



Research Paper

A Comparative Study on the Impact of In-Text Codes, Post-Text Comments, and Uncoded Feedback on Improving Iranian Advanced EFL Learners' Written Grammatical Accuracy

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<http://doi.org/10.71528/jntell.2024.1190939>

Received: 25 October, 2023

Accepted: 05 January, 2024

ABSTRACT

For EFL learners to improve their grammatical accuracy in writing, they need to be provided with corrective feedback. In this regard, coded versus uncoded corrective feedback has remained a rarely explored area and, simultaneously, a controversial issue of investigation in foreign language learning (EFL). To explain such conflicting results, this study investigated the effects of three different types of written corrective feedback: post-text, in-text coded, and in-text uncoded feedback on Iranian advanced EFL learners' grammatical accuracy in writing. To this end, 55 advanced learners at a language institute in Sari, Mazandaran, Iran, were selected and divided into three experimental groups to receive the three types of aforementioned corrective feedback as their treatment. Then, their writing pretest and posttest collected data were analyzed. The results indicated that all three types of written feedback were effective. However, post-text and in-text coded feedback improved writing accuracy more than uncoded feedback. Since providing learners with corrective feedback can help them improve their writing accuracy, it is essential to consider the most appropriate type of feedback in writing classes.

Keywords: In-text coded feedback; In-text uncoded feedback; Post-text feedback; Writing grammatical accuracy.

INTRODUCTION

Writing has always been considered one of the most challenging skills for EFL learners. They need to revise their writing several times before coming up with the final draft (Rahmati & Rahimy, 2016). To assist learners in writing with fewer errors and more accuracy, teachers must provide appropriate feedback to learners with clues about their errors (Mohsen, 2022; Rahimi, 2021; Rasool et al., 2024; Razmi & Ghane, 2024; Wondim et al., 2024). However, Melkersson & Annertz (2022) believe that language teachers often feel that their attempts to provide feedback to correct learners' errors are not effective, as some learners continue to make the same errors. Achieving grammatical accuracy in writing by learners is a challenging task. Therefore, teachers need to apply the best and most useful feedback to help learners overcome the difficulties of writing. Moreover, feedback plays a crucial role in the writing classes, being recognized as a key factor in improving the writing abilities of second/foreign language learners, mainly because of its influence on language acquisition. This claim is backed by several researchers (Aseeri, 2019; Atmaca, 2016; Kang & Han, 2015; Lee, 2019; Yu & Liu, 2021) and is also associated with boosting learners' motivation (Hyland & Hyland, 2006).

Dealing with the process approach of writing, various types of feedback, like direct and indirect feedback, as well as teacher and student conferencing, are acknowledged to be vital tools for guiding EFL learners through different levels of writing processes until reaching the final product of written texts (Cheng & Zhang, 2022; Hyland & Hyland, 2006). Due to the significant role of feedback in classroom writing, many ESL researchers in the field of writing have shown interest in conducting extensive research on various issues related to feedback. Some studies have confirmed that error correction does not enhance students' grammatical writing accuracy (Kim & Emelivanova, 2021; Modirkhamene et al., 2017; Vahdat & Daneshkhah, 2019), while other research studies have claimed that it helps students produce a more accurate final draft of writing (Karimi, 2016; Sattarpour et al., 2023).

To tackle these controversial matters, the present study was an attempt to analyze the efficiency of three unique forms of indirect feedback (in-text coded, in-text uncoded, and post-text feedback) on the grammatical accuracy of advanced Iranian EFL learners in writing, aiming to ascertain the most successful type seeking to address the following research questions:

RQ1: Does the teacher's in-text coded written corrective feedback have any statistically significant effect on written grammatical accuracy of Iranian advanced EFL learners?

RQ2: Does the teacher's in-text uncoded written corrective feedback have any statistically significant effect on written grammatical accuracy of Iranian advanced EFL learners?

RQ3: Does the teacher's post-text written corrective feedback have any statistically significant effect on written grammatical accuracy of Iranian advanced EFL learners?

RQ4: Are there any statistically significant differences among the post-text, in-text coded and in-text uncoded corrective feedback in terms of their impact on written grammatical accuracy of Iranian Advanced EFL learners?

LITERATURE REVIEW

Considering SLA theories, the Interaction Hypothesis (Long, 1996), the Noticing Hypothesis (Schmidt, 1990; 1995; 2001) and the Social Constructivist Theory of Vygotsky (1978) have been dealt with in this study which have provided theoretical support to corrective feedback.



Long's Interaction Hypothesis

Interactionists emphasize the importance of providing feedback, asserting that feedback is a critical element of input. They propose that feedback is essential in assisting learners in recognizing their errors and making connections between form and meaning, thereby aiding in the language acquisition process (Ekanayaka & Ellis, 2021; Herra & Kulińska, 2018; Nassaji, 2017). Furthermore, as highlighted in Dabboub (2019), concerning written corrective feedback, the time that a teacher provides written feedback dealing with the form or vocabulary corrections, clarification or elaboration request, negotiation of meaning occurs. This type of interaction provides comprehensible input, and students can notice the gap between the feedback they receive and their output, which pushes them to produce modified output.

Schmidt's Noticing Hypothesis

Cognitive theories propose that the provision of corrective feedback is essential in improving learning by aiding in the identification and acknowledgment of disparities in language input, as emphasized by Leow and Driver (2021). The Noticing Hypothesis, which was introduced by Richard Schmidt (1990), argues that learners need to actively recognize grammatical elements in language input in order for these elements to be absorbed and applied in language production (Ahadi Kalashi, 2023). By highlighting the difference between the desired language standards and learners' interlanguage, corrective feedback stimulates learners to participate in internal language processing, ultimately resulting in the reorganization of their internal representation of L2/FL rules to better align with the intended linguistic norms (Chen, 2019; Khatib et al., 2018; Sunara, 2018).

Vygotsky's Social Constructivist Theory

Lev Vygotsky, a prominent Russian psychologist of the late 19th and early 20th centuries, is most famous for his sociocultural theory, which emphasizes the importance of culture and social interactions in cognitive development. This theory, also known as social constructivism, proposes that knowledge is actively constructed through social interactions within a specific cultural and historical context (McLeod, 2024). At the core of Vygotsky's framework is the concept of the zone of proximal development (ZPD), which he introduced in 1978. This concept highlights the crucial role of an instructor in an individual's educational journey (Mahn & John-Steiner, 2012). According to Vygotsky (1978), ZPD represents the gap between a learner's independent abilities and their potential accomplishments with the guidance of a more knowledgeable other (MKO), such as a teacher or peer. Vygotsky's theory emphasizes the ZPD as a fundamental element where learning occurs through collaborative social interactions. This collaborative learning approach, as emphasized by scholars (e.g., Bunde, 2023; Man et al., 2024; Mcleod, 2024), underscores the significance of social engagement and cooperation in the educational process.

Vygotsky's theory (1978) posits that children acquire skills by observing and imitating adults, gradually gaining the ability to perform tasks independently. He highlights the distinction between a learner's existing stage of development, as indicated by their ability to solve problems independently, and their potential level of development, as shown by their ability to solve problems with the guidance of adults or through collaboration with more skilled peers. This emphasizes the importance of social interaction and guidance in the learning process, as it can help learners reach their full potential and



advance to higher levels of development. Essentially, Vygotsky's ZPD suggests that learners can handle more complex tasks with minimal adult assistance, eventually reaching a stage where they can autonomously complete the task. However, the strategies and approaches they employ in problem-solving are influenced by their desire to expand their cognitive processes (Hill, 2019; Lantolf & Minakova, 2021; Swain et al., 2013).

As a key concept of ZPD, Scaffolding is a structured support mechanism offered to learners within their Zone of Proximal Development (ZPD), customized to their developmental requirements and capacities to facilitate progress beyond their current abilities. According to Nassaji (2017), scaffolding entails guided support provided to learners during interactions, focusing on the collaborative creation of assistance within the ZPD to ensure effective learning and growth. Hammond and Gibbons (2005) stress the significance of motivating learners to move beyond their current developmental stage through efficient scaffolding. Through providing scaffolded feedback, educators can further assist learners in improving their language skills, particularly in L2 learning settings (Bitchener & Storch, 2016; Nassaji, 2017; Saleem, et al., 2021).

Written Corrective Feedback

The importance of providing corrective feedback is widely recognized as a key element in improving writing skills in a second language (Wondim et al., 2024). Generally, scholars in the field agree that written corrective feedback serves as a way to alert learners to the incorrect use of the target language and to reinforce error correction (Ellis, 2009; Negahi et al., 2022; Van Beuningen et al., 2012). According to Sun (2013), written corrective feedback can come from various sources, such as a casual reader of the composition, the teacher, or peers. However, in L2 classrooms, teachers play a crucial role in providing feedback to second language learners (Mao et al., 2024; Sun, 2013). Moreover, research suggests that students place higher importance on written corrective feedback compared to other types of feedback, like oral feedback and peer feedback (Corpuz, 2011; Kartchava, 2019; Van Ha et al., 2021).

Written corrective feedback can be in forms of corrections, questions about the author's intended meaning, grammar mistakes, explicit corrections, as well as praise for an interesting idea (Dabboub, 2019; Irwin, 2018). As Ellis (2009) put it, effective teacher feedback focuses on linguistic accuracy, vocabulary, grammar, mechanics, and content, helping students identify and address writing issues (Omar & Shamsudin, 2022). In this regard, from the input given by the instructor, the students can focus on their writing problems and infer the meaning and form, as well as the content and organization of the written text. In addition, this input can strengthen what students have already learned (Thi & Nikolov, 2021).

Previous Studies

Previous studies that have investigated corrective feedback (e.g., Semke, 1984; Kepner, 1991; Shepard, 1992) have been criticized for methodological flaws and insufficient outcome measures, including the use of a 'content-comments' group as a comparison instead of a control group with no feedback. Recent research has attempted to address these issues by improving control measures in this area. However, over the past decades, corrective feedback has been recognized as an effective technique for teaching and learning, particularly in second/foreign language. Research has explored various factors that influence



the effectiveness of different types of corrective feedback, such as direct and indirect feedback, including Post-text and In-text Feedback (Bediako & Jianhong, 2021; Chong, 2019; Li & Vuono, 2019). As the present study focused on written corrective feedback, relevant studies on written feedback have been reviewed.

A number of studies have compared direct and indirect feedback methods and studied the extent to which they facilitate accuracy (Fu et al., 2024; Masrul et al., 2024; Nusrat et al., 2019; Shirotha, 2016; Thananchai & Padgate, 2018; Valentin-Rivera & Yang, 2021). Direct feedback occurs when the teacher corrects students' errors. Indirect feedback is indicated by the teacher without correction, leaving students to diagnose and correct it. Many studies indicate that both teachers and students prefer direct feedback over indirect feedback (Nusrat et al., 2019; Paulina, 2024; Shin, 2024; Sihombing, 2023). Several studies report that indirect feedback leads to greater accuracy over time (Eslami, 2014; Shirotha, 2016; Thananchai & Padgate, 2018). Some research findings have shown no significant difference between the two methods, with positive outcomes observed for both direct and indirect feedback (e.g., Ghoorchaei et al., 2022; Nematzadeh & Siahpoosh, 2017).

Concerning the direct and indirect feedback, Wondim et al., (2024) demonstrated a significant improvement in the learners' writing performance, especially when direct feedback was combined with metalinguistic explanations, proving to be the most effective method. The research emphasized the positive influence of both direct and indirect feedback on the enhancement of learners' writing skills, highlighting the essential role of feedback in the development of second language writing proficiency. In contrast, Ghoorchaei et al. (2022) found that neither type of corrective feedback resulted in a substantial improvement in the participants' grammatical accuracy in the short-term or long-term, with a noticeable decrease in accuracy observed in the group receiving indirect feedback during the delayed posttest.

In an investigation conducted by Zapata and Almeida (2022), a descriptive case study was carried out to analyze the impacts of different feedback types on improving the writing abilities of an adult EFL learner in Spain. The results indicated that direct feedback, coded indirect feedback, and uncoded indirect feedback each played a significant role in addressing distinct error types, ultimately resulting in enhancements in language proficiency. Similarly, Masrul et al. (2024) explored the influence of written corrective feedback on EFL students' revised texts in Indonesia. The research highlighted the importance of feedback type in enhancing various language skills, with direct feedback being advantageous for accuracy in the long term, while indirect feedback contributed to fluency. Both studies emphasized the benefits of utilizing a range of feedback methods in language acquisition, as they not only facilitated error rectification but also fostered the assimilation of language features. The outcomes underscore the necessity of customizing feedback strategies to target specific language aspects in order to optimize the efficacy of language learning interventions.

There is also another type of indirect feedback called post-text feedback, which is an alternative to indirect feedback. In this type of feedback, like in-text feedback, the teacher highlights the errors in the text and gives a summary of repeated error forms at the end of the students' writing tasks. Post-text feedback has four significant advantages: a) it leads to correct revision; b) it requires cognitive effort; c) it potentially leads to more long-term improvement; and d) it is easy to use for review (Bankier, 2012;



Ebrahimzadeh & Mashhadi Heidar, 2014). Besides the aforementioned advantages, post-text feedback suffers from one major drawback. According to Bankier (2012), the post-text feedback cannot be used for all types of errors. It cannot be applied to correct minor errors such as subject-verb agreement. In other words, the teacher only highlights the errors but does not provide any comments. In contrast, the teacher highlights the grammatical errors that affect meaning (like verb tense) and writes comments about them while providing post-text feedback. However, concerning the studies on post-text feedback, Bankier (2012) demonstrated that post-text feedback in writing classes facilitated revisions that could be either accurate or unchanged. In a similar vein, Ebrahimzade and Mashhadi Heidar (2014) highlighted that students who were provided with post-text feedback outperformed those in the control group.

MeTHODOLOGY

The Research Design

The study's research design involves a comparative analysis of the impact of three different types of feedback - in-text codes, post-text comments, and uncoded feedback - on enhancing the written grammatical accuracy of advanced EFL learners in Iran. Participants will be selected and randomly assigned to one of the three feedback groups. Pretests and posttests were administered to assess changes in grammatical accuracy. The quantitative data collected underwent inferential statistical analyses, including paired samples t-tests within each group for pretest and posttest comparisons, and one-way ANOVA to compare posttest results across all groups, determining if there are significant differences in improvement among the feedback conditions (Creswell & Creswell, 2018). By employing robust statistical methods, this research aims to provide valuable insights into the effectiveness of different feedback approaches in enhancing EFL learners' writing skills.

Participants

The study included 55 male and female students out of a total of 83 participants, who were chosen from Iranian advanced EFL learners aged between 16 and 45. These individuals were carefully selected from three advanced language classes held at Khavarmiane English Institute in Sari, Mazandaran, Iran.

Instruments

The following instruments were employed to collect data for the present study:

Placement test

In order to homogenize the participant learners in this research, Nelson English Language Proficiency Tests were administered. Each test consisted of 50 multiple-choice questions, entailing 37 grammar, 7 vocabulary and 5 pronunciation questions, to each of which one score was assigned. The total score of the test was 50 and the allocated time to answer the questions was 40 minutes.

Pretests and posttests

The pretest in this study included a topic on which the students had to write a narrative paragraph on "Technology" in three tenses (present, past and future). After completing the therapy sessions, students participated in a writing assessment during class focusing on "future transportation systems" as a follow-



up evaluation. The writing prompts for both the pretests and posttests were selected from the Top-Notch final exam created by Joan Saslow and Allen Asher (Pearson Education, Inc. 2006). Each assessment was allotted a time frame of one hour.

Data Collection Procedure

To achieve the purpose of the study, the following procedures were conducted to collect the demanded data: First, 83 English learners participating in three advanced English classes at Khavarmiane English Institute in Sari were selected. Then, Nelson English Language Proficiency Tests were administered to homogenize and recognize the right level of the students. For the study, 55 students were selected from the group, with their scores being one standard deviation above or below the mean. All three advanced classes served as the experimental groups.

Next, the selected participants took an in-class writing pretest. As long as taking into account all types of grammatical errors were impossible in a short period of time, this study only considered grammatical written errors, including verb tenses, passivation, word order, prepositions, and articles. During the treatment period, the students in each group were required to write a paragraph on topics assigned on a weekly basis and then each group was randomly provided with one type of feedback, namely, post-text, in-text coded, and in-text uncoded feedback. In the first experimental group that received post-text comments, the teacher highlighted and commented on the participants' errors at the end of the text. Then, the students were asked to correct the errors based on the teacher's comments or examples.

Considering the second experimental group who were provided with in-text coded feedback, unlike the post-text one, the teacher did not write the comments at the end of the text but wrote some codes inside the text and above the errors to make the learners understand their problems. And the students corrected the errors based on the codes given by the teacher. Finally, in the uncoded feedback group, the teacher just underlined or drew a circle over each error without commenting on them. No corrections were provided, and the learners had to revise the paragraphs and return them to the teacher again for further evaluation.

After the pretest, the students in all three groups were required to write one paragraph on the topics assigned on a weekly basis. Furthermore, the students were required to organize their writing in a way to include three verb tenses, i.e., present, past, and future. All these papers were collected, read and returned to the learners for further revision, but no corrections were made by the teacher. Finally, all groups sat down to write the posttest the same as the pretest. After counting the number of specific grammatical errors in writing pretests and posttests, the raters assessed and scored the papers according to the assessment scale for written work based on the ESL profile published in Jacobs (1981). And inter-rater reliability of 92% proved high agreement among the raters in correcting the papers. In addition, the following linguistic errors were targeted in this study:

- 1) Inappropriate use of articles (definite and indefinite)
- 2) Inappropriate use of simple past tense (regular and irregular)
- 3) Inappropriate use of simple present tense (third person S)
- 4) Inappropriate use of future tense (will and to be going to)



- 5) Inappropriate use of plurals (regular and irregular)
- 6) Passivation
- 7) Preposition
- 8) Word order

Data Analysis

The current study's quantitative nature necessitates the utilization of both descriptive and inferential statistical techniques to effectively respond to the research questions. In order to address the initial three research questions and assess the written texts of the learners, a paired samples t-test was employed to compare the pretest and posttest results within each group. Additionally, to investigate the fourth research question, a one-way ANOVA was used to analyze the differences in means among groups classified according to the independent variables across all posttests.

RESULTS

During the first phase of data analysis, the primary step consisted of evaluating the uniformity of students according to their overall proficiency levels. The research utilized Nelson Proficiency Tests to assess students in three advanced classes. It should be emphasized that the researcher scored the test on a 50-point scale. These descriptive statistics are presented in Table 1.

Table 1

Descriptive Statistics of the Participants' Scores on Proficiency Test

| | N | M | SD | Min. | Max. |
|----------|----|---------|---------|-------|-------|
| Advanced | 83 | 39.1928 | 5.19957 | 27.00 | 50.00 |

Before commencing data analysis, it is crucial to evaluate the normality of the data. This was accomplished by employing the Kolmogorov-Smirnov and Shapiro-Wilk tests. The null hypothesis for both tests posits that the data adheres to a normal distribution. The null hypothesis is accepted if the probability value is greater than 0.05, and rejected if the probability value is less than or equal to 0.05.

Table 2

Tests of Normality of Advanced Groups' Proficiency Test

| Group | Kolmogorov-Smirnov ^a | | | Shapiro-Wilk | | |
|----------|---------------------------------|----|------|--------------|----|------|
| | statistic | Df | Sig. | statistic | df | Sig. |
| Advanced | .093 | 83 | .072 | .980 | 83 | .210 |

According to the data provided in Table 2, it is evident that the p-value is greater than 0.05. This indicates that the data obtained from the proficiency tests conforms to a normal distribution. After collecting the data through the aforementioned procedures, ANOVA and paired sample t-tests were utilized to compare the students' pretest and posttest scores. The descriptive statistics of all groups' pre and posttests are indicated in Table 3 below. It must be noted that the three raters rated the students' pre



and posttests and the inter-rater reliability for both tests indicated that the scores provided by the three raters had a high positive correlation of 92% with each other.

Table 3

Descriptive Statistics of Advanced Groups' Pretest and Posttest

| | N | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|----|---------|---------|---------|----------------|
| Posttest in-text | 18 | 17.00 | 19.67 | 18.6111 | .79418 |
| Pretest in-text | 18 | 14.00 | 16.00 | 14.9815 | .75383 |
| Pretest uncoded | 19 | 14.00 | 17.67 | 15.5088 | 1.06208 |
| Posttest uncoded | 19 | 15.00 | 19.67 | 17.6491 | 1.20428 |
| Pretest post-text | 18 | 13.67 | 15.67 | 14.5741 | .53389 |
| Posttest post-text | 18 | 18.33 | 20.00 | 19.1111 | .47140 |
| Valid N | 18 | | | | |

It is crucial to verify the accuracy of data analysis by initially assessing the normality of the data. An overview of the normality tests performed on the pretest and posttest scores for the three groups is presented in Table 4.

Table 4

Normality Test of Pretest and Posttest

| | | Kolmogorov-Smirnov ^a | | | Shapiro-Wilk | | |
|----------|-----------------|---------------------------------|----|-------|--------------|----|------|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| Pretest | in-text coded | .181 | 18 | .121 | .863 | 18 | .014 |
| Posttest | in-text coded | .139 | 18 | .200* | .949 | 18 | .408 |
| Pretest | in-text uncoded | .105 | 18 | .200* | .962 | 18 | .635 |
| Posttest | in-text uncoded | .128 | 18 | .200* | .977 | 18 | .913 |
| Pretest | post-text | .176 | 18 | .144 | .934 | 18 | .224 |
| Posttest | post-text | .204 | 18 | .045 | .923 | 18 | .148 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results presented in Table 4 demonstrate that the data collected from the pretest and posttest scores of the three groups followed a normal distribution, as indicated by a p-value exceeding 0.05. Consequently, a paired sample t-test was utilized to assess the differences between the pretest and posttest scores within each group.

Table 5

Post-text Paired Sample t-test

| Paired Differences | t | df |
|--------------------|---|----|
|--------------------|---|----|



| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|--------------------|---------|----------------|-----------------|---|------------|--------|----|-----------------|
| | | | | Lower | Upper | | | |
| | | | | Mean | Std. Error | | | |
| Pretest - Posttest | 4.53704 | .59561 | .14039 | 4.24084 | 4.83323 | 32.318 | 17 | .000 |

The result of the Table 5 reveals that the students' pretest and posttest scores of post-text feedback group were significantly different from each other, since the p value is $.000 < .05$. Therefore, it can be concluded that post-text feedback improved the written grammatical accuracy of advanced learners. Then, the first null hypothesis was rejected.

Table 6*In-text coded Paired Sample t-test*

| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|--------------------|---------|----------------|-----------------|---|------------|---------|----|-----------------|
| | | | | Lower | Upper | | | |
| | | | | Mean | Std. Error | | | |
| Pretest - Posttest | 3.62963 | 1.08398 | .25550 | 3.09058 | 4.83323 | 4.16868 | 17 | .000 |

The analysis of pretest and posttest scores for in-text coded groups was conducted through a paired-sample t-test, as demonstrated in Table 6. The results revealed a statistically significant variance between the two assessments, with a p-value of 0.00, falling below the critical threshold of 0.05. Consequently, the rejection of the second null hypothesis suggests that the utilization of in-text coded feedback had a discernible effect on improving the written grammatical proficiency of advanced English learners.

Table 7*In-text Uncoded Paired Sample t-test*

| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) |
|--------------------|---------|----------------|-----------------|---|------------|-------|----|-----------------|
| | | | | Lower | Upper | | | |
| | | | | Mean | Std. Error | | | |
| Pretest - Posttest | 2.14035 | 1.65297 | .37922 | 1.34365 | 2.93705 | 5.644 | 18 | .000 |

The third null hypothesis, which suggests that the teacher's in-text uncoded written feedback has no statistically significant impact on the written grammatical accuracy of Iranian Advanced EFL learners,



was examined through a paired-sample test comparing pretest and posttest scores of the in-text uncoded feedback group. The results indicated a significant difference between the two sets of scores, with a probability value of 0.00, falling below the critical value of 0.05. These findings imply that in-text uncoded feedback does indeed contribute to improving learners' grammatical writing accuracy, leading to the rejection of the third null hypothesis. To determine any notable differences in the performances of the three groups, a one-way ANOVA analysis was carried out. The inferential statistics of the posttests for the three groups can be found in Table 8.

Table 8

Results of One-Way ANOVA For the Three Groups' writing Posttest Scores

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 20.518 | 2 | 10.259 | 13.138 | .000 |
| Within Groups | 40.605 | 52 | .781 | | |
| Total | 61.123 | 54 | | | |

Table 8 demonstrates a statistically significant variance among the means of the three groups, with a significance level of .00, below the threshold of 0.05. This suggests that all three forms of feedback contributed to enhancing the written grammatical accuracy of Iranian Advanced EFL learners. Additionally, to determine the superiority of one group over the others, multiple comparison analyses were conducted.

Table 9

Multiple Comparison

| (I) VAR00001 | (J) VAR00001 | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|--------------|--------------|-----------------------|------------|------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| Posttest | in-text | .50000 | .29456 | .096 | -.0911 | 1.0911 |
| | uncoded | 1.46199* | .29065 | .000 | .8787 | 2.0452 |
| Posttest | in-text | -.50000 | .29456 | .096 | -1.0911 | .0911 |
| | coded | .96199* | .29065 | .002 | .3787 | 1.5452 |
| Posttest | Post-text | -1.46199* | .29065 | .000 | -2.0452 | -.8787 |
| | | -.96199* | .29065 | .002 | -1.5452 | -.3787 |

*. The mean difference is significant at the 0.05 level.

The results presented in Table 9 indicate a significant contrast in the performance of the post-text, in-text uncoded, and in-text coded groups during the posttests ($p = .00 \leq 0.05$). Notably, there was no notable distinction between the post-text and in-text coded groups, as the p value was $.09 > .05$. Additionally, the findings suggest that both the post-text and in-text feedback groups exhibited better performance compared to the in-text uncoded group. As a result, it was deduced that offering learners codes and comments on their grammatical errors in writing proved to be more beneficial than merely highlighting the errors.



DISCUSSION AND CONCLUSIONS

The results of the present study indicated that the EFL learners in all three groups exhibited improvement in their posttest scores. This indicates that the provision of indirect written feedback had a significant influence on enhancing the grammatical proficiency of the learners in their writing tasks. However, there was no statistically significant difference in the learners' performance when comparing post-text feedback with in-text feedback. Moreover, both post-text and in-text coded feedback were deemed more advantageous than uncoded feedback in improving grammatical accuracy in writing. Consequently, it can be posited that students who received both post-text and in-text coded feedback demonstrated superior performance compared to those who only received in-text coded feedback.

Therefore, this result supported the different types of research on feedback conducted by Thananchai and Padgate (2018), Nassaji (2017), Leow and Driver (2021), Shirotha (2016), Omar and Shamsudin (2022), and Berkant et al. (2020) who claimed that indirect error feedback can help students draw their attention to the syntactic structures of the sentences. Furthermore, the obtained results of this study suggested that indirect feedback generally showed better results compared to direct one since it allowed the students to have the 1. The results of the current investigation align with Bankier's (2012) study, which explored the efficacy of three different forms of indirect feedback and concluded that post-text feedback yielded better results compared to in-text coded and uncoded feedback. However, these outcomes are contradictory to the research conducted by Robb et al. (1986), who argued that providing feedback of any type can be advantageous. Moreover, the overall conclusions of this study contrast with those of Ghoorchaei et al. (2022), who demonstrated that the various types of corrective feedback did not significantly enhance the short-term and long-term retention of subject-verb agreement among participants. Additionally, Wahyuni's (2017) findings diverge from the present study's results, as he found no notable disparity in writing quality between students who received direct corrective feedback and those who received indirect corrective feedback in the primary analysis.

Consequently, the EFL teachers of the writing classes are recommended to use both in-text and post-text feedback in their classrooms. They should also keep in mind that a single piece of feedback that is always the best for all the learners and all types of errors that come up in all situations, does not exist. Therefore, the main pedagogical implication of the present study can address the teachers' role in encouraging the learners to use accurate language forms and structures through observing learners' errors and providing them with the proper type of feedback for their writing. The present research was restricted by specific limitations. At first, the study solely focused on examining the influence of indirect feedback on the grammatical precision of second language writing, failing to investigate other crucial aspects of writing such as fluency, complexity, and rhetorical conventions. Second, this research was carried out among advanced learners; further research can be undertaken to see if the findings are also true about writers at other proficiency levels. Finally, factors such as aptitude, motivation, and attention might vary among the participants; therefore, in future studies, their roles could be investigated.

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