

# Enriching the Zone of Audacity through AI-Assisted Corrective Feedback: Iranian EFL Learners' Writing Anxiety Revisited

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Audacity, Artificial Intelligence (AI), Corrective Feedback (CF), Anxiety

## ABSTRACT

Among the four skills of reading, writing, listening and speaking, writing skill seems more challenging as it demands more audacity to be activated and trigger the passive knowledge into an accurate and cohesive output. No doubt, corrective feedback plays a crucial role in this regard. This study aimed at depicting the engagement of Artificial Intelligence bots into the process of English language learners' writing tasks. Some 60 Iranian EFL sophomores were selected via an Oxford test of English language proficiency, and randomly assigned into two groups of experimental and one control. The experimental groups were trained to receive corrective feedback, one experimental via AI-Bots and one experimental via teacher-n-peers, to improve their performance in writing tasks. The control group followed the conventional trend and received no corrective feedback. The design of the present study was quasi-experimental pretest-posttest design. The accredited writing anxiety questionnaire along with a validated writing-tasks test, were the instrument of the present study and they were administered before and after the treatment. The data obtained from the pretest and posttest phases went through statistical analysis by computer program SPSS 24. The result confirmed that the artificial-intelligence-assisted group outperformed the teacher-n-peers-assisted group significantly and it was due to the application of AI-assisted bots in conducting the corrective feedback in writing course. The findings would be beneficial for EFL teachers, learners, policy makers in the English language teaching and learning field.

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## Introduction

The process of teaching and learning a new language like English embraces four skills of reading, writing, listening and speaking. Of course reading and listening skills are receptive and less challenging whereas writing and speaking are regarded as productive skill and demanding. In speaking skill, the present interlocutor could easily make use of the body language and other features to save face and dodge the challenging situation, hence, in writing skill the paucity of such present clues make it more challenging and that's why authorities such as Chastain 1988 labeled writing as the fundamental communication skill. What counts in writing skill is the proper conveyance of the intended message (Harmer, 2003) and it would be manifested through proper juxtaposing of writing component (Williams & Polio, 2009) just the same as notes of music.

Since writing skill is the productive skill and it reflect streams of thought, many EFL learners might find it difficult to manifest their thoughts in the form of words, sentences and linguistic means (Nunan, 2003) in a foreign/second language, so writing efficiently in another language

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rather than their mother tongue renders challenging and vital for the practitioners worldwide (Ghoorchaei et al., 2010). In the same line, many scholars like Batstone (1994) and Ellis (2008) highlighted that the infrastructure of good meaningful and targeted writings lied in the pivotal role of grammar and grammatical accuracy. The knowledge of grammar and grammar accuracy would be learned via intensive practice and rectifying probable errors. Many scholars (Ashwell, 2000; Liu, 2008) believe that the most popular and fruitful technique in enhancing the writing ability of EFL learners is the corrective feedback.

Corrective feedback might be considered to be in the same vein as the idea raised by Vygotsky (1978) as the zone of proximal development (ZPD) as it gradually train EFL learners to produce errorless utterances. Hence, the privileges embedded in new computerized technologies on the basis of Artificial Intelligence (AI) have move above and beyond the expectations of AI advocates. Such AI-based ChatBots have provided the EFL learners with the necessary encouragements to possess their own agentive stance and to shape their own voices. Such infrastructure is best labeled as the zone of audacity (Underwood, et al., 2023) through which the practitioners are continually encouraged, motivated and engaged in an innovative learning fashion to avidly search and discover their best manifestation of their performance with least possible sense of losing their interests and ,at the same time, experience an anxiety-free learning environment (Jeon, 2022). So AI-assisted corrective feedback might be the proper response to the enrichment of the audacity of EFL learners in 2025 onwards as the EFL learners and practitioners might find it difficult and boring to attend face-to-face conventional classes to receive teacher/peers corrective feedback on their language learning process. Finding the teaching/learning environment as difficult and boring, in the sense that they might feel nervous and sometimes anxious for their mistakes to be pinpointed in front of their peers.

In order to examine the effect of implementing AI-assisted corrective feedback on the writing anxiety of Iranian EFL learners, the following research questions were posed:

- Research Question 1: Does implementing AI-assisted corrective feedback have statistically any significant impact on Iranian EFL learners' writing anxiety?
- Research Question 2: Does implementing Teacher-n-Peers-assisted corrective feedback have statistically significant impact on Iranian EFL learners' writing anxiety?
- Research Question 3: Is there any statistically significant difference between the effects of AI-assisted corrective feedback vs. Teacher-n-Peers-assisted corrective feedback on Iranian EFL learners' writing anxiety?

### Literature Review

Corrective feedback in the process of language acquisition is the set of advices and responses the EFL learners receive from the knowledgeable teacher or even peers while producing an utterance even in written or spoken form. So the EFL learners mostly receive inaccuracy notes regarding his/her utterances and might scarcely receive the accurate utterance (Tavakoli et al., 2020). That is to say, EFL learners are provided with comments or extra informative notes on their linguistic performance and correct his/her linguistic production (Richard & Schmidt, 2002) for further applications. Researchers recommended that it would be beneficial to develop informative manuals (Zohrabi & Khalili, 2024) for teachers and lecturers in order to provide proper guidelines and sufficient information on proper strategies in offering

corrective feedbacks to their students. Some scholars believe that EFL teachers might utilize various corrective feedback once facing the EFL learners' errors and would offer comments or other metalinguistic features or even raise questions concerning the well-formedness of EFL learners' productions. In better words, they evade any forms of explicit feedback (Lyster & Ranta, 1997).

A great body of literature has been devoted to the concept of implementing corrective feedback to EFL learners in order to enrich the efficacy of language acquisition and surprisingly scholars have always encountered conflicting findings (Hyland & Hyland, 2006). Such conflicting outcomes might be rooted in the issue raised by Ellis (2008) who shed lights on the individual differences of the learners embracing age, needs, objectives, level of language proficiency, etc. He emphasized that there exists no clear-cut uniform recipe and method of corrective feedback applicable to all EFL learners' errors. Other research studies have confirmed Selinker (1992) viewpoints that errors are parts of learning process and the symptom of learning and should not be corrected, and concluded that if errors are corrected improperly or inappropriate corrective feedbacks applied, they might hinder the learning process (Fahim & Montazeri, 2013) in the long run.

The advent of new technologies such as artificial intelligence (AI) has accelerated the process of teaching and learning new languages to a great extent, prominent of which recognized as the real-time support AI offers (Pari, 2024). Great population of EFL learners are the advocates of the new technologies and believe that computer-based smart devices save more time and offer better outputs, and in turn, enhance productivity and efficacy (Liu et al., 2024). The advantages of AI-based applications have been numerous, hence the importance of which are categorized in three main aspects. The first could be the availability of use at anywhere and anytime. Such practical usage of AI-supported partnership which could never be compared to human partnership would be rendered as a great advantage (Haristiani, 2019; Winkler & Soellner, 2018). The second advantage is the great bulk of knowledge the AI-supported Bots offer which is not comparable to human knowledge. The practitioners believe that a master mind is supporting them in an ad hoc fashion (Fryer et al., 2019). The last but not least is that artificial intelligence bots could serve as a tireless assistance, free from demanding frequent laborious and exhausting repetitive tasks (Kim et al., 2019). What counts here is to make the most of the opportunities the new technologies provide the EFL learners with. In other words, the focus of attention for EFL practitioners has gently shifted to turn the challenges new technologies, toolkits, applications and chatBots provide, into great opportunities for enriching the uptakes and strengthening the process of teaching and learning a new language.

Recently, a great number of research has been devoted by authorities and researchers to delve into the effects of integrating the artificial intelligence chatbots into writing courses and found that the EFL learners' writing quality, overall coherence, and grammatical accuracy would be enhanced (Mun, 2024; Rahimi et al., 2024). Some researchers concluded that providing immediate feedback via AI-chatbots could be regarded as the vantage point for motivating the EFL learners to actively and eagerly participate in accomplishing the assigned writing tasks (Roy & Swargiary, 2024). Sabry and Selim (2024) studied the application of Jasper as an AI-powered writing tool and drew the conclusion that EFL learners' writing errors decreased and the writings cohesion and coherence increased. Rizky et al. (2024) conducted a thorough investigation on the

impact of applying AI tools in the writing skill, and their study result ascertained that the accuracy of the EFL learners' writing tasks has been increased significantly.

Scholars such as Chen and Cui (2022) believe that AI-assisted systems such as Automated Writing Evaluation (AWE) have gained acceptance and application among EFL learners as an instant assistance to correct their writing performance. Saricaoglu and Bilki (2021) have studied AI-bots such as Jasper, Pigai and iWrite thoroughly and indicated that the strong point in these AI-bots are the prompt feedback they provide the EFL learners with, aiming to enhance the writing accuracy of the practitioners. Some scholars (Ranallie, 2018; Warschauer & Ware, 2006) believe that through implementing AI-Bots, teachers would find some free time to emphasize on higher-order writing agendas. Godwin-Jones (2022) insisted that AI-Bots have moved beyond error correction tasks and appeared as writer assistants. The process of integrating artificial intelligence into language acquisition and teaching/learning realm seems to be growing and reaching puberty in all skills' forms and formats. The new AI-Bots are rendering more interactive and innovative through which more creativity and enjoyment are induced (Taj, 2024; Hanafiah et al., 2022; Lee et al., 2024; Yuan et al., 2022).

