lies in its contextual application of a widely used communication tool within a structured instructional framework, offering practical insights for teachers and policy-makers. Ultimately, the study aims to contribute to the enhancement of English writing education in Public Administration programs in Indonesia, while also expanding the scope of research on technology-assisted language learning.

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## 2. Methodology

### 2.1 Research Design.

We employed a preexperimental, onegroup pretest–posttest design to assess the impact of the Networking Email Strategy (NES) on students' English writing ability. This approach is widely adopted in educational research due to its simplicity, feasibility, and effectiveness in determining instructional outcomes over a short period (Kushwah, 2024; Amiruddin & Muslaini, 2022). The model allows us to measure changes within a single group by comparing outcomes before and after the intervention, thereby facilitating preliminary evaluations of teaching efficacy. As noted by Yuliadarwati et al. (2023), such designs are especially relevant when random assignment is not feasible in classroom research**.**

### 2.2 Variables.

The independent variable was the Networking Email Strategy (NES) as an instructional medium, while the dependent variable was students' English writing achievement. We assessed five analytic components content, organization, vocabulary, language use, and mechanics following contemporary guidance in language assessment (e.g., Brown & Abeywickrama, 2010) and widely used rubric frameworks that emphasize comprehensive evaluation of form, meaning, and technical accuracy (Graham et al., 2023; Colognesi & Niwese, 2020).

### 2.3 Setting and Participants.

The population comprised 85 firstsemester students enrolled in three classes in the Department of Public Administration, Universitas Muhammadiyah Makassar (Unismuh Makassar), academic year 2024/2025. We used purposive sampling to select 32 participants whose coursework aligned with the intervention's communicationfocused activities. This approach is common in educational interventions where participant selection is driven by relevance to study objectives, though it limits generalizability beyond nonEnglishmajor EFL learners in this setting (Muico, 2023; Klu et al., 2023).

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### 2.4 Measures (Writing Tasks).

The primary instrument was a timed inclass writing task administered both before (pretest) and after (posttest) the intervention, assessing performance on the five components listed above. Prompts asked students to compose short texts on familiar topics (e.g., personal introductions, daily activities) to ensure accessibility and engagement. Using direct writing tasks allowed us to capture authentic language output and identify specific areas for improvement, consistent with best practices in writing assessment (Guo & Li, 2024; Khachadourian, 2020).

### 2.5 Procedure (Networking Email Strategy).

The intervention comprised **three sessions** of guided writing activities using NES. In Session 1, students received explicit instruction on creating/using email accounts, composing subject lines and formal salutations, and sending assignments. Sessions 2–3 required structured writing tasks (introductions; descriptions of daily routines) submitted via email. We provided formative feedback by email and invited revision/resubmission, creating iterative cycles that mirror authentic communication and reinforce writing conventions (Ariyanto et al., 2021; Cheung & Jang, 2020).

### 2.6 Scoring and Rubric.

To evaluate writing performance, we used an analytic rubric aligned with contemporary guidance in language assessment (Brown & Abeywickrama, 2010) covering five components: content, organization, vocabulary, language use, and mechanics. Each component was rated using clearly defined criteria (e.g., content: relevance, completeness, clarity; organization: coherence and logical flow; vocabulary: range and appropriacy; language use: grammar and sentence structure; mechanics: spelling, punctuation, capitalization). Raw component points were standardized to a 0–100 percentage scale for analysis and reporting, and total scores were computed as X1 + X2 + X3 + X4 + X5 = X. Performance bands were used to aid interpretation: Very Poor (0–49), Poor (50–59), Fair (60–74), Good (75–89), and Excellent (90–100). Such descriptive bands support instructional feedback and progress monitoring (Graham et al., 2022).

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### 2.7 Data Analysis.

We analyzed quantitative data using SPSS 18.0. We computed means, standard deviations, and standard errors for all variables. Assumptions were checked on the difference scores (Shapiro–Wilk test; outlier screening). We then conducted pairedsamples ttests to compare pretest and posttest scores. Effect sizes (Cohen's *d* for dependent means, *d*<sub>z</sub>) and 95% confidence intervals for mean differences were reported, with α = .05. This approach is appropriate for withingroup change in a onegroup pretest–posttest design (Nkala et al., 2024).

