



Research Article

An Investigation into the Effect of Online Group Dynamic Assessment on EFL Learners' Grammar Achievement

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ABSTRACT

The academic discourse surrounding Dynamic Assessment (DA) acknowledges its significance within the realm of language testing, yet expresses reservations regarding its practicability when applied to larger groups of individuals. The aforementioned limitation of dynamic assessment has prompted the utilization of Online Group Dynamic Assessment (GDA). Regarding the role of GDA and English as a Foreign Language (EFL) learners' problems with grammar learning, the present study attempted to investigate the effect of GDA on EFL learners' grammar achievement. To this end, 70 students participated in this experimental research and were given the Oxford Placement Test (OPT). As a result, a total of 52 participants were chosen through a selection process involving the OPT with subsequent random assignment to both the experimental and control groups. Subsequently, a grammar test was administered as a pretest for both groups. The former were taught through online GDA through Adobe Custom while the latter had their own conventional method of explicit instruction. After 10 sessions of treatment instructions, both groups sat for the grammar posttest, parallel to the pretest. The application of the independent samples t-test revealed that there were significant differences in the post-test grammar achievement between the participants in the experimental group and the control group. Specifically, the individuals in the experimental group exhibited superior performance compared to their counterparts in the control group. The results of this study can shed light on the effectiveness of GDA, in grammar achievement among Iranian learners. In line with these findings, some implications for language stakeholders were provided.

Introduction

The acquisition of English language proficiency entails acknowledging the pivotal role that grammar

plays in both language competence and interpersonal abilities (Zhou, 2018). Furthermore, it is widely recognized that grammar serves as a

crucial framework for successful English language acquisition (Cam & Tran, 2017). In accordance with Newby (2003), grammar is perceived as a constituent element within an intricate assemblage of diverse linguistic subsystems and sub-skills. By acquiring knowledge of grammatical rules, individuals can effectively prevent language fossilization and improve their overall performance, along with various associated advantages. Furthermore, a firm grasp of language structure principles fosters the development of autonomous learners who possess the ability to navigate their own learning process beyond the confines of a traditional educational setting. Moreover, such learners can compartmentalize their learning experiences, reserving the acquisition and utilization of knowledge within the confines of the classroom. Additionally, due to the useful role of mobile-assisted language learning (MALL) and the improvement of the quality of both teaching and learning, MALL has obtained a high amount of attention in the realm of education (Loewen et al. 2019; Rezaee et al., 2019). The advent of cellphone technology, specifically tablets, and smartphones, has greatly facilitated the process of language learning through their widespread availability and innovative instructional approaches, thereby revolutionizing traditional methods (Kukulka Hulme et al., 2017; Loewen et al., 2019). Several studies substantiated the effects of MALL on language learning experiences (Chen et al. 2019; Lai & Zheng, 2018; Loewen et al., 2019; Rosell-Aguilar, 2018).

Besides, in alignment with the transformative shifts in language teaching methodologies and approaches, language testing and evaluation processes have likewise experienced notable modifications. DA is a non-traditional assessment methodology that offers an alternative to conventional static approaches. It espouses the belief that assessment and teaching are inherently interconnected, rejecting the notion of them being discreetly independent pursuits (Lantolf, 2009; Poehner, 2008). According to Poehner (2009), DA holds the potential to enable language instructors to foster substantive exchanges among learners, by offering them feedback that is conducive to the uninterrupted progression of interactions. The

interpersonal dynamic between the instructor and the student holds significant importance in this specific mode of assessment, as it serves as a mirror to the disparity that exists between the current level of knowledge possessed by the student and the untapped reservoir of knowledge they have the capacity to acquire (Pileh Roud & Hidri, 2021). Furthermore, Poehner (2009) coined the term GDA, which is premised on the idea that educators providing constructive feedback at the collective level can facilitate learners' Zone of Proximal Development (ZPD) and enhance their proficiency. GDA occurs when students engage in active interaction and endeavor to motivate their peers to participate in the educational environment, under the vigilant supervision of the teacher (Poehner, 2009).

In the context of GDA, mediations prioritize the enhancement of collective skills among all members of a particular class, as opposed to solely focusing on individual participants. Mediations in DA can be categorized into two main approaches: interventionist and interactionist. The interventionist approach encompasses the utilization of standardized administration procedures and pre-established assistance forms to gauge the extent of support necessary for a learner to attain a specific linguistic structure. In contrast, the interactionist perspective predominantly prioritizes the cultivation of collaborative dialogues. Cooperative dialoguing facilitates the development of support and assistance utilizing interactions between an examiner and a learner, or a collective of learners (Poehner, 2008). Consequently, this feature renders it particularly well-suited for incorporation into the GDA approach. GDA can be conceived through the adoption of both cumulative and concurrent approaches. The first is cumulative GDA in which the students primarily take turns to be involved in primary interaction with the teacher (Poehner, 2009). For instance, when a student gives a wrong answer, prompts can be produced by the instructors until the correct reply is provided by the learner (Poehner, 2009). The second is Concurrent assessment which can be defined as a situation when the teacher starts with a specific group but passes on to other learners instead of just remaining on one learner or one

group. The teacher cooperates with the whole class and this interaction changes from the first to the second cooperation in concurrent GDA.

