**FORUM DE L'ENSEIGNANT Journal**
e-ISSN: 2437-0576 ISSN: 1112-5101
**Volume: 22, Special Issue: 1 / October 2026 pp. 33-46**

# Using Digital Feedback Tools to Improve Writing Skills among Middle School EFL Learners in Online and Hybrid Classrooms

**Received: 31/05/2026; Accepted: 28/10/2026; Published: 31/10/2026**

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**Abstract:**
The integration of digital technologies has transformed the teaching and learning of writing. This study investigates the effectiveness of digital feedback tools in improving the writing skills of middle school EFL learners. A quasi-experimental design was adopted with 50 second-year middle school students (aged 13–14), divided into an experimental group (n = 25), who received digital feedback, and a control group (n = 25), who received traditional teacher feedback, over eight weeks. Data were collected through writing pre-tests and post-tests scored with an analytic rubric (content, organization, vocabulary, grammar, mechanics), classroom observations, and a student questionnaire. The groups were equivalent at pre-test. At post-test, the experimental group (M = 17.68, SD = 1.95) outperformed the control group (M = 13.24, SD = 2.18), $t(48) = 7.62$, $p < .001$, $d = 2.15$, with the largest differences in grammar and mechanics. Observation and questionnaire data from the experimental group indicated high engagement and positive perceptions of digital feedback. The findings suggest that digital feedback tools can support EFL writing development at this level, although the quasi-experimental design and small sample limit causal claims.

**Keywords:**
Digital feedback tools; quasi-experimental design; Middle school EFL learners; Writing skills;

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## Introduction

The rapid integration of digital technologies into education has significantly reshaped teaching and learning practices, particularly in language education. Online and hybrid learning environments have become increasingly common, offering flexible access to instruction while also requiring new pedagogical approaches to maintain effective learner engagement. In this context, digital tools have emerged as essential supports for enhancing interaction, feedback, and student autonomy in language learning processes (Anderson, 2008; Graham, 2019).

Writing is considered one of the most complex skills in second language acquisition, as it requires learners to coordinate vocabulary, grammar, organization, and content development simultaneously. For English as a Foreign Language (EFL) learners, writing presents additional challenges due to limited exposure to the target language and reduced opportunities for authentic practice. Consequently, effective instructional strategies are needed to support learners in developing coherent and accurate written production (Hyland, 2019; Silva, 1993).

Feedback plays a central role in improving students' writing performance, as it helps learners identify errors, revise their work, and develop metalinguistic awareness. Traditional teacher feedback, however, is often time-consuming and may not always provide immediate or individualized support. Recent research highlights the effectiveness of formative feedback in improving learning outcomes, especially when it is timely, specific, and actionable (Hattie & Timperley, 2007; Shute, 2008). With technological advancement, digital feedback tools such as automated writing evaluation systems and online commenting platforms have expanded opportunities for more efficient and interactive feedback delivery.

Despite the growing use of digital tools in education, evidence on their effect on EFL writing development remains uneven and is concentrated in university settings (e.g., Fan, 2023; Li, Link, & Hegelheimer, 2015; Zhang & Hyland, 2018). Studies with school-age learners are fewer and have often been conducted in first-language or English-dominant school contexts (Grimes & Warschauer, 2010; Wilson & Czik, 2016). Results are also mixed: a recent meta-analysis reports a medium overall benefit of automated writing evaluation (Ngo, Chen, & Lai, 2022), whereas a quasi-experimental study with university EFL students found no significant advantage over teacher feedback alone (Fan, 2023). Younger EFL learners are therefore underexplored. This study addresses that gap by examining

the effectiveness of digital feedback tools in improving writing skills among middle school EFL learners, addressing both performance outcomes and learner engagement.

## Research questions and hypotheses

The study answers the following main research question:

**Main RQ:** To what extent do digital feedback tools improve writing skills among middle school EFL learners?

It is addressed through four sub-questions:

- **RQ1.** Do students who receive digital feedback achieve higher overall writing scores than students who receive traditional feedback?
- **RQ2.** How do the two groups compare on each of the five dimensions of the writing rubric (content, organization, vocabulary, grammar, mechanics)?
- **RQ3.** What levels of engagement and motivation toward writing activities are observed and reported among students who use digital feedback tools?
- **RQ4.** How do students perceive the use of digital feedback tools in writing instruction?

RQ1 is tested through the following hypotheses:

- **H1:** Students who receive digital feedback achieve significantly higher overall writing scores than students who receive traditional feedback.

- **H0:** There is no statistically significant difference in overall writing performance between students who use digital feedback tools and those who receive traditional feedback.

## 1. Literature Review:

### 1.1. Digital Feedback Tools in Language Learning

Digital feedback tools have become an important component of modern language teaching, particularly with the rise of online and hybrid learning environments. These tools include automated writing evaluation systems, learning management system feedback features, peer-review platforms, and teacher annotation tools that allow real-time or asynchronous feedback on student writing. Their main advantage lies in providing immediate, continuous, and individualized feedback, which support learners' revision processes and reduces the delay often associated with traditional paper-based correction (Graham, 2019; Li, 2021).

Research shows that digital feedback tools can enhance learner autonomy by allowing students to identify and correct their own errors more effectively. Automated feedback systems, for example, help learners recognize grammatical and structural issues while encouraging self-editing practices. However, scholars also note that these tools are most effective when combined with teacher guidance, as automated systems may sometimes provide superficial or inaccurate feedback on complex language use (Ranalli, 2018; Stevenson & Phakiti, 2014).

In addition, digital feedback tools contribute to increased learner engagement in writing tasks. The interactive nature of online feedback, including comments, highlights, and revision histories, allows students to view writing as a process rather than a final product. This aligns with process-oriented approaches to writing instruction, which emphasize drafting, revising, and continuous improvement (Hyland, 2019).

### 1.2. Writing Skills in EFL Contexts

Writing is widely recognized as one of the most challenging skills for English as a Foreign Language (EFL) learners due to the cognitive and linguistic demands it places on students. It requires mastery of vocabulary, grammar, coherence, cohesion, and organization, all of which must be applied simultaneously to produce meaningful written texts. Many EFL learners struggle with generating ideas, structuring paragraphs, and maintaining grammatical accuracy (Silva, 1993; Fareed, Ashraf, & Bilal, 2016).

In middle school contexts, these challenges are often more pronounced due to learners' limited exposure to English outside the classroom and their developing cognitive and linguistic abilities. Writing instruction at this level typically focuses on basic sentence construction and paragraph development, yet students often continue to exhibit persistent errors in syntax and organization. This highlights the need for supportive instructional strategies that provide continuous feedback and scaffolding (Hyland, 2019).

Furthermore, writing development is strongly influenced by the quality of feedback learners receive. Effective feedback helps learners bridge the gap between their current performance and desired writing standards. According to formative assessment theory, feedback should be clear, specific, and oriented toward improvement rather than evaluation alone. When applied effectively, feedback contributes significantly to writing accuracy and overall language development (Hattie & Timperley, 2007; Shute, 2008).

### 1.3. Relationship Between Digital Feedback Tools and Writing Improvement

The relationship between digital feedback tools and writing improvement has been widely discussed in recent educational research. Studies indicate that integrating digital feedback into writing instruction can significantly improve students' writing accuracy, organization, and vocabulary use. This improvement is largely attributed to the immediacy and clarity of feedback provided through digital platforms, which enables learners to revise their work more effectively (Li, 2021; Ranalli, 2018).

In blended and online learning environments, digital feedback tools also play a key role in maintaining instructional continuity. They allow teachers to monitor student progress, provide consistent feedback, and support collaborative writing activities. This is particularly important in hybrid classrooms, where learners alternate between face-to-face and online instruction, requiring flexible and accessible feedback systems (Graham, 2019).

However, some studies caution that overreliance on automated feedback tools may limit critical thinking if learners accept suggestions without reflection. Therefore, integrating teacher feedback with digital tools is essential to ensure that feedback remains meaningful and pedagogically effective. This blended approach is considered most effective in supporting sustainable writing development among EFL learners (Stevenson & Phakiti, 2014; Hyland, 2019).

### 1.4. Theoretical Framework

This study is grounded in two complementary perspectives. First, formative assessment theory holds that feedback is most effective when it is timely, specific, and actionable, and when it helps learners close the gap between current and desired performance (Hattie & Timperley, 2007; Shute, 2008). Second, process-oriented writing instruction views writing as a cycle of drafting, receiving feedback, and revising (Hyland, 2019), which digital tools can make visible through comments and revision histories. These perspectives guided the choice of outcome measures (writing performance across rubric dimensions) and of engagement indicators (attention to feedback, revision behavior, participation).

## 2. Methodology

### 2.1. Research Design

This study employed a quasi-experimental pre-test/post-test research design to investigate the effectiveness of digital feedback tools in improving writing

skills among middle school EFL learners in online and hybrid classrooms. A quasi-experimental design was considered appropriate because it allows researchers to examine the effects of an educational intervention in naturally occurring classroom settings where random assignment is often impractical (Creswell & Creswell, 2018). The study involved two groups: an experimental group that received writing instruction supported by digital feedback tools and a control group that received traditional teacher feedback. Both groups completed a pre-test and a post-test to measure changes in writing performance before and after the intervention.

### 2.2. Participants and Intervention

The participants consisted of 50 second-year middle school EFL learners enrolled in a public middle school. Their ages ranged from 13 to 14 years. The students were selected using convenience sampling due to their accessibility and availability to the researcher. The sample was divided into two groups: experimental Group (25 students) and control Group (25 students). Both groups had similar educational backgrounds and English proficiency levels as determined by their previous academic records and pre-test results. The experimental group received digital feedback through online platforms and writing applications, whereas the control group received conventional written feedback from the teacher. The intervention lasted eight weeks. The experimental group received digital feedback on their writing through online platforms and writing applications, whereas the control group received conventional written feedback from the teacher. Both groups completed the same pre-test and post-test.

### 2.3. Research Instruments

#### a. Writing Pre-Test and Post-Test

A writing test was administered before and after the intervention to assess students' writing performance. The test required students to produce a short paragraph or composition on a familiar topic appropriate to their educational level. Students' writing was evaluated using an analytic scoring rubric adapted from established EFL writing assessment criteria (Weigle, 2002).

The rubric assessed the following dimensions: content, organization, vocabulary, grammar, mechanics. Each criterion was assigned a specific score, and the total score represented students' overall writing performance.

#### b. Student Questionnaire

A questionnaire was designed to investigate students' perceptions of digital feedback tools and their impact on writing development. The questionnaire

included both closed-ended and open-ended items covering: ease of use of digital feedback tools, perceived usefulness, motivation toward writing, satisfaction with feedback quality, overall learning experience

### c. Classroom Observation Checklist

An observation checklist was used during the intervention period to monitor students' engagement and participation in writing activities. The checklist focused on: student participation, interaction with feedback, revision behavior, task completion, motivation during writing sessions.

## 3. Results

This section presents the findings of the study concerning the effectiveness of digital feedback tools in improving writing skills among middle school EFL learners in online and hybrid classrooms. The results are organized according to the research questions and hypotheses of the study.

### 3.1. Group Equivalence at Pre-Test

Before implementing the intervention, a writing pre-test was administered to both the experimental and control groups to determine whether there were any significant differences in their initial writing proficiency.

**Table n° 01: Pre-Test Writing Scores of the Experimental and Control Groups**

| Group | N | Mean | Standard Deviation |
|---|---|---|---|
| **Experimental** | 25 | 11.84 | 2.31 |
| **Control** | 25 | 11.52 | 2.45 |

The results indicate that both groups had comparable writing proficiency levels before the intervention. The mean scores of the experimental group (M = 11.84) and the control group (M = 11.52) were very close, suggesting that the groups were relatively equivalent at the beginning of the study.

The mean scores were very close, and the difference was not statistically significant ($p = .633 > .05$; negligible effect size). The groups were therefore considered equivalent in writing ability at the outset of the study.

### 3.2. RQ1: Overall Writing Performance

**Table n° 02: Independent-Samples t-Test for Pre-Test Scores**

| Variable | t-value | df | p-value |
|---|---|---|---|
| **Pre-Test Scores** | 0.48 | 48 | .633 |

Note. Independent-samples t-test: $t(48) = 7.62$, $p < .001$, $d = 2.15$.

The p-value (.633) was greater than the significance level of .05, indicating that there was no statistically significant difference between the two groups before the intervention. Therefore, the groups were considered equivalent in terms of writing abilities at the outset of the study.

The experimental group achieved a substantially higher post-test mean than the control group, and the difference was statistically significant with a very large effect size. The null hypothesis was therefore rejected, and the results support H1.

**Table n° 03 Pre-Test to Post-Test Change**

| Group | Pre-test M (SD) | Post-test M (SD) | Mean gain | t | df | p | dz |
|---|---|---|---|---|---|---|---|
| **Experimental** | 11.84 (2.31) | 17.68 (1.95) | 5.84 | 12.41 | 24 | < .001 | 2.48 |
| **Control** | 11.52 (2.45) | 13.24 (2.18) | 1.72 | – | – | – | – |

Note. Paired-samples t-test for the experimental group; $dz = t/\sqrt{n}$. A paired test for the control group was not reported.

The experimental group improved significantly from pre-test to post-test ($p < .001$). This gain is consistent with a positive effect of digital feedback but cannot demonstrate it on its own, since practice, maturation and ordinary instruction also contribute to gains. The control group also improved (by 1.72 points), and the experimental group's mean gain was 5.84 points, about 4.12 points larger. Together with the equivalent pre-test scores, this pattern is consistent with an advantage for digital feedback beyond normal instruction.

### 3.3. RQ2: Writing Components

**Table n° 04 Post-Test Mean Scores by Writing Component**

| Writing component | Experimental M | Control M | Difference |
|---|---|---|---|
| **Content** | 3.74 | 2.95 | 0.79 |
| **Organization** | 3.58 | 2.66 | 0.92 |
| **Vocabulary** | 3.49 | 2.71 | 0.78 |

| | | | |
|---|---|---|---|
| **Grammar** | 3.42 | 2.43 | 0.99 |
| **Mechanics** | 3.45 | 2.49 | 0.96 |

Note. Component means sum to the post-test totals in Table 2 (17.68 and 13.24). Differences are descriptive and were not tested for significance.

The experimental group obtained higher means than the control group on all five dimensions. The largest differences were in grammar (0.99) and mechanics (0.96), followed by organization (0.92), content (0.79) and vocabulary (0.78). This pattern suggests that digital feedback may have been particularly helpful for identifying and correcting language errors.

### 3.4. RQ3: Engagement and Motivation

Engagement was examined through classroom observation and the questionnaire. Both were collected for the experimental group only, so no comparison with the control group is possible.

**Table n° 05 Classroom Observation Results for the Experimental Group (%)**

| Observation item | Frequently observed | Occasionally observed | Rarely observed |
|---|---|---|---|
| Active participation in writing activities | 88 | 8 | 4 |
| Attention to digital feedback comments | 92 | 4 | 4 |
| Revision of writing based on feedback | 84 | 12 | 4 |
| Collaboration with peers during writing tasks | 76 | 16 | 8 |
| Completion of writing assignments on time | 88 | 8 | 4 |
| Positive attitude toward writing activities | 80 | 16 | 4 |

Note. The values are consistent with proportions of the 25 students in the experimental group (e.g., 88% = 22 students).

Observed engagement was high. The most frequently observed behavior was attention to feedback comments (92%), and peer collaboration was observed least often (76%). In the questionnaire (Table 6), 80% of students agreed that they felt more motivated to write and 92% that they revised their work more frequently. These data describe engagement among students who used digital feedback; they

do not show that digital feedback produced higher engagement than traditional feedback.

### 3.5. RQ4: Students' Perceptions

**Table n° 06** ***Students' Responses to the Questionnaire (%)***

| Statement | Agree | Neutral | Disagree |
|---|---|---|---|
| Digital feedback helped me improve my writing. | 88 | 8 | 4 |
| Digital feedback was easy to understand. | 84 | 12 | 4 |
| I felt more motivated to write. | 80 | 16 | 4 |
| I revised my work more frequently. | 92 | 4 | 4 |
| I would like to continue using digital feedback tools. | 88 | 8 | 4 |

Students' attitudes toward digital feedback tools were largely positive: most reported that the tools helped them improve their writing, increased their motivation and encouraged revision, and 88% wished to continue using them.

### 3.6. Summary of Findings

First, the groups were equivalent at pre-test. Second (RQ1), the experimental group significantly outperformed the control group in overall post-test writing scores ($t(48) = 7.62$, $p < .001$, $d = 2.15$), and improved significantly from pre-test to post-test. Third (RQ2), the experimental group had higher means on all five rubric dimensions, with the largest differences in grammar and mechanics; these differences were descriptive. Fourth (RQ3), observation and questionnaire data showed high engagement and motivation in the experimental group, without a control-group comparison. Fifth (RQ4), students held positive perceptions of digital feedback tools.

## 4. Discussion

The purpose of this study was to investigate the effectiveness of digital feedback tools in improving writing skills among middle school EFL learners. Students who received digital feedback achieved significantly higher overall post-test scores than those who received traditional teacher feedback. These results support H1 and suggest that digital feedback tools can be an effective instructional resource for writing development at this level.

The size of the difference calls for caution. An effect of $d = 2.15$ is considerably larger than the average effect reported for feedback in the wider literature ($d = 0.79$; Hattie & Timperley, 2007) and than the medium overall effect

found for automated writing evaluation in EFL/ESL contexts (g = 0.59; Ngo et al., 2022). The groups were intact, non-randomly assigned, and drawn from one school, so the result should be treated as promising rather than conclusive. Not all studies find an advantage either: Fan (2023) found no significant benefit of Grammarly feedback over teacher feedback alone among university EFL students.

The result is consistent with research suggesting that digital feedback supports writing improvement by providing timely, individualized, and actionable comments (Hattie & Timperley, 2007; Li et al., 2015). One possible explanation is that the immediacy of feedback allowed students to revise continuously. However, immediacy and timing of feedback were not measured in this study, so this remains speculative. Alternative explanations include a novelty effect, more writing practice or time on task in the experimental group, and teacher expectancy.

At component level, the largest differences were in grammar and mechanics, which may reflect the capacity of digital tools to detect surface-level language errors and offer specific suggestions for revision. This is in line with work suggesting that computer-generated feedback can support linguistic accuracy (Stevenson & Phakiti, 2014), although that literature is mixed, and the meta-analysis by Ngo et al. (2022) found automated feedback to be less effective for grammar than for vocabulary. Because the component differences in this study were not tested statistically, this interpretation is tentative.

The questionnaire and observation findings were positive: students reported feeling motivated and revising more, and were observed attending to feedback and revising their work. These findings fit the view that technology-supported environments can make learning more interactive and learner-centered (Graham, 2019) and are in line with formative assessment principles that emphasize continuous feedback (Shute, 2008). However, because these data come from the experimental group only, they describe engagement under digital feedback and cannot establish that it exceeded engagement under traditional feedback. Learner autonomy was not measured.

Overall, the findings suggest that digital feedback tools can enhance writing performance among middle school EFL learners. The study contributes evidence from a school-age EFL population, which is underrepresented in a literature dominated by university samples, and shows where further work is needed: larger randomized samples, tested component effects, and control-group data on engagement.

## 5. Limitations of the Study

1. The sample was small (50 students) and drawn from a single institution by convenience sampling, which limits generalizability.
2. Assignment to groups was not random, so pre-existing differences may remain despite equivalent pre-test scores. Possible teacher or researcher bias and a novelty effect of the digital tools cannot be excluded.
3. The intervention is described in general terms (online platforms and writing applications over eight weeks). The specific tools, the frequency of feedback and the exact content of control-group feedback were not controlled or analysed separately, which limits replication, and the findings relate to digital feedback in general rather than to a particular tool.
4. Scoring reliability (e.g., inter-rater agreement) and questionnaire reliability were not statistically estimated, and open-ended questionnaire responses were not analysed.
5. Questionnaire and observation data covered the experimental group only, so engagement and perceptions could not be compared across groups.
6. Component scores were compared descriptively, the control group's pre-test to post-test change was not tested, and no covariate-adjusted analysis (e.g., ANCOVA) was conducted.
7. The intervention lasted only eight weeks, and there was no delayed post-test to examine retention.
8. Teacher attitudes and technological challenges were not examined.

## Conclusion

This study investigated the effectiveness of digital feedback tools in improving writing skills among middle school EFL learners. Students who received digital feedback achieved significantly higher overall writing scores than those who received traditional teacher feedback, and the experimental group's means were higher on all five rubric dimensions, with the largest differences in grammar and mechanics.

Observation and questionnaire data from the experimental group indicated high engagement, motivation and positive perceptions of digital feedback, although these data were not compared with a control group. The findings suggest that digital feedback tools are a promising resource for EFL writing instruction at this level. Given the quasi-experimental design, the small sample and the short duration, the results should be confirmed by larger, longer and, where possible, randomized studies.

## Recommendations

Based on the findings, and with the limitations above in mind:

**For teachers**

1. Use digital feedback tools in writing instruction to give timely, individualized support, particularly for grammar and mechanics, where the largest differences were found.
2. Encourage students to revise their work based on the feedback, since revision was widely reported and observed.
3. Combine digital feedback with teacher feedback so that content and organization also receive guidance, as the literature recommends (Stevenson & Phakiti, 2014).
4. Give students a short orientation on how to use the feedback platforms, since most of them found the feedback easy to understand.

**For schools and administrators**

1. Provide access to suitable digital feedback tools and support teachers' professional development in digital literacy.

**For curriculum designers**

1. Integrate technology-supported feedback and drafting/revising activities into EFL writing curricula.

**For future researchers**

1. Replicate the study with larger, randomized samples, specify the tools and feedback types used, and collect engagement data for both groups.
2. Test rubric components inferentially, use covariate-adjusted analyses, and include delayed post-tests.
3. Measure learner autonomy directly and explore teachers' perceptions**.**

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