### 2.8 Reliability.

Given classroom constraints, scoring was conducted by the course instructor using the analytic rubric and a set of anchor scripts for calibration. To enhance reliability**,** detailed descriptors and a standardized scoring sheet were used, and borderline cases were rechecked after a coolingoff period. We acknowledge that future studies should include independent doublerating and report interrater coefficients.

### 2.9 Validity Considerations.

Content validity was supported by aligning prompts with course learning outcomes and by using familiar topics to reduce constructirrelevant variance. Construct validity was addressed by operationalizing writing through five analytic components consistent with current assessment theory (Brown & Abeywickrama, 2010).

### 2.10 Ethical Considerations.

The study received administrative approval from the Department of Public Administration at Unismuh Makassar. Participation was voluntary; students provided informed consent, and all data were anonymized. No course grades depended on participation or results.

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## 3. Results

This section presents the results of the research on the effect of the Networking Email Strategy (NES) on the students' writing ability. The findings are derived from pretest and posttest scores of 32 students, assessed using five writing components: content, organization, vocabulary, language use, and mechanics. The results are reported in terms of score distribution, mean differences, and ttest outcomes.

### 3.1 Test Results

All 32 students participated in both pretest and posttest writing tasks, which were scored based on the five components. During the pretest, scores ranged from 52 to 91, while in the posttest they ranged from 61 to 97. The frequency distribution of total scores is presented in Table 1.

*Table 1. Distribution of Total Score for Pre-Test and Post-Test*

| No. | Classification | Score | Frequency | |
|---|---|---|---|---|
| | | | Pre-test | Post-test |
| 1 | Excellent | 90 - 100 | 2 | 4 |
| 2 | Good | 75 - 89 | 5 | 20 |
| 3 | Fair | 60 - 74 | 24 | 8 |
| 4 | Poor | 50 - 59 | 1 | 0 |
| 5 | Very Poor | 0 - 49 | 0 | 0 |
| **Total** | | | **32** | **32** |

The data showed a considerable shift in performance. Before the treatment, most students (24) were categorized as "Fair," while only 5 were in the "Good" category. After the treatment, 20 students moved into the "Good" category, and the number of students classified as "Fair" dropped to 8, with none remaining in the "Poor" or "Very Poor" categories.

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### 3.2 Component-Based Score Analysis

The performance of students in each of the five components showed varying levels of improvement.

a. Content

**Table 2**. Content Score during Pre-Test and Post-Test

| No. | Classification | Score | Frequency Pretest | Frequency Post-test |
|---|---|---|---|---|
| 1 | Excellent to Very good | 30 - 27 | 0 | 1 |
| 2 | Good to average | 26 - 22 | 6 | 11 |
| 3 | Fair to Poor | 21 - 17 | 19 | 20 |
| 4 | Very Poor | 16 - 13 | 7 | 0 |
| | **Total** | | **32** | **32** |

As shown in Table 2, most students remained in the "Fair to Poor" category for content in both tests. However, a positive trend was seen as the number of students in the "Very Poor" category decreased from 7 to 0, and more students moved into the "Good to Average" level.

b. Organization

**Table 3**. Organization Score during Pre-Test and Post-Test

| No. | Classification | Score | Frequency Pretest | Frequency Post-test |
|---|---|---|---|---|
| 1 | Excellent to Very good | 20 - 18 | 5 | 15 |
| 2 | Good to average | 17 - 14 | 12 | 17 |
| 3 | Fair to Poor | 13 - 10 | 15 | 0 |
| 4 | Very Poor | 9 - 7 | 0 | 0 |
| | **Total** | | **32** | **32** |

Table 3 indicates a marked improvement in students' organization. The number of students at the "Excellent to Very Good" level increased from 5 to 15. No students remained in the "Fair to Poor" or "Very Poor" categories after the

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treatment, suggesting a significant improvement in their paragraph structure and idea sequencing.

c. Vocabulary

**Table 4**. Vocabulary Score during Pre-Test and Post-Test

| No. | Classification | Score | Frequency Pretest | Frequency Post test |
|---|---|---|---|---|
| 1 | Excellent to Very good | 20 - 18 | 4 | 19 |
| 2 | Good to average | 17 - 14 | 21 | 11 |
| 3 | Fair to Poor | 13 - 10 | 7 | 2 |
| 4 | Very Poor | 9 - 7 | 0 | 0 |
| | **Total** | | **32** | **32** |

According to Table 4, students' vocabulary scores showed considerable improvement. 19 students were in the "Excellent to Very Good" category in the posttest, up from just 4 in the pretest**.** This pattern indicates substantial vocabulary gains following the intervention.

d. Language Use

**Table 5**. Language Use Score during Pre-Test and Post-Test

| No. | Classification | Score | Frequency Pretest | Frequency Post-test |
|---|---|---|---|---|
| 1 | Excellent to Very good | 25 - 22 | 3 | 10 |
| 2 | Good to average | 21 - 19 | 5 | 12 |
| 3 | Fair to Poor | 18 - 11 | 24 | 10 |
| | **Total** | | **32** | **32** |

In Table 5, most students were in the "Fair to Poor" category at pretest, indicating challenges with grammar and sentence structure. At posttest, counts shifted toward "Good to Average," but language use remained the component with the highest number of students below the top two bands.

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e. Mechanics

**Table 6**. Mechanics Score during Pre-Test and Post-Test

| No. | Classification | Score | Frequency Pretest | Frequency Post-test |
|---|---|---|---|---|
| 1 | Excellent to Very good | 5 | 1 | 5 |
| 2 | Good to average | 4 | 5 | 15 |
| 3 | Fair to Poor | 3 | 20 | 11 |
| 4 | Very Poor | 2 | 6 | 1 |
| **Total** | | | **32** | **32** |

As shown in Table 6, students demonstrated modest gains in mechanics (spelling, punctuation, capitalization**).** Five students reached "Excellent to Very Good" at posttest, and the "Very Poor" count declined from six to one.

f. Percentage Distribution Analysis

Table 7 and Table 8 provide a detailed breakdown of the percentage distribution for each component.

**Table 7**. Percentage of Score Distribution during Pre-Test

| No. | Classification | PRE-TEST SCORE FREQUENCY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Content | | Organization | | Vocabulary | | Language Use | | Mechanic | |
| | | f | % | f | % | f | % | f | % | f | % |
| 1 | Excellent to Very good | 0 | 0 % | 5 | 16 % | 4 | 12 % | 3 | 9 % | 1 | 3 % |
| 2 | Good to average | 6 | 19 % | 12 | 37 % | 21 | 66 % | 5 | 16 % | 5 | 16 % |
| 3 | Fair to Poor | 19 | 59 % | 15 | 47 % | 7 | 22 % | 24 | 75 % | 20 | 62 % |
| 4 | Very Poor | 7 | 22 % | 0 | 0.00% | 0 | 0.00% | 0 | 0 % | 6 | 19 % |
| | | **32** | **100%** | **32** | **100%** | **32** | **100%** | **32** | **100%** | **32** | **100%** |

In the pretest (Table 7), the majority of students scored "Fair to Poor" in content (59%) and language use (75%). Vocabulary and organization had higher

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concentrations in the "Good to Average" range. Mechanics remained a weak area, with 62% of students rated as "Fair to Poor."

**Table 8**.ercentage of Score Distribution during Post-Test

| No. | Classification | POST-TEST SCORE FREQUENCY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Content | | Organization | | Vocabulary | | Language Use | | Mechanics | |
| | | F | % | F | % | F | % | F | % | F | % |
| 1 | Excellent to Very good | 1 | 3 % | 15 | 47 % | 19 | 60 % | 10 | 31 % | 5 | 16 % |
| 2 | Good to average | 11 | 34 % | 17 | 53 % | 11 | 34 % | 12 | 38 % | 15 | 47 % |
| 3 | Fair to Poor | 20 | 63 % | 0 | 0.00% | 2 | 6 % | 10 | 31 % | 11 | 34 % |
| 4 | Very Poor | 0 | 0 % | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 1 | 3 % |
| | | **32** | **100%** | **32** | **100%** | **32** | **100%** | **32** | **100%** | **32** | **100%** |

In the posttest (Table 8), the percentage of students scoring "Excellent to Very Good" rose in vocabulary (60%) and organization (47%). Content and language use remained lower, with 63% and 31% respectively in "Fair to Poor."

### 3.3 Mean Scores and Standard Deviation

Tables 14 through 18 show the mean scores and standard deviations for each writing component in both pre- and post-tests.

a. *Content*

**Table 9**. The Mean Score and Standard Deviation of the Content Component

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Content pre test | 15.86 | 32 | 11.47 | 2.03 |
| | Content post test | 63.53 | 32 | 10.93 | 1.93 |

Tables 9–12 present the pairedsamples statistics (mean, standard deviation, and standard error where SE = SD/√N**)** for the five writing components between pretest and posttest scores of 32 students. All components demonstrated increased mean scores after treatment, indicating improvements in students' writing skills.

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b. Organization

**Table 10**. The Mean Score and Standard Deviation of the Organization Component

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Organization pre-test | 68.78 | 32 | 13.91 | 2.46 |
| | Organization post-test | 83.47 | 32 | 8.62 | 1.52 |

The mean organization score during the **pretest** was 68.78 (SD = 13.91). After the intervention, the **posttest** mean improved to 83.47 (SD = 8.62), indicating a positive shift in this component.

**c. Vocabulary**

**Table 11**. The Mean Score and Standard Deviation of the Vocabulary Component

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Vocabulary pre-test | 73.25 | 32 | 11.06 | 1.96 |
| | Vocabulary post-test | 84.34 | 32 | 11.05 | 1.95 |

The mean vocabulary score during the pretest was 73.25 (SD = 11.06). After the intervention, the posttest mean improved to 84.34 (SD = 11.05), indicating a positive shift in this component.

d. Language Use

**Table 12**. The Mean Score and Standard Deviation of the Language Use

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Language use pre-test | 62.09 | 32 | 12.33 | 12.33 |
| | Language use post-test | 74.56 | 32 | 14.88 | 2.63 |

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The mean languageuse score during the pretest was 62.09 (SD = 12.33). After the intervention, the posttest mean improved to 74.56 (SD = 14.88), indicating a positive shift in this component.

e. Mechanics

**Table 13**. The Mean Score and Standard Deviation of the Mechanics Component

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Mechanics Pre test | 56.88 | 32 | 12.38 | 2.19 |
| | Mechanics Post test | 70.17 | 32 | 14.14 | 2.50 |

The mean score of mechanics during the pretest was 56.88 (SD = 12.38). After the intervention, the posttest mean increased to 70.17 (SD = 14.14), indicating a positive shift in this component. Corresponding standard errors were 2.19 and 2.50, respectively.

f. Score Overall

**Table 14**. Overall Score Improvement

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | Pre test | 68.19 | 32 | 8.531 | 1.508 |
| | Post test | 76.15 | 32 | 8.384 | 1.482 |

Table 14 summarizes the students' overall performance. The mean score for all components rose from 68.19 to 76.15, reflecting an improvement of 7.96 points. Based on the performance bands, the overall level shifted from "Fair" to "Good."

### 3.4 T-Test Results

To determine the significance of the difference between pretest and posttest scores, a pairedsamples ttest was conducted. The calculated value was t(31) = 11.774, exceeding the critical value at α = .05 (t_crit = 2.040), so the null hypothesis ($H_0$)

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was rejected. The effect size was large (d_z = 2.08), and the mean difference had a 95% CI of [6.58, 9.34]. These results indicate a statistically significant improvement in overall writing performance and component scores following the Networking Email Strategy.

## 4. Discussion

We investigated the effectiveness of the Networking Email Strategy (NES) as a pedagogical strategy to enhance students' writing performance, specifically focusing on five critical components: content, organization, vocabulary, language use, and mechanics. The implementation of this strategy was evaluated through a pretest–posttest design with structured treatments provided over three sessions. The findings showed a marked improvement across the components measured, offering insight into the multifaceted benefits and instructional challenges associated with technologybased writing interventions.

### 4.1 Interpretation of Pre-Test Performance and Initial Challenges

Before the application of NES, the pretest revealed a wide variability in students' writing skills, with scores ranging from 52 to 91. This variation underscored the heterogeneous proficiency levels within the sample. A number of students displayed significant struggles in content generation and grammatical accuracy, confirming that their writing lacked direction, structure, and linguistic control. These observations were corroborated by the instructor's classroom observations, which indicated students often wrote informally, mimicking spoken language without regard for grammar, mechanics, or coherence. These initial findings resonate with Herda et al. (2024), who emphasized that without structured guidance, students tend to lack awareness of formal writing conventions, resulting in weak performance.

### 4.2 Progressive Improvement Through Email-Based Writing Tasks

Subsequent treatments, which included modeling, translation tasks, grammar instruction, and practical writing using NES, yielded significant improvement in student writing. By the third session, students began to show awareness of writing structure, punctuation rules, and grammatical usage, reflecting a deeper cognitive

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engagement with the material. Shahri and KarimiAghdam (2025) highlighted that authentic writing tasks such as email composition stimulate critical thinking and metacognitive reflection. This aligns with our observation that students gradually developed an ability to organize their ideas more logically and cohesively, an outcome supported by their improved **p**osttest scores across all five components. Notably, the use of authentic writing contexts provided by email communication aligns with Khlaisang and Yoshida (2022), who suggested that digital tools enhance both language and digital literacy. As students transitioned from traditional paperbased tasks to composing and submitting via email, they practiced English composition and acquired practical skills in navigating digital platforms. These outcomes reinforce the dual utility of digital writing tools in our Department of Public Administration context**:** improving academic writing while fostering essential technological competencies.

### 4.3 Broader Implications of Email Communication in EFL Contexts

**Our findings** support the broader implications proposed by Herda et al. (2024), in which emailbased writing offers students a realworld communicative platform. Students were required to articulate ideas with clarity, adhere to format, and respond to feedback tasks that mirror professional communication scenarios. Furthermore, the iterative process of drafting, editing, and submitting emails aligns with findings from *Digital Resources and Technologies for Improvement of Educational Process in Ukraine* (2024), where email communication was shown to nurture selfassessment and promote linguistic accuracy through practice and reflection. Students who actively engaged with the tasks, sought clarification, and demonstrated curiosity toward vocabulary and grammar consistently showed significant improvement. These observations are consistent with findings from Guo and Li (2024), who emphasized that learner autonomy and the ability to seek feedback are strong predictors of writing success in technologyenhanced environments. Additionally, the students' increasing familiarity with email and mobile applications fostered their confidence and efficiency in handling assignments, as discussed by Li (2023) and Yan & Yi (2021).

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### 4.4 Cognitive and Motivational Dimensions of Writing via Networking Email

Cognitive and Motivational Dimensions of Writing via Networking Email Cognitive engagement is evident in students' gradual mastery of content generation, paragraph development, and error correction. Through repeated exposure and feedback, students transitioned from superficial writing to more meaningful compositions. The challenges encountered in earlier stages such as unfamiliarity with sentence structure, vocabulary limitations, and confusion over tense usagediminished as students were provided opportunities to revise and reflect on their work. This supports Shahri and KarimiAghdam's (2025) assertion that authentic writing tasks cultivate deeper cognitive involvement. Motivation also played a crucial role throughout the intervention. Technologybased learning environments fostered intrinsic motivation, as noted by Wang (2025), who described increased learner autonomy through digital platforms. Students appreciated the interactive and novel nature of NES tasks, which allowed for personalization and flexibility. According to Fathi et al. (2022), the inclusion of multimedia components in writing tasks increases engagement and relevance**.** Although not required by our tasks, several students independently embedded images or informal media in their email drafts, further emphasizing their evolving digital literacy.

### 4.5 Learning Variability and Case-Specific Observations

While the majority of students demonstrated notable improvement, we observed individual differences in learning outcomes. One student, for instance, maintained a low score despite repeated exposure to the intervention. Our analysis suggested that the student's persistent vocabulary limitation hindered their ability to express ideas meaningfully. This supports previous literature by Ahmed and Akyıldız (2022), who noted that digital interventions are less effective for students with low language proficiency unless paired with foundational support. In contrast, another student who initially scored low but actively participated, asked questions, and explored vocabulary saw remarkable improvement by the posttest. These contrasting cases highlight the critical role of learner agency and interaction in digital learning contexts. Additionally, absenteeism significantly affected performance outcomes.

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A student who missed two of three NES sessions recorded a posttest score that was considerably lower than peers. These findings align with Yangxi et al. (2021), who emphasized that while technology can enhance learning, its effectiveness is contingent upon consistent engagement and user participation.

### 4.6 Technological Competency and Access Disparities

In our cohort, approximately 60% of students had never used email for academic purposes prior to the study**.** While most possessed email accounts due to social media requirements, they lacked functional literacy in navigating these platforms for learning. Through guided practice, students learned how to format emails, attach files, and use basic tools an important gain for students in the Department of Public Administration. According to Khlaisang & Yoshida (2022), such skills are essential for students to thrive in digital workplaces. Nevertheless, technological challenges persisted. Some students lacked personal devices or had limited internet access, reflecting the concerns raised by Lubis & Samsudin (2021) and Chen & Abdullah (2024), who cited infrastructural barriers as a major constraint in implementing digital pedagogy at scale. Furthermore, the disparity in digital familiarity created an unequal starting point, with some students requiring more assistance than others. These findings reaffirm the importance of targeted digital literacy training, as advocated by Kaldarova et al. (2024), to ensure equitable learning opportunities.

### 4.7 Alignment and Contradiction with Previous Research

Our outcomes largely affirm the benefits documented in previous research on emailbased writing interventions. For example, the improvement in writing selfefficacy observed among participants supports findings by Romrome & Mbato (2022), who noted increased confidence and motivation among students exposed to structured online writing tasks. Similarly, the gradual development of students' writing strategies, including revision and audience awareness, echoes the conclusions drawn by Yabukoshi & Mizumoto (2024), where emailbased projects encouraged selfregulated learning. Conversely, the challenges encountered with a few participants highlight the nuanced nature of technologymediated learning. Students with low digital familiarity or linguistic confidence were slower to adapt,

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occasionally showing signs of frustration or disengagement. These cases align with Woottipong (2020), who emphasized that technology integration must be contextsensitive and inclusive, accounting for individual learner profiles.

### 4.8 Scalability and Sustainability of the Intervention

Although the Networking Email Strategy (NES) proved effective in this study, scaling the approach across broader contexts requires careful consideration. Infrastructure and resource availability remain significant concerns, particularly in underresourced schools. Moreover, teachers' readiness to adopt digital tools into the curriculum is a determinant of success. Kaldarova et al. (2024) noted that without sufficient training in technological pedagogical content knowledge (TPACK), educators may struggle to utilize platforms like email meaningfully. Administrative support is also crucial. Institutional policies need to recognize the pedagogical value of digital writing tools and provide frameworks for their integration. Arslan (2024) pointed out that administrative hesitance or lack of clear policy often stalls digital innovation in education. Therefore, for emailbased writing interventions to be sustainable and effective, a systemic approach involving policy, training, and infrastructure is essential. Given our preexperimental onegroup design and short duration, generalizability is limited; future research should include control or comparison groups, longer exposure, and independent doublerating to strengthen causal inference. The analysis from this study demonstrates that NES not only enhances writing skills but also promotes digital fluency, metacognitive awareness, and learner autonomy. It affirms that authentic, technologybased tasks offer valuable opportunities for cognitive and motivational growth in EFL writing instruction. However, it also highlights the importance of individualized support, equitable access, and institutional readiness in achieving longterm educational impact.

## 5. Conclusion

This study demonstrates the positive impact of integrating the Networking Email Strategy (NES) into English as a Foreign Language (EFL) writing instruction for students in the Department of Public Administration at Unismuh Makassar.

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Across a pretest–posttest design, students' performance improved on all five components content, organization, vocabulary, language use, and mechanics with the distribution shifting toward higher achievement bands. Students who actively engaged with NES activities and revisions showed the strongest gains, and their writing moved from informal, fragmented expression to more coherent and accurate compositions. Beyond language outcomes, NES supported essential digitalliteracy practices (email etiquette, file attachment, concise subject lines), indicating practical readiness for academic and professional communication. Despite variability in device access and initial email familiarity, appropriate scaffolding enabled most students to participate successfully. Implications for practice include embedding short, iterative email tasks with explicit feedback cycles and clear rubrics to promote measurable gains in writing. Future work should examine longer implementations, compare NES with other digital platforms, and test the approach with control groups to strengthen causal claims and assess scalability across programs.

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