Several studies have demonstrated the effectiveness of the Guided Discovery Approach (GDA) in enhancing different language skills, including writing accuracy (Tabatabaee et al., 2018), reading (Badhoda & Shabani, 2018; Birjandi et al., 2013), listening (Alavi et al., 2011; Moradian & Kogani Baharvand, 2015), and writing (Shabani, 2018). Although these studies have indicated the usefulness of GDA, online GDA has not been largely applied by teachers since they have supposed that it is not practical (Miri et al., 2017). Although hundreds of studies have been conducted on assessment in many subjects, based on the researchers' knowledge, there was a gap in the existing literature about the possible effect of the online GDA as a type of DA on EFL learners' grammar achievement.

Review of the Literature Grammar

Grammar does not have an explicit meaning as Bade (2008) expressed the most classic explanation of grammar as a constructor of the language. In his definition, grammar is a collection of guidelines that displays the alterations of words and how they are joined to build new blocks. In addition, Duso (2007) mentioned that currently, grammar is not just a simple set of morphosyntactic guidelines, but it is a tool for communication, which means a "mediation of words and contexts. Therefore, grammar is converted to a set of instructions with which the speaker can comprehend the language and produce accurate propositions. Moreover, Duso (2007) inclined the distinctive stages of grammar's concepts: the phonological stage, which involves pronunciation, rhythm, and tone; the morphosyntactic stage; the stage of social language, which contains the types and constants of a language; the vocabulary stage, that comprises semantics and morphology; the practical stage, which means the communication activities accomplished through language; and the text stage, which realizes segments of various types of texts.

Group Dynamic Assessment

The notion of DA is associated with Vygotsky's Socio-cultural Theory (SCT) of Mind as the ZPD, scaffolding, and mediation. According to Lantolf (2006), the Sociocultural Theory (SCT) does not aim to elucidate the process in which learners acquire the cultural values associated with a second language (L2) but rather focuses on the internalization of L2 knowledge through sociocultural experiences. The most fundamental notion in Vygotsky's SCT is the ZPD, an instantiation of the relation between theory and practice (Lantolf & Poehner, 2011). The practitioners of SCT assert that mediators possess the ability to engage in simultaneous discussion with a cohort of learners, thereby collaboratively constructing multiple ZPDs and augmenting the collective ZPD of the entire group (Poehner & Lantolf, 2005; Poehner, 2009). Mediation can be characterized as the cycle through which individuals utilize culturally built relics, notions, and exercises to control the tangible world or their own and one another's societal and psychological activity (Lantolf & Thorne, 2006). The notion of scaffolding must be distinguished from Vygotsky's groundbreaking concept of mediation, which is a rigorous effort taken by the instructor to offer as much assistance as possible, and in various forms, to the learner while considering the learner's responsiveness and making cognitive adjustments as appropriate. According to Poehner (2008), the reason behind mediation is to identify and enhance learners' rising abilities through adjusted assistance. The execution of DA for a group of L2 students fits well into a structure called GDA (Poehner, 2009). In this method, the educator involves the group in exercises that necessitate mediation for all participants. In doing so, the educator provides mediation as a reaction to the hardship of one of the students in the group. Poehner (2009) also mentioned that GDA's contribution to L2 learning is that it makes class associations more structured and more accustomed to students' rising skills. Particularly, the educator might provide GDA in two various methods in the class, including concurrent GDA and cumulative GDA (Poehner, 2009).

Related Studies

In a study conducted by Mehri and Amiaran (2015), the impact of GDA on enhancing the L2 (second language) learners' mastery of the past tense was investigated. The researchers selected three learners from varying proficiency levels, namely elementary, low-intermediate, and intermediate general proficiency, and assigned them the task of reading a novel and subsequently recounting the narrative. The teacher offered dynamic intervention during the story retelling, which was assessed in writing tasks. The results revealed that the participants switched their roles from simple receivers of the instructor's inputs to active providers of mediation to other group members. This also helped them to increase their knowledge of the concept of the past tense. In a study, Poehner and Infante (2017) examined the impacts of GDA on the development of L2 students' knowledge awareness. The results showed that providing the learners with effective feedback consistent with their needs could foster their knowledge and awareness. This enabled them to go beyond their solo abilities. The results of this study are in keeping with one of the most basic principles of Vygotsky's sociocultural theory. Based on this theory, knowledge is initially co-constructed on the social level, enabling the learners to engage in social interactions.

Mirzaei et al. (2016) contrasted the success of GDA and DA in increasing vocabulary knowledge. The results of their study indicated that the implementation of GDA proved to be more effective in enhancing individuals' grasp of vocabulary. Additionally, the qualitative analysis of the conversational feedback revealed that cumulative GDA could serve as an effective instrument for problem-solving and aid educators in assessing students' comprehension of individual words and their ability to utilize the guidance provided by educators. Moreover, Shabani (2018) additionally investigated whether or not GDA and non-GDA were different in increasing writing over twelve weeks. The GDA group engaged in conversational interactions with their educator and received feedback that was tailored to their level of understanding. In contrast, the non-GDA group received feedback that was not open to negotiation. The outcome of his research demonstrated that

members of the GDA presented substantially better compared to learners who did not carry out GDA in writing skills.

Moradian et al. (2019) sought to probe the effect of simultaneous GDA in teaching Iranian EFL students on demand and refusal using a mixed methods approach. While the simultaneous GDA group was given calibrated criticism, The non-dynamic assessment (N-DA) group received explicit assistance without considering their ZPD. According to the outcomes of the evaluation of the data, utilizing a t-test demonstrated that the GDA group presented substantially better than the N-DA one. Furthermore, the qualitative micro-genetic evaluation of the conversation between the students and their educator demonstrated the success of simultaneous GDA in the education of demands and denials. In their study, Alemi et al. (2019) examined whether or not GDA improves EFL learners' grammatical accuracy in their writing in an online setting. The study sample comprised two distinct groups, each assigned to complete a set of seven writing tasks, which were then shared via the messaging platform Telegram. The participants in the experimental group were administered graduated and contingent feedback through the utilization of a concurrent interactive methodology. The findings of the study revealed that the group exposed to the GDA demonstrated a superior level of performance in terms of grammar and writing accuracy compared to the group not exposed to GDA, commonly referred to as the non-GDA group.

According to the literature discussed above and considering the existing knowledge, it appears that there has been a lack of utilization of DA models, including online GDA models, to instruct grammar thus far. Consequently, concerning the above-mentioned points and related studies, the current study aimed to study the effect of online GDA on EFL grammar achievement. Accordingly, the following research question and hypothesis were raised:

Q1: Does online GDA have any significant effect on EFL learners' grammar achievement?

H01: Online GDA does not have any significant effect on EFL learners' grammar achievement.

Method

Participants

This study involved the selection of a group comprising 70 male and female students enrolled in English programs at South Tehran University. The mean age of the study participants was approximately 26 years, with a range of 20 to 32 years. All participants exhibited an equivalent level of language proficiency. The participants of the study were chosen based on their performance in the proficiency test (OPT), particularly directed towards individuals whose scores fall within a range of one standard deviation above to one standard deviation below the mean. The participants were subsequently subjected to random assignment, resulting in the formation of a control group and an experimental group. The gender distribution was balanced within each group, with 35% male and 65% female participants in both the control and experimental groups. Prior to their participation, all selected individuals were provided with detailed information about the nature and purpose of the study. Informed consent was obtained from each participant, emphasizing their voluntary participation and the option to withdraw at any stage of the research without facing any consequences. The study design adhered to ethical guidelines, ensuring the confidentiality and anonymity of participants throughout the research process. Ethical approval for the study was obtained from the relevant institutional review board at South Tehran University. This ethical framework aimed to protect the rights and well-being of the participants, guaranteeing transparency and respect for their autonomy. The participants were given the opportunity to refuse participation initially and had the right to withdraw from the study at any point, reinforcing the principles of informed consent and voluntary involvement in the research process.

Instruments

For the aim of the inquiry, the subsequent instruments were utilized.

Oxford Placement Test (OPT)

The instrument utilized in the present study consisted of a total of 60 items. The test, being a standardized measure of proficiency, is presumed

to possess satisfactory levels of validity and reliability ($r=0.92$), as asserted by the University of Cambridge Local Examination Syndicate.

Grammar Pretest

A teacher-made grammar test including 20 items was used as the pretest in this study. The grammar items were developed based on the content of the student's course book "Communicate What You Mean", to evaluate the EFL learners' enhancement of grammar knowledge. The time allocated for taking the test was around 20 minutes. It is worth mentioning that at first, the test included 25 multiple choice items and it was validated by two experts in TEFL to see whether the items relate to the contents covered in the book *Communicate What You Mean*. The experts, the instructor of the classes and her colleague from the South Tehran Branch, both were teaching advanced grammar there. They reviewed the items and deleted 5 repeated or similar items. Finally, the test with 20 items was approved. Then the grammar test was piloted to see whether there were any problems with the items and time during the performance. The reliability of the test was .721 calculated through Cronbach's Alpha.

Grammar Posttest

The participants in groups were also asked to have the grammar test parallel (identical) to the pretest after the treatment. The test aims to assess the learners' development in grammar after treatment.

Procedure

The OPT was administered to a sample of 70 female and male students to establish homogeneity among the participants. Fifty-two individuals, whose test scores deviated by one standard deviation from the mean, were purposefully sampled and randomly allocated into two distinct groups for the study. In this study, the experimental group received instruction utilizing GDA, whereas the control group was instructed using a traditional teaching method. Both cohorts were instructed to participate in a grammar examination. It is noteworthy to mention that the whole treatment

took 13 sessions, taking place twice a week and lasting approximately 80 minutes per session. Ten sessions were designated for the purpose of instructing grammar using online GDA through Adobe Custom, while the remaining sessions were allocated for administering assessments.

Additionally, the implemented procedures adhere to the principles of Cumulative GