

Diagnostic Assessment and Remedial Instruction in Improving L2 learners' Writing Ability

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Abstract

This mixed-methods research was carried out to investigate the impact of diagnostic assessment and remedial instruction to improve second/foreign language (L2) learners' writing ability and to shed light on their perceptions towards these techniques. For this purpose, after administering the Oxford Quick Placement Test (OQPT), 60 lower-intermediate L2 learners were selected and randomly assigned into an experimental and a control group. The groups took the writing pretest and then participated in writing classes. However, only the experimental group received the diagnostic assessment and remedial instruction on their writing. At the end, both groups took the writing posttest. The researchers also developed a checklist with 20 yes/no items. They asked the participants to respond to the items based on their experience of dealing with diagnostic assessment and remedial instruction. Moreover, seven experimental group participants participated in a semi-structured interview to identify their perceptions of diagnostic assessment and remedial instruction. The results of a repeated-measures two-way ANOVA revealed the considerable outperformance of the experimental group. Furthermore, the analysis of the L2 learners' responses to the checklist and interviews indicated that they had positive perceptions of using diagnostic assessment and remedial instruction in improving L2 learners' writing ability.

Keywords: Diagnostic assessment, Feedback, L2 learners, Remedial instruction, Writing ability

1. Introduction

Assessment is a bridge between learning and teaching, which is a good way to explore the results of instructional activities and how well L2

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learners face the expectations of specific instructional programs (William, 2013). Assessment is also considered a process that collects and discusses the required information through a variety of sources to improve and intensify a deep understanding of what L2 learners figure out and can do with their acquired knowledge as an outcome of their educational experiences (Huba & Freed, 2000). Educational assessments, such as dynamic, formative, performance, and diagnostic assessments, aim to evaluate L2 students' learning and skill improvement and to provide feedback to students, teachers, and other stakeholders (Pellegrino et al., 2001).

This research selected diagnostic assessment to highlight L2 learners' strengths and weaknesses, enabling instructors to provide targeted remedial instruction for improving students' weak areas through various tasks and activities (Alderson et al., 2014). Furthermore, diagnostic assessment is an effective way of analyzing the tasks for the instructors based on which they can provide feedback and offer remedial points to eliminate difficulties and improve learning (Jang & Wagner, 2013). Although strengths and weaknesses are highlighted when diagnostic assessment is utilized, the weaknesses are often focused based on which feedback and remedial instruction have to be provided (Authors).

In addition, in any L2 context, teaching and assessing writing is necessary, as it is an important skill that depends heavily on practice (Sahragard & Mallahi, 2014). Learning writing is considered difficult for L2 learners since it requires paying attention to both higher and lower-level skills at the same time during the writing process (Bae & Bachman, 2010). Moreover, paying attention to the core elements of content, organization, vocabulary, language use, spelling, punctuation, and accuracy in a writing task makes it quite demanding. Receiving appropriate feedback on these core elements, especially on the weak parts, would be of great help to L2 learners, which is possible through diagnostic assessment.

However, though scholars expanded consideration on diagnostic assessment and its capacity to boost learning and to ensure a positive influence on learning processes, more research is required to identify how L2 learners utilize diagnostic assessment and remedial instruction to direct their learning. As a result, the writing ability and its improvement through diagnostic assessment and remedial instruction was selected for further investigation in this research because the mastery of this crucial skill is a prerequisite for the educational success of most L2 learners. Accordingly, an attempt was made in this study to shed some light on improving L2

learners' writing through using diagnostic assessment and remedial instruction and their perceptions towards these techniques.

2. Review of the Literature

2.1. Diagnostic Assessment

Diagnostic assessment intends to recognize L2 learners' weaknesses and strengths according to instruction and assessment, which is provided through the knowledge acquired via the instruction (Jang & Wagner, 2013). As Alderson et al. (2015) explained through diagnostic assessment, the instructor tries to recognize those parts and areas of the course in which L2 learners require extra help and to identify the learners' current level of conception of a topic or subject during the course to dispel misunderstanding.

Alderson and Huhta (2011) outlined a number of significant specifications of diagnostic assessment including emphasizing more on particular elements rather than global abilities, involving little anxiety to promote the progress of performance, providing results without delay after test-taking, accentuating more on language rather than on the skills of language, and providing context for remediation in supplementary instruction.

As Alderson et al. (2015) proposed the first phase of diagnostic assessment happens by diagnosing probable problems and difficulties of an L2 learner to be subsequently solved and to detect the underlying reasons. They also used the term feedback, which can come from the teacher, a friend's gesture, and the like. Jang and Wagner (2013) further postulated that diagnostic feedback can provide the information required to L2 learners and assist them to reflect on their performance towards receiving the proper remedy.

Even though most of the definitions in diagnostic assessment point to both L2 learners' strengths and weaknesses, in the actual setting of the classroom, instructors should pay more attention to weaknesses in need of feedback (Alderson et al., 2014). In other words, the major role of diagnostic assessment is to establish vital knowledge and information regarding the development of L2 learners. According to Harding et al. (2015), instructors should use different kinds of feedback to avoid too much focusing on correctness or to give merely negative or positive kinds of feedback. They also contended that a central component of diagnostic assessment, having a decisive function to supply L2 students with the information required to receive essential strategy and remedial service, is feedback. There are countless types of feedback that can be used in diagnostic assessment such as direct or indirect feedback, providing the

correct form of a mistake to L2 learners, regular use of codes to highlight different errors in writing or other skills, etc.

Harding et al. (2015) offered a framework for diagnostic assessment that can be applied in the classrooms. The framework consists of four steps. It begins with the listening/observation stage in which the instructor attempts to figure out some information about the general ability of L2 learners by observing their performance. The second stage is the initial assessment in which the information is used as the experience to solve the problems. The third stage, called hypothesis checking, assists the instructor in testing the hypothesis using a test or an expert to check the progress of L2 learners. Finally, in the decision-making stage, the instructor is to select the best feedback required to solve the learners' problems.

2.2. Remedial Instruction

Remediation or intervention is a combination of teaching and learning tasks and activities to strengthen the recognized weaknesses of L2 learners on the features in the target domain (Lee, 2015). In this regard, instructors have to incorporate the results of diagnostic assessment into the curriculum to create concrete pedagogy and meaningful content. Remediation activities can develop L2 learners' language skills (Ganga et al., 2018). Thus, remediation is popular in compensatory education (Denzin, 2017), preparatory education (Hu & Liu, 2017), academic upgrading (Glaziou et al., 2016), and developmental education (Ganga et al., 2018).

Wang and Li (2019) further argued that the process of remediation is concerned with the instructors' behavior, encompassing several phases of planning, framing, conducting, and reflecting. *Planning*, as the first phase, focuses on the process of the instructors' decision to choose activities, tasks, research projects, and teaching approaches that are in line with the learning intentions/goals and diagnostic outcomes. *Framing* explores the domain to which the compensatory instruction is constructed in line with the benchmark to assess L2 learners' achievement, and its goal is to allocate teaching purposes to L2 learners to have a suitable orientation towards the instructional activities. *Conduction*, as the third phase, determines the passage to administer the teaching blueprint in the class within which instruction-embedded or spontaneous tasks take place regularly in the classroom. *Reflecting*, the last phase, focuses on the instructors' reflection on those parts of teaching they have used in the class that possess affirmative influences on the student's progression.

2.3. Empirical Studies on Diagnostic Assessment and Remedial Instruction

Various studies have been carried out on diagnostic assessment in different contexts. For instance, the research by Doe (2015) revealed that the best part of applying diagnostic assessment is L2 students' capability in the sections they are strong and/or weak at, and the obtained knowledge can assist them in enhancing their learning and provide them with a supportive situation leading to their faster progress. In a more recent study, Authors found the positive influence of diagnostic assessment on selective and productive reading comprehension tasks. Further, the Authors found the positive effect of diagnostic assessment on receptive and productive listening comprehension tasks. Ardin (2018) also explored the impact of diagnostic assessment on narrative and descriptive writing and concluded that it could be counted on as a tool to assist learners in developing their writing performance. Moreover, the Authors investigated the influence of diagnostic assessment on enhancing L2 learners' speaking ability and concluded that it positively improved the learners' speaking ability.

Fan et al. (2021) also investigated an incorporative structure of diagnosis, linking cognitive diagnostic assessment to compensatory instruction and feedback, within which they incorporated reading skills and diagnostic assessment into curricula. Their findings demonstrated that the integrative framework was effective, and remedial instructions were useful for the L2 learners.

Regarding the positive effects of diagnostic assessment, Rafi et al. (2022) conducted a study whose findings suggest that EFL learners can largely benefit from diagnostic assessment and remedial instructions that target their myriad of goals, needs, and weaknesses. Likewise, Rafi and Pourdana (2023) provided strong evidence that utilizing DIA can closely meet the five major attributes of inclusive education such as teamwork and collaboration, organizational practices, instructional practices, behavioral, social, and emotional practices, and designating progress (Finkelstein et al., 2021). Therefore, diagnostic assessment must become an inseparable part of in-service professional improvement programs, language curricula, and L2 teaching practice. Because of the significance of diagnostic assessment and remedial instruction in educational settings, the present research aimed to investigate the impact of diagnostic assessment and remedial instructions on improving L2 learners' writing ability and their perceptions towards these techniques in the context of Iran. Accordingly, the following research questions were posed:

1) Is applying diagnostic assessment and remedial instruction effective in improving L2 learners' writing ability?

2) What are L2 learners' perceptions of diagnostic assessment and remedial instruction?

3. Method

3.1. Participants

The participants were 60 male and female L2 learners from among an initial 85 lower-intermediate L2 learners with the age range of 19-25 selected based on their performance on the Oxford Quick Placement Test (OQPT). The participants' first language was Persian, and convenience sampling, which is a non-random sampling technique (Best & Kahn, 2013), was utilized to select them. All of them willingly participated in this study. The participants were then randomly assigned into two groups of experimental (N=30) and control (N=30).

3.2. Instrumentation

3.2.1. Oxford Quick Placement Test (OQPT)

To check the participants' homogeneity, an OQPT (2004, version 2) developed by the University of Cambridge Local Examination Syndicate, was administered. It is a flexible, valid, and highly effective test to provide a time-saving and reliable way of identifying L2 learners into appropriate levels of English. The test encompasses two versions of paper-and-pen (P&P) and computer-based (CB). All the participants of the present inquiry took the first part of the P&P version (i.e., questions 1-40), targeting L2 students at or below the intermediate level. The test was marked out of 40.

Preliminary English Test (PET): The Writing Section

In the process of carrying out this research, the writing section of two PET tests were employed as the pretest and the posttest. PET is a proper test for L2 learners of the lower-intermediate and intermediate levels, which consists of four separate sections of reading, writing, listening, and speaking. The speaking, listening, and reading sections were excluded due to their irrelevance to the current study. The writing section contains three parts: part one questions 1-5, sentence transformation; part two question 6, writing a short message of 35-45 words; and part three questions 7 and 8, asking the participants to write a letter or a story of about 100 words.

An example of sentence transformations is the following.

- *When I was young, I drove a small car.*
- *I used to a small car when I was young.*

The second part presents a topic for which the learners have to write a message of 35-45 words.

- *You are going to a concert this evening with a group of friends and want to ask your English friend Pat to come too. In your note, ask Pat to join you at the concert and explain where the concert will take place.*

For the third part, students should write a letter to a friend or write a story as an assignment to their teacher. PET assesses the test-takers' use of language in real-life situations. To make sure of the validity of the tests utilized, a pilot testing phase was tried before putting the tests into practice.

3.2.2. Checklist

A perception checklist, embracing 20 yes/no statements created by the researchers, was employed to find out about the participants' perceptions towards diagnostic assessment and remedial instruction. The researchers developed the checklist based on the literature. The researchers then consulted some experts in the field of language teaching to pass their comments on the content of the items and revised the items accordingly. The checklist was answered by the participants of the experimental group at the end of the experiment.

3.2.3. Semi-Structured Interview

The last instrument utilized was face-to-face semi-structured interviews conducted and recorded by one of the researchers aiming at achieving in-depth information concerning L2 learners' perceptions of diagnostic assessment and remedial instruction. In this type of interview, researchers use several pre-planned questions to be responded by each interviewee. Seven participants (four females, 57.14%, and three males, 42.86%) from the experimental group participated in the interviews. The interview questions were:

1. Do you think that diagnostic assessment could improve your writing ability? If yes, in what ways?
2. What is your idea regarding receiving feedback in the process of writing tasks?
3. Do you think that remedial instruction was effective to improve your writing performance? If yes, in what ways?
4. Does remedial instruction lead to receiving better marks? If yes, how?

To ensure the validity of the questions, the researchers consulted experts of the field and also piloted questions with few participants at the

start of the data collection phase and before applying them with all the participants.

3.3. Procedure

The current study was carried out through an explanatory sequential mixed-methods design, which is a two-phase design. In this two-phase design, researchers first compile the quantitative data, analyze the results, and then move towards the next qualitative phase. The objective of this design was to clarify the primary quantitative results utilizing qualitative data to provide a comprehensive and applicable picture (Creswell & Creswell, 2017).

Eighty-five lower-intermediate level male and female L2 learners with the age range of 19-25 took part in this research. They took the OQPT to determine their proficiency level. Then, 60 learners who obtained the scores within one standard deviation above and below the mean were selected as the participants. They were then assigned randomly to an experimental group, diagnostic assessment and remedial instruction (N=30), and a control group (N= 30).

Both groups participated in the writing section of PET as the pretest to reveal their writing ability. However, only the experimental group received diagnostic assessment and remedial instruction on their writing throughout the course. That is, for the participants of the experimental group, PET was used as a practice test. After checking their answers and recognizing their weaknesses, the teacher, who was one of the researchers, held a compensatory session to discuss their difficulties and weaknesses. In the next step, the instructor tested the hypothesis to obtain acceptable evidence about the challenges. After, the instructor checked the hypothesis and consulted an expert for diagnostic assessment of writing. Then, the instructor discovered the correct assumption and provided appropriate feedback to the learners in detail. The instructor had to provide the feedback directly and point to the exact problem in particular, rather than merely providing a general suggestion towards the writing task.

The following principles and strategies from Nicol and Macfarlane-Dick (2006) were used in the experimental group:

- The instructor provided conceptualized feedback in a dialog form, not just transmitting information.
- The instructor attempted to inform the learners directly to ensure their proper responses.

- The instructor provided opportunities for the learners to learn something from peer discussion and determined precisely the parts of the activity they met during the process.
- The instructor demonstrated a clear explanation in line with the erroneous answers.

On the other hand, the control group proceeded along with the conventional writing classes and used writing techniques such as taking notes, outlining, using simpler words, and writing short sentences. After four weeks of instruction, another PET was administered as the posttest to both the experimental and control groups to check their progress. In addition, a perception checklist comprising 20 yes/no items was given to the experimental group to elicit their perceptions of diagnostic assessment and remedial instruction on the improvement of their writing skill. Finally, seven L2 learners from the experimental group were randomly selected to answer the interview questions. The interviews were recorded and subsequently transcribed. Afterward, the researchers created a codebook within which the transcriptions were coded as major and minor codes, and then organized the codes thematically (Creswell & Poth, 2016). The researchers worked collaboratively in coding the interviews and in case of differences, they negotiated to reach agreement.

4. Results

First, the assumptions of normality of the data, reliability of the tests, and homogeneity of the groups were checked, and the outcomes are represented below (Table 1).

As indicated in Table 1, the significant values of the OQPT, pretest, and posttest of the experimental group are .19, .36, and .21, respectively, all of which bear normal distribution because they are all above the critical point ($\alpha=.05$; $p>\alpha$). The significant values of the control group's OQPT, pretest, and posttest are .41, .55, and .39 and are also normal since they are above the critical point ($\alpha=.05$; $p>\alpha$). Therefore, parametric analyses were considered appropriate for this study.

Table 1. *One-sample Kolmogorov-Smirnov Test of the Two Groups*

		OQPT	Pretest	Posttest	OQPT	Pretest	Posttest
		EG	EG	EG	CG	CG	CG
N		30	30	30	30	30	30
Normal Parameters	Mean	26.73	16.77	18.54	27.20	15.46	15.75
	SD	2.19	.879	.907	1.97	1.170	1.151
Asymp. Sig. (2-tailed)		.19	.36	.21	.41	.55	.39

EG: Experimental Group

CG: Control Group

The participants' knowledge of English was also assessed at the start of the study to check their homogeneity. To do so, an independent-samples t-test was run on the two groups' mean scores on the OQPT (Tables 2 and 3).

Table 2. Descriptive Statistics of the OQPT of the Two Groups

	N	Mean	SD
Experimental Group	30	26.73	2.19
Control Group	30	27.20	1.97

Table 2 presents the descriptive statistics of the two groups on the OQPT and Table 3 shows that there was not a significant variation between the two groups' performance on the OQPT at the start of the inquiry because the significant value related to the means is .39 and higher than the critical point ($t=-.86$; $p=.39$; $\alpha=.05$; $p>\alpha$). Hence, it could be claimed that the learners were at almost the same proficiency level at the beginning of the study, and therefore, the outcomes could be compared.

Table 3. Independent-samples T-test on the OQPT of the Two Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
OQPT	Equal variances assumed	.62	.43	-.86	58	.39

The next important point was checking the reliability of the OQPT, pretests and posttests. The KR21 reliability of the OQPT was .92 for the experimental group and .89 for the control group. According to Muijs (2010), reliability values above .8 are considered very strong.

Table 4. Inter-rater Reliability of the Two Raters' Scores

		Pretest, EG, R2	Posttest, EG, R2	Pretest, CG, R2	Posttest, CG, R2
Pretest, EG, R1	Pearson Correlation	.92*			
	Sig. (2-tailed)	.00			
Posttest, EG, R1	Pearson Correlation		.92*		
	Sig. (2-tailed)		.00		
Pretest, CG, R1	Pearson Correlation			.94*	
	Sig. (2-tailed)			.00	
Posttest, CG, R1	Pearson Correlation				.92*
	Sig. (2-tailed)				.00

R1: Rater 1

R2: Rater 2

Accordingly, the reliability of the OQPT of both groups was very high and strong. Moreover, the reliability of the pretests and posttests of the two groups were checked through correlation coefficient as there were two raters scoring the writings and all the data were normally distributed (Table 4).

As indicated in Table 4, all the data sets related to the pretest and posttest of the two groups are strongly reliable since all the Pearson Correlation values between the two raters scores are higher than .9.

The first research question was an attempt to see if applying diagnostic assessment and remedial instruction was effective in improving the L2 participants' writing ability. To this end, the two groups' pretest and posttest scores were compared through repeated-measures two-way ANOVA (Tables 5-7).

Table 5 demonstrates that the experimental group's mean score from the pretest to the posttest changed from 16.77 to 18.54 and that of the control group shifted from 15.46 to 15.75. It means both groups improved from the pretest to the posttest, but the experimental group improved more. To check whether this difference was significant, a repeated-measures two-way ANOVA was run on the pretest and posttest scores of the two groups (Hinton et al., 2014).

Table 5. Descriptive Statistics of the Pretest and Posttest of the Two Groups

		Pretest	Posttest
Experimental Group (N=30)	Mean	16.77	18.54
	SD	.87	.90
Control Group (N=30)	Mean	15.46	15.75
	SD	1.17	1.15

As it can be seen in Table 6, the within-subject effect of the two groups, *time*, showed a significant difference between the pretest and posttest scores of the two groups since the significance value is .00 and smaller than the critical value ($F=393.08$; $p=.00$; $\alpha=.05$; $p<\alpha$). The significance value of the *group* factor, the between subject effect, was also significant ($F=60.80$; $p=.00$; $\alpha=.05$; $p<\alpha$). Moreover, the value for *time * group*, which is an illustration of the interaction effect of the two groups' performance, was again .00 and less than the critical value ($F=201.85$; $p=.00$; $\alpha=.05$; $p<\alpha$). That is, the two groups' progress was considerably different from each other from the pretest to the posttest. Therefore, it could be said that the two groups had different degrees of improvement

from the pretest to the posttest. To check which group performed better, the pairwise comparison of the two groups in their posttest is designated in Table 7.

Table 6. *Repeated-Measures Two-way ANOVA of the Pretest and Posttest of the Two Groups*

Effect	Value	F	Sig.	Partial Eta Squared
Time	.87	393.08	.00*	.87
Group		60.80	.00*	.51
Time * Group	.77	201.85	.00*	.77

Table 7 shows a significant difference between the posttest scores of the two groups as the significance value was .00 and the critical .05 level was smaller. In other words, applying diagnostic assessment and remedial instruction was effective in improving L2 learners’ writing ability.

Table 7. *Pairwise Comparison of the Two Groups’ Posttest Scores*

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
Experimental	Control	1.02*	.05	.00*

To sum up, the first research question can be answered as “applying diagnostic assessment and remedial instruction is effective in improving L2 learners’ writing ability”.

The second research question aimed at exploring the L2 learners’ perceptions of diagnostic assessment and remedial instruction. To answer this question, a perceptions checklist was developed based on the literature, reviewed by experts, revised, and used in the experimental group. The participants’ responses were analyzed and the results are reported in Table 8.

The frequency analysis of the responses to the perceptions checklist (Table 8) revealed that the majority of the participants had a positive perception towards diagnostic assessment and remedial instruction since the frequency of the yes responses was 23 or above (out of 30) to all individual items of the checklist.

Table 8. *Frequency Analysis of the Responses to the Perceptions Checklist*

Item No.	Statement	Yes	No
1	Diagnostic assessment improved my writing performance through practice tests.	29	1
2	The teacher identified my writing weak points through diagnostic assessment.	27	3
3	I enjoy receiving feedback in the process of the writing task.	27	3
4	The teacher provided the required information and instruction through effective materials.	28	2
5	I learned how to deal with writing difficulties through diagnostic assessment.	28	2
6	I learned how to solve my writing problems through remedial instruction.	26	4
7	I learned how to improve my writing ability through useful strategies.	26	4
8	The teacher encouraged me during the process to improve my writing performance.	26	4
9	The teacher cared about my writing problems in class.	29	1
10	I enjoyed the effect of diagnostic assessment during the process of writing.	27	3
11	By the teachers' hints during remedial instruction, I became aware of my weak points.	29	1
12	Remedial instruction was effective to improve my writing skill.	26	4
13	The teachers' remedial instruction and diagnostic assessment during the writing course made me interested in improving my writing skill.	28	2
14	The teachers' remedial instructions were effective in gaining better marks.	28	2
15	By diagnostic assessment and remedial instruction, writing is more enjoyable.	26	4
16	The teachers' remedial instruction and practice tests of diagnostic assessment made me less stressed.	23	7
17	When the teacher checked my writing task, it made me have more concentration.	27	3
18	The interaction between the teacher and me during the writing test increased my self-confidence.	27	3
19	In the future, if I have more free time at home, I will write more.	25	5
20	Generally, I agree with the diagnostic assessment and remedial instruction during and after the course to improve my writing ability.	27	3

To further delve into the L2 learners' perceptions of diagnostic assessment and remedial instruction, semi-structured interviews were done with 7 participants in the experimental group. The interviews were recorded, transcribed, and analyzed by identifying and coding some important themes. The coding was done by the researchers collaboratively

to be systematic and consistent. In the case of controversies, there was discussion between the researchers to reach agreement. The themes extracted from the participants’ responses are presented in Table 9.

Table 9. *Frequency and Percentage of Themes from Interviews*

Theme	Frequency	Percentage
Effect of Diagnostic Assessment		
Identifying strengths and weak points	7	6.30
Dealing with writing difficulties	7	6.30
Being essential and useful to determine weaknesses	6	5.40
Enjoying the effect of diagnostic assessment	7	6.30
Receiving Feedback		
Enjoyable	7	6.30
Solving problems	7	6.30
Helpful to write better	7	6.30
Objective evaluation of writing	7	6.30
Useful to recognize weaknesses	7	6.30
Remedial Instruction		
Helpful to deal with writing problems	7	6.30
Effective to improve writing	7	6.30
Correcting mistakes	7	6.30
Enhancing the learners’ interest towards writing	7	6.30
Better Marks and Total Improvement		
Through remedial instruction	7	6.30
Through receiving feedback	7	6.30
Improve writing performance	7	6.30
Total	111	100

As it can be seen in Table 9, except for the theme that diagnostic assessment was considered essential and useful to determine weaknesses, which was referred to six times (5.40%), all the other themes were mentioned seven times (6.30%) by the interviewees. In other words, the interview responses were very similar to each other. The analysis of the interview responses showed that all the interviewees had positive perceptions towards applying diagnostic assessment and remedial instruction to improve their writing performance. Some examples follow. The examples are not refined in accuracy to observe the authenticity of the responses. Regarding the first code: *Effect of diagnostic assessment*

Interviewee 1 mentioned: "Yes, we learned how to deal with writing difficulties. I enjoyed the feedback process during the remedial instruction, it made me concentrate on weak points and try to correct them. And surely, the whole process helped me to receive better marks."

Interviewee 2 declared: "I think that diagnostic assessment could improve my writing ability because I realized my weak points and

mistakes, and corrected them with the help of my instructor's feedback and remedial instruction."

Interviewee 4: "I learned some tips when my instructor reviewed my writing task and told my mistakes. This helped me to fix my mistakes quickly and prevent repeated mistakes through diagnostic assessment."

Concerning the code: *receiving feedback*, Interviewee 5 mentioned: "Getting feedback is important because it gave me an objective evaluation of the writing task and it helped me to recognize my strengths and weaknesses through diagnostic assessment."

Interviewee 7 stated: "Remedial instruction makes mistakes corrected faster and better. It is helpful to develop skills, so the result is better graded. Because we are aware of our problems and we don't repeat them."

In sum, to answer the second research question posing "What are L2 learners' perceptions of diagnostic assessment and remedial instruction?" we concluded that L2 learners mainly had positive perceptions of diagnostic assessment and remedial instruction. That is, the participants were happy to apply diagnostic assessment and remedial instruction to improve their writing ability. In their viewpoint, they could pay more attention to their writing difficulties, focus more on them, and then correct the mistakes through using diagnostic assessment, teacher feedback, and remedial instruction. Some participants mentioned that they learnt how to deal with writing problems and how to solve them after their teacher's evaluations, and finally, they received a better mark.

5. Discussion

The current study scrutinized the impact of diagnostic assessment and remedial instruction on L2 learners' writing ability and their perceptions towards these techniques. It was implemented within a framework encompassing diagnostic assessment, remedial instruction, and feedback, each of which bearing a particular function. The findings indicated that using diagnostic assessment and remedial instruction was an effective way of assisting the learners to improve their writing ability and they had positive perceptions of diagnostic assessment and remedial instruction.

The findings of the current research are consistent with several investigations. Rafi et al. (2022) found the influential effect of computer-mediated diagnostic assessment of mixed-ability L2 learners' performance on tiered tasks. Pourdana (2022) further worked on the impact of computer-assisted diagnostic assessment on sustainability of L2 learners' collaborative writing improvement and their engagement where diagnostic assessment was found out to be effective. Moreover, Doe (2015) found that diagnostic assessment can help L2 students in the class

and outside the classroom walls to obtain the necessary skills to overcome their writing problems and it can improve autonomous and lifelong L2 learning. He further discovered that L2 students could modify their practices and improve their English skills through feedback. Moreover, Granfeldt and Agren (2014) identified the effectiveness of direct profile, as a diagnostic assessment tool, to develop the students' linguistic structures and to supply them with exhaustive and fast feedback.

Similar to the outcomes of earlier research on diagnostic assessment depicting its positive influence on different skills, the results of the present inquiry are consistent with the effectiveness of diagnostic assessment as well. Diagnostic assessment serves as a tool to understand and identify L2 students' weak points and strengths, more specifically weak points, and to provide feedback with remedial instruction (Jang & Wagner, 2013), which was the case in the course of the current investigation. Besides, remedial instruction can be changed and presented in various forms relying on the type of difficulty diagnosed by the instructor. Further, the significant issue regarding diagnostic assessment is to provide the required knowledge and information for the learners' improvement (Alderson et al., 2014).

The outcomes of this research are also in line with Yi (2017) who investigated the different models of cognitive diagnostic assessment to check the response behavior of the examinees on their reading comprehension skill and found the effectiveness of the models. Similarly, Kim (2015) did research on the cognitive diagnostic assessment with the goal of diagnosing the weak points and strengths of the students' reading comprehension performance. The findings showed that using the cognitive diagnostic assessment had a positive effect on recognizing the students' potentials and weaknesses. The results also supported the claim that diagnostic assessment improved suitability of the teaching materials and it upgraded the reading ability of the learners.

Integrating diagnostic assessment into the curriculum was the subject of Fan et al.'s (2021) study in which they maintained that using diagnostic assessment had a useful effect on the learners' perceptions and attitudes towards compensatory instructions and it enhanced the students' level of reading comprehension ability. Moreover, the results illustrated that diagnostic assessment could act as a practical component to guide both instructors and learners to develop their English language skills.

Considering the results of this research and the aforementioned similar studies on diagnostic assessment and remedial instruction with feedback to improve the learners' language knowledge, it is concluded that diagnostic assessment is a proper technique to identify and determine the

writing problems, to eliminate L2 students' difficulties in various aspects of writing, and assist students to develop their required knowledge. Applying diagnostic assessment makes instructors cognizant of diverse types of feedback pivotal to assist L2 students to dissolve their difficulties with the L2. Furthermore, diagnostic assessment serves as an applicable way to assist instructors to interact with L2 learners concerning their strengths and weaknesses and supply the essential feedback after and within the process of remedial instruction. In addition, the outcomes of this study indicated that diagnostic assessment is a practical tool for L2 students to outperform on their final tests after obtaining feedback on various types of activities or practice tests during the semester. Ultimately, based on the findings of the current study which revealed the participants' positive perceptions and the remarkable influence of diagnostic assessment and remedial instruction with feedback, it is recommended to apply this assessment technique in different L2 teaching and learning contexts.

6. Conclusion

The present research was designed to probe L2 learners' perceptions of diagnostic assessment and remedial instruction in improving their writing ability. To this end, the present research used a mixed-methods design, which was carried out in two phases. Considering the results of the study, it can be concluded that the participants benefited from diagnostic assessment and remedial instruction, which served as an applicable technique with considerable effects on writing improvement, and they expressed their positive perceptions of this technique.

This study can be practical for L2 learners and teachers as they can utilize a variety of techniques which focus on the strengths and weaknesses of most learners to develop their writing skill. That is, the effectiveness of applying diagnostic assessment and remedial instruction can be valuable for most teachers to use this technique and help students to develop their writing performance without any pressure or tension. Teachers can figure out their students' writing difficulties, eliminate them with additional explanations, and provide appropriate feedback. Furthermore, diagnostic assessment can strengthen the interaction between L2 teachers and those students with problems and those who need more motivation to obtain better marks. It is noteworthy to mention that the effect of using diagnostic assessment with remedial instruction can be useful for test developers and materials developers by organizing and categorizing the content of the materials and tests based on L2 students' strengths and problems. Thus, through diagnostic assessment, they will be

able to prepare tasks and tests compatible with L2 students' levels that can result in quicker progress and more satisfaction.

A point in effect was that as the researcher did not have any control over the possible potential biases the participants may have had throughout the self-report section, it could be counted as a limitation of the present inquiry.

Because of the effectiveness of diagnostic assessment in L2 classes, some suggestions are provided for further research. Other researchers can conduct a comparative study on gender differences or the proficiency level of the participants to find out the benefits of diagnostic assessment and remedial instruction in different groups of students. Moreover, this study was planned to investigate L2 learners' perceptions of diagnostic assessment and remedial instruction to improve their writing performance. Future studies can focus on the effect of other types of assessment on other language skills and the learners' perceptions of those assessment types. In addition, the teachers are recommended to use diagnostic assessment in their classrooms to predict the possible strengths and particularly weaknesses of the students that would be considered a good strategy to remedy their learning.

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