## Method

### Design

The design of the present quantitative research enjoyed a descriptive pre-test post-test design. There existed one control group and two experimental groups, and the raw data gained from the administered pretests and posttests were considered as the sets of research data for the present quantitative research.

### Participants

The total participants of 138 undergraduates at Islamic Azad University in Tehran attended an English proficiency test (OPT) and 60 successful intermediate university students who were willing to participate in the study were selected and divided randomly into three identical 20-student groups as the two experimental and one control groups. The research took place in the second semester of the academic year 2023-2024 and the age range of the participants was between 19 and 29. Of course the academic discipline of the university students in the present study was English translation and the researcher was advised to take the OPT to make sure that the participants did hold the intermediate language proficiency level needed for the study attendees. Gender was not a limitation in this research and participants in all three groups were males and females.

### Instrumentation

There existed three instruments to accomplish the present study, namely as the oxford placement test (OPT) of English as the language proficiency test which was administered once and before the commencement of the study to select the 60 intermediate participants. In order to measure the writing ability enhancement of the participants in all experimental and control groups, a writing essay test was designed for the pretest and posttest which was administered

before and after the treatment. That was done in line with the suggestion of Jacobs et al. (1981) who recommended that researchers should consider at least two sets of writing performance from every participant before and after the treatment in order to conclude a reliable stance of the learners' performance. The four common topics for writing task test were selected from the topic pool suggested by the participants. It was done after the OPT test and before the treatment sessions and they were asked to put a checkmark besides the list of topics offered according to their interest. The four selected topics were the topics of the writing essay test as pretest and posttest, for which the participants were asked to write an essay not exceeding 250 words. Two experienced raters were assigned to check and score the participants essays according to the rubrics advised by Wang (2024). The reliability existing between the raters as the inter-rater reliability was calculated through Pearson Correlation Coefficient and found to be 0.81 which deemed acceptable. The two raters scored the pre-test and post test of writing performance of all experimental and control groups before and after the treatment. The writing anxiety questionnaire was the second main instrument which was administered to the three groups before and after the treatment in order to check the probable enrichment of the anxiety index of the participants. Anxiety Scale Questionnaire (ASQ) was developed by Horwitz et al. (1986) is a 5-point Likert scale questionnaire comprised of 33 entries. The reliability coefficient of the Anxiety Questionnaire employed was .907 which was regarded as satisfactory. The two main instruments applied to the present study were accredited and approved to be applicable by two TEFL authorities to reassure to suit the pretest and posttest.

## Procedure

The present quantitative study lasted twelve consecutive weeks in the second semester of the academic year 2023-2024 with the participants who were majoring at English translation in Islamic Azad University of Tehran. From the subject pool of 138 undergraduates, males and females, an Oxford Placement Test (OPT) was given to select intermediate English proficiency level as the participants of the study. The successful 60 intermediate EFL learners were selected to attend the experiment and they were informed on the framework, aim and scope of the present research. The 60 intermediate participants were randomly assigned into three groups of two experimental and one control. The teacher for conducting the treatment in all groups was identical. The three groups' participants took part in two test sessions prior to the commencement of the treatment. One accredited essay type writing test and one accredited Anxiety Scale Questionnaire were conducted as the pretest phase of the study. The topic of the essays were chosen from the list of topics of interests the participants provided after the OPT test in this way: the researcher provided an open-ended list of interesting topics for the participants and asked them to put a checkmark besides the topics they were interested and if possible take their time and add to the list. Then the common topics of interest were selected to be offered to the participants as the topic of their essay writing test. As mentioned earlier, after twelve consecutive sessions of treatment, each week one session of 90 minutes, the same pretests were administered and the participants in the three groups were asked to take part in the posttest phase of the study.

The treatment sessions were all in a uniform time span, and no bias was probable. In the AI-assisted corrective feedback experimental group, the 20 EFL learners were allowed to use ChatGPT as an Artificial Intelligence (AI) toolkit to help them with the writing task. Of course, ChatGPT was one of the AI applications and they were allowed to use Grammarly and Pi ( $\pi$ )

artificial intelligence inside and even at library or dormitory to accomplish their essays and writing drills. For instance, in the experimental class, the participants were obliged to do a writing task as a drill, then, they were asked to read out the text for their classmates. If the teacher or the classmates came into a misuse or a misconception or other forms of error, they were allowed to raise the issue and the assigned participant should asked the artificial intelligence to elaborate on the issue to the extent that the assigned participants fully understood his/her errors and mistakes. Sometimes, once the teacher felt that the issue raised had been very critical, the teacher asked the assigned participant to elaborate on the critical issue to the class. The assigned participant was allowed to utilize his/her smart devices and AI-tools through AI-prompts in order to elaborate on the raised critical issue to the class.

The treatment sessions in the teacher-n-peers corrective feedback group which was the second experimental group followed the conventional method of corrective feedback by the teacher and the peers. The teacher gave both explicit and implicit corrective feedback and in the collaborative drills, the participants received peer corrective feedback. The cast/recast technique was also practiced. The topic of essays and the stream of materials were the same for all the experimental and control groups. The participants in the teacher-n-peers corrective feedback group were not allowed to receive any help from the smart devices or artificial intelligence bots and toolkits. They were allowed to ask for justifications and elaborations from their teachers and knowledgeable peers, even when their errors and misconceptions were repetitive or redundant. The control group in the present study did not receive any corrective feedback and followed the traditional practice of writing classes. The treatment sessions were long enough to repeat the pretests after twelve sessions of treatment as the posttests. As mentioned, the posttests were administered after the treatment and all experimental and control groups took part in the posttest phase and the same essay writing test (with the word limit of 250 words) and the accredited Anxiety Scale Questionnaire were administered as the posttests of the present study. It is worth mentioning that the essay writing tests of the participants in all experimental and control groups were scored by two expert raters who checked the drafts of the participants in the three groups according to the guidelines and frameworks of rating essays. The obtained scores in both pretest and posttest phases were gathered and went through statistical analysis which would be discussed in the next section.

### Findings

As mentioned earlier, the collected data gathered from the pretest and posttest phases went through the computer software statistics program SPSS version 24 in order to find proper answers to the research questions posed in the present study as whether AI-assisted corrective feedback has any supremacy to the teacher-n-Peers-corrective feedback in dwindling Iranian intermediate EFL learners' anxiety index in writing tasks.

### The Results of OPT

First, in order to select 60 homogenous participants, 138 intermediate male and female English language undergraduates took part in the Oxford Placement Test (OPT) test. Table 1 shows the mean score and the standard deviation of the OPT.

**Table 1**

*Descriptive Statistics of OPT*

|                    | N   | Minimum | Maximum | Mean  | Std. Deviation |
|--------------------|-----|---------|---------|-------|----------------|
| OPT                | 100 | 22      | 41      | 33.11 | 4.993          |
| Valid N (listwise) | 138 |         |         |       |                |

According to the results of the OPT ( $M=33.11$  and  $Std.=4.993$ ), 60 participants whose scores ranged between one standard deviation above and below the mean were selected and divided into three equal groups as two experimental and one control groups.

### Inter-Rater Reliability

Table 2 shows the inter-rater reliability of two raters who rated the writing skill of the participants in pre- and posttest. A Pearson product-moment correlation was run to determine if there was an agreement between two raters. The results show that there was a strong, positive correlation between two raters, which was statistically significant ( $r = .87$ ,  $n = 60$ ,  $p = .001$ ).

**Table 2**

*The Result of the Inter-rater Reliability in the Pretest*

|                   | Pretest (Rater 1)   | Pretest (Rater 2) |
|-------------------|---------------------|-------------------|
| Pretest (Rater 1) | Pearson Correlation | 1                 |
|                   | Sig. (2-tailed)     | .873**            |
|                   | N                   | 60                |
| Pretest (Rater 2) | Pearson Correlation | .773**            |
|                   | Sig. (2-tailed)     | .000              |
|                   | N                   | 60                |

\*\*, Correlation is significant at the 0.01 level (2-tailed).

The inter-rater reliability of the raters in the posttest was similarly computed via a Pearson product-moment correlation. Table 3 shows that there was a strong, positive correlation between two raters, which was statistically significant ( $r = .801$ ,  $n = 60$ ,  $p = .001$ ).

**Table 3**
*The Result of the Inter-rater Reliability in the Posttest*

|                    |                     | Posttest (Rater 1) | Posttest (Rater 2) |
|--------------------|---------------------|--------------------|--------------------|
| Posttest (Rater 1) | Pearson Correlation | 1                  | .801**             |
|                    | Sig. (2-tailed)     |                    | .000               |
|                    | N                   | 60                 | 60                 |
| Posttest (Rater 2) | Pearson Correlation | .801**             | 1                  |
|                    | Sig. (2-tailed)     | .000               |                    |
|                    | N                   | 60                 | 60                 |

\*\*. Correlation is significant at the 0.01 level (2-tailed).

### Test of Normality

In order to check the normality of the data, the researchers ran the one-sample Kolmogorov-Smirnov test. This test shows that a variable is normally distributed if 'Sig.' > 0.05 (Pallant, 2013). As the numbers in Sig. column in Table 4 shows, the results had a normal distribution ( $P > .05$ ).

**Table 4**
*Tests of Normality*

|          |                                | Kolmogorov-Smirnov <sup>a</sup> |    |       | Shapiro-Wilk |    |      |
|----------|--------------------------------|---------------------------------|----|-------|--------------|----|------|
|          | Groups                         | Statistic                       | df | Sig.  | Statistic    | df | Sig. |
| Pretest  | AI-assisted Group              | .159                            | 20 | .200* | .952         | 20 | .401 |
|          | Teacher-n-Peers-assisted Group | .178                            | 20 | .096  | .930         | 20 | .155 |
|          | Control Group                  | .154                            | 20 | .200* | .924         | 20 | .119 |
| Posttest | AI-assisted Group              | .167                            | 20 | .145  | .898         | 20 | .038 |
|          | Teacher-n-Peers-assisted Group | .388                            | 20 | .062  | .731         | 20 | .080 |
|          | Control Group                  | .397                            | 20 | .040  | .680         | 20 | .072 |

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

a. Lilliefors Significance Correction

Hence, parametric tests such as a paired-samples t-test and an independent-samples t-test could be employed.

In order to find out whether AI-assisted corrective feedback has any statistically significant effect on writing anxiety of Iranian EFL Learners, the researcher performed the independent-samples t-test. Table 5 shows the mean scores of the AI-assisted corrective feedback group ( $M=34.45$ ,  $Sd.=3.034$ ) and the control group ( $M=34.90$ ,  $Sd.=3.401$ ) in the pretest.

**Table 5**

*Group Statistics of AI-assisted Corrective Feedback and Control Groups in the Pretest*

|         | Groups                                | N  | Mean  | Std. Deviation | Std. Error Mean |
|---------|---------------------------------------|----|-------|----------------|-----------------|
| Pretest | AI-assisted corrective feedback Group | 20 | 34.45 | 3.034          | .679            |
|         | Control Group                         | 20 | 34.90 | 3.401          | .761            |

Table 6 indicates that there was not a statistically significant difference between the AI-assisted corrective feedback group and the control group in the pretest ( $t(38) = -.442$ ,  $P > .661$ ,  $P > .05$ ).

**Table 6**

*Independent-Samples t-Test of AI-assisted corrective feedback and Control Groups in the Pretest*

| Levene's Test for Equality of Variances |      |      |       |        |            |            |            |                                           |       |
|-----------------------------------------|------|------|-------|--------|------------|------------|------------|-------------------------------------------|-------|
| t-test for Equality of Means            |      |      |       |        |            |            |            |                                           |       |
|                                         |      |      |       |        | Sig.       | Mean       | Std. Error | 95% Confidence Interval of the Difference |       |
|                                         | F    | Sig. | t     | df     | (2-tailed) | Difference | Difference | Lower                                     | Upper |
| Equal variances assumed                 | .885 | .353 | -.442 | 38     | .661       | -.450      | 1.019      | -2.513                                    | 1.613 |
| Equal variances not assumed             |      |      | -.442 | 37.516 | .661       | -.450      | 1.019      | -2.514                                    | 1.614 |

The researcher similarly ran the independent-samples t-test to compare the posttest of the AI-assisted corrective feedback and control groups in the posttest. Table 7 shows the mean scores of the AI-assisted corrective feedback group ( $M=44.30$ ,  $Sd.=3.34$ ) and the control group ( $M=36.55$ ,  $Sd.=2.32$ ) in the posttest.

**Table 7**

*Group Statistics of AI-assisted corrective feedback and Control Groups in the Posttest*

|          | Groups                                | N  | Mean  | Std. Deviation | Std. Error Mean |
|----------|---------------------------------------|----|-------|----------------|-----------------|
| Posttest | AI-assisted corrective feedback Group | 20 | 44.30 | 3.342          | .747            |
|          | Control Group                         | 20 | 36.55 | 2.328          | .521            |

Table 8 shows that there was a statistically significant difference between the AI-assisted corrective feedback group and the control group in the posttest ( $t(38) = 8.51, P < .05, P = .01$ ).

**Table 8**
*Independent-Samples t-Test of AI-assisted corrective feedback and Control Groups in the Posttest*

| Levene's Test for Equality of Variances |       |      |       |        |                 |                 |                       |                                           |       |
|-----------------------------------------|-------|------|-------|--------|-----------------|-----------------|-----------------------|-------------------------------------------|-------|
| t-test for Equality of Means            |       |      |       |        |                 |                 |                       |                                           |       |
|                                         | F     | Sig. | t     | df     | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |       |
|                                         |       |      |       |        |                 |                 |                       | Lower                                     | Upper |
| Equal variances assumed                 | 1.097 | .302 | 8.510 | 38     | .000            | 7.750           | .911                  | 5.906                                     | 9.594 |
| Equal variances not assumed             |       |      | 8.510 | 33.923 | .000            | 7.750           | .911                  | 5.899                                     | 9.601 |

Therefore, the results of the comparison of the AI-assisted corrective feedback group and the control group in the pre- and posttest rejected the first null hypothesis of this study and it was confirmed that AI-assisted corrective feedback has statistically significant effect on writing anxiety of intermediate Iranian EFL Learners.

In order to find out whether Teacher-n-Peers-assisted corrective feedback has any statistically significant effect on writing anxiety of Iranian intermediate EFL Learners, the researcher also ran the independent-samples t-test. Table 9 shows the mean scores of the Teacher-n-Peers-assisted corrective feedback (CF) group ( $M=34.65, Sd.=3.297$ ) and the control group ( $M=34.90, Sd.=3.401$ ) in the pretest.

**Table 9**
*Group Statistics of Teacher-n-Peers-assisted corrective feedback and Control Groups in the Pretest*

|         | Groups                                             | N  | Mean  | Std. Deviation | Std. Error Mean |
|---------|----------------------------------------------------|----|-------|----------------|-----------------|
| Pretest | Teacher-n-Peers-assisted corrective feedback Group | 20 | 34.65 | 3.297          | .737            |
|         | Control Group                                      | 20 | 34.90 | 3.401          | .761            |

Table 10 displays that there was not a statistically significant difference between the Teacher-n-Peers-assisted corrective feedback group and the control group in the pretest ( $t(38) = -.236, P > .815, P > .05$ ).

**Table 10**
*Independent-Samples t-Test of Teacher-n-Peers-assisted corrective feedback and Control Groups in Pretest*

| Levene's Test for Equality of Variances |      |      |       |        |                 |                 |                       |                                           |       |
|-----------------------------------------|------|------|-------|--------|-----------------|-----------------|-----------------------|-------------------------------------------|-------|
| t-test for Equality of Means            |      |      |       |        |                 |                 |                       |                                           |       |
|                                         | F    | Sig. | t     | df     | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |       |
|                                         |      |      |       |        |                 |                 |                       | Lower                                     | Upper |
| Equal variances assumed                 | .180 | .674 | -.236 | 38     | .815            | -.250           | 1.059                 | -2.394                                    | 1.894 |
| Equal variances not assumed             |      |      | -.236 | 37.963 | .815            | -.250           | 1.059                 | -2.394                                    | 1.894 |

The researcher performed the independent-samples t-test to compare the posttest of the Teacher-n-Peers-assisted corrective feedback and control groups in the posttest. Table 11 shows the mean scores of the Teacher-n-Peers-assisted corrective feedback group ( $M=39.90$ ,  $Sd.=3.32$ ) and the control group ( $M=36.55$ ,  $Sd.=2.32$ ) in the posttest.

**Table 11**
*Group Statistics of Teacher-n-Peers-assisted corrective feedback and Control Groups in the Posttest*

| Groups   |                                                    | N  | Mean  | Std. Deviation | Std. Error Mean |
|----------|----------------------------------------------------|----|-------|----------------|-----------------|
| Posttest | Teacher-n-Peers-assisted corrective feedback Group | 20 | 39.90 | 3.323          | .743            |
|          | Control Group                                      | 20 | 36.55 | 2.328          | .521            |

Table 12 shows that there was a statistically significant difference between the Teacher-n-Peers-assisted corrective feedback group and the control group in the posttest ( $t(38) = 3.69$ ,  $P < .05$ ,  $P = .01$ ).

Therefore, the results of the comparison of the Teacher-n-Peers-assisted corrective feedback group and the control group in the pre- and posttest rejected the second null hypothesis of this study and it was confirmed that Teacher-n-Peers-assisted corrective feedback has statistically significant effect on writing anxiety of Iranian intermediate EFL Learners.

**Table 12**

*Independent-Samples t-Test of Teacher-n-Peers-assisted corrective feedback and Control Groups in Posttest*

| Levene's Test for Equality of Variances |      |      |       |        |                 |                 |                       |                                           |       |
|-----------------------------------------|------|------|-------|--------|-----------------|-----------------|-----------------------|-------------------------------------------|-------|
| t-test for Equality of Means            |      |      |       |        |                 |                 |                       |                                           |       |
|                                         |      |      |       |        |                 |                 |                       | 95% Confidence Interval of the Difference |       |
|                                         | F    | Sig. | t     | df     | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower                                     | Upper |
| Equal variances assumed                 | .087 | .769 | 3.693 | 38     | .001            | 3.350           | .907                  | 1.513                                     | 5.187 |
| Equal variances not assumed             |      |      | 3.693 | 34.028 | .001            | 3.350           | .907                  | 1.506                                     | 5.194 |

In order to conclude whether there was any statistically significant difference between the effects of artificial-intelligence-assisted corrective feedback vs. Teacher-n-Peers-assisted corrective feedback on writing anxiety index of Iranian intermediate EFL Learners, the researcher ran one-way ANOVA and Tukey Post Hoc. Table 13 displays that there was a statistically significant difference between the posttests of three groups ( $P=.001$ ,  $P<.005$ ).

**Table 13**

*One-way ANOVA of the Posttests*

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 604.300        | 2  | 302.150     | 32.808 | .000 |
| Within Groups  | 524.950        | 57 | 9.210       |        |      |
| Total          | 1129.250       | 59 |             |        |      |

Table 14 indicates the result comparison between three groups' posttest. The numbers in column *Sig.* shows that there were statistically significantly difference between three groups' posttests ( $P<.05$ ,  $P=.01$ ).

**Table 14**
*Multiple Comparisons of Posttests*

| (I) Groups            | (J) Groups            | Mean Difference |            | Sig. | 95% Confidence Interval |             |
|-----------------------|-----------------------|-----------------|------------|------|-------------------------|-------------|
|                       |                       | (I-J)           | Std. Error |      | Lower Bound             | Upper Bound |
| AI-assisted CF Group  | Teacher-Peer CF Group | 4.400*          | .960       | .000 | 2.09                    | 6.71        |
|                       | Control Group         | 7.750*          | .960       | .000 | 5.44                    | 10.06       |
| Teacher-Peer CF Group | AI-assisted CF Group  | -4.400*         | .960       | .000 | -6.71                   | -2.09       |
|                       | Control Group         | 3.350*          | .960       | .003 | 1.04                    | 5.66        |
| Control Group         | AI-assisted CF Group  | -7.750*         | .960       | .000 | -10.06                  | -5.44       |
|                       | Teacher-Peer CF Group | -3.350*         | .960       | .003 | -5.66                   | -1.04       |

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

A Tukey post hoc test revealed that the mean score of AI-assisted CF group ( $M=44.30$ ) was statistically significant and higher than the Teacher-Peer CF group ( $M=39.90$ ) and the control group ( $M=36.55$ ).

**Table 15**
*Tukey Post Hoc Results of Posttests*

| Groups                | N  | Subset for alpha = 0.05 |       |       |
|-----------------------|----|-------------------------|-------|-------|
|                       |    | 1                       | 2     | 3     |
| Control Group         | 20 | 36.55                   |       |       |
| Teacher-Peer CF Group | 20 |                         | 39.90 |       |
| Ai-assisted CF Group  | 20 |                         |       | 44.30 |
| Sig.                  |    | 1.000                   | 1.000 | 1.000 |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 20.000.

Hence, the third null hypothesis of this study was rejected, and it was confirmed that there was a statistically significant difference between the effects of receiving Artificial-Intelligence-assisted corrective feedback vs. Teacher-n-Peers corrective feedback on writing anxiety of Iranian EFL Learners, and receiving AI-assisted corrective feedback outweighed receiving Teacher-n-Peers corrective feedback.

It is worth mentioning here that it might deemed redundant but the researcher ran a thorough statistical analysis and a one-way ANOVA and a Tukey post hoc test to ascertain the effects of receiving AI-assisted corrective feedback vs. receiving teacher-n-Peers-assisted corrective feedback on the writing ability of Iranian intermediate EFL learners, through which it revealed that the mean score of AI-assisted CF group ( $M=48.25$ ) was statistically significantly

higher than the Teacher-Peer CF group ( $M=40.95$ ) and the control group ( $M=30.65$ ). That is to say that receiving AI-assisted corrective feedback significantly enhanced the writing ability of Iranian intermediate EFL learners in comparison with receiving feedback from teacher and peers. Of course receiving Teacher-n-Peers corrective feedback rendered a noticeable enhancement in the writing ability of Iranian intermediate EFL learners, but receiving AI-assisted corrective feedback was proved to be higher and above the improvement witnessed through teacher-n-Peers corrective feedback.

The overall and conclusive outcome from the quantitative descriptive statistical analysis of the gathered and computed data confirmed that EFL learners would significantly act powerfully and much better once they received artificial-intelligence-assisted corrective feedback in comparison with the time through which they received teacher-n-peers corrective feedback, meanwhile their writing ability also enhanced noticeably.

The present research was designed to shed light into the concept of integrating the new technologies namely as artificial intelligence bots into the field of TEFL and changing the challenges AI bots into great opportunities through which the language learning process would be accelerated and enriched. The focus of the present research was put on writing skill which is more prominent and challenging, and demands more creativity and performance. A good writing skill is rooted in inner circle and outer circle. Inner circle as the EFL practitioners has always problem to establish proper ways to communicate with their own thought (Rahimi & Zhang, 2018). The outer circle is the EFL practitioners are hindered by the impediments as their errors and misconceptions. The proper reactions to the errors in the EFL performance are very crucial as a great body of literature is devoted to the notion of corrective feedback. Integrating new technologies properly (Harunasari & Halim, 2019) might accelerate and foster EFL learning, hence, considering creative ways in utilizing adaptive and suitable technologies would help diminish the discrepancies (William et al., 2019) and pitfalls to the least value possible.

The sixty participants of the present research who were intermediate level of proficiency in English language and were selected through an Oxford Placement Test (OPT) were randomly assigned into three groups of twenty students as two experimental and one control groups. The data obtained from pretests and posttests of the AI-assisted corrective feedback experimental, the Teacher-n-Peers-assisted corrective feedback and the control group went through the statistical analysis and the results confirmed that the participants who received artificial-intelligence-assisted corrective feedback had considerably higher performance in their writing skill, along with, they showed greater audacity to take the risk and diminish their writing anxiety in order to express and reflect their streams of thoughts freely and courageously. The results also ascertained that receiving corrective feedback from teacher and peers would also be effective in having better writing performance and also lowering the writing anxiety of EFL learners, which in line with the findings of other researches (Moghimi & Mirzaei, 2024) in the related literature, the notion of the efficacy of receiving corrective feedback from teachers and peers was once more reconfirmed.

One point to be spotlighted here is that myriad of availability of smart devices and artificial intelligence Chatbots in the field of English language teaching and learning, and in line with the findings of the present study, the researcher aimed at pinpointing that the amalgamation of AI-assisted corrective feedback and Teacher-n-Peers-assisted corrective feedback is

recognized as the utopia of circumstances for the EFL learners to be provided with. Like what Zohrabi et al. (2024) recommended in their study that the amalgamation of direct, indirect and meta-linguistic writing corrective feedback strategies might be attributed to empower English language learners in internalization of language knowledge, here it should be highlighted that through integration of AI Chatbots along with appreciation of the teachers and peers support, the movement towards the best uptake possible would be rendered accessible and the expected enrichment and depth in the knowledge obtained by the EFL learners would be achieved. Such point of view of the researcher is in line with the viewpoint of Luo and Qiu (2024) who emphasized to keep the balance of AI applications and conventional teaching methodologies through which the overall efficacy and expected language learning improvements could be strongly fostered.

In recent years, there have been many research studies on the notion of integrating Artificial Intelligence (AI) into the field of language teaching and learning, each of which focused on one aspect of the merits of AI-powered applications, and great valuable findings have been achieved. Some scholars believe that AI-applications would enhance the EFL learners' motivation and self-regulation (Wei, 2023), would enhance speaking skills via virtual conversation partnership (Khasawneh, 2023), would facilitate collaborative interactions and learning (Zou et al., 2023), would create more adaptive and engaging environments (Son et al., 2023; Huang et al., 2023) and a lot more body of research which has focused on the integration of AI application in the field of TEFL. The focus of the present research was on the importance of enriching the EFL learners writing audacity through AI-assisted corrective feedback in writing skill in order to overcome their writing anxiety. It is taken for granted that the deciding on the best corrective feedback which suits a particular group of learners or an individual learner has always been controversial and enigmatic (Hosseini et al., 2024) for the practitioners. The findings of the present study was in line with the findings of Azimi and Farahian (2024) that concluded utilizing AI in EFL writing evaluation would facilitate the process of learning and teaching. This study reconfirmed that such evaluation in the form and format of corrective feedback would be enriched once performed in an individualized fashion of practice.

The findings of the present study were also in line with that of Jasim et al. (2024) which revealed that AI writing tools help promote the quality of EFL writing tasks and would provide errorless cohesive and coherent texts. The researcher in the present study also concluded that through integrating AI-chatbots and the related useful prompts and practices, the dilution of the EFL learners' intended streams of thoughts would be dwindled and diminished. The present study, in the same vein as the study by Azizimajd (2023) which emphasized the human-robot interaction would lead to increased participation and engagement of EFL learners, do confirm that eradicating the errors and misconception via AI-assisted corrective feedback would increase the self-confidence of EFL learners to display a more authentic performance of their uptakes in realistic and real life settings.

### Conclusion and Implications

The present study aimed at delving into the introduction and integration of artificial intelligence bots into the zone of teaching and learning writing skill in order to improve the writing ability of the EFL learners and, in turn, empowering them to overcome the writing anxiety index while communicating with their thoughts and composing their writing texts and

manifestations of their streams of thoughts. Such empowerment if practiced and reinforced would result in the enrichment of the EFL learners to move beyond the zone of audacity and write what they think in a creative and innovative fashion. The main research question here posed by the researcher was whether there is any statistically significant difference between the effects of AI-assisted corrective feedback vs. Teacher-n-Peers-assisted corrective feedback on Iranian EFL learners' writing anxiety.

The findings of the present study conformed that through integrating the artificial intelligence assisted corrective feedback, the anxiety index of the EFL learners would be decreased, more depth of English language knowledge would be internalized, and the EFL learners would be empowered in having better understanding of their own errors and trying to have better performances in writing tasks. The findings of this study would be beneficial to EFL teachers and learners, curriculum and materials developers, stakeholders, syllabus designers and authorities in the field of education and training. The researcher clarifies that this study was a mild scratch on the body of artificial intelligence in the field of language education and TEFL. There exist lots of stones left unturned, ideas yet to be uncovered or discovered through which the realm of language teaching and learning would glorify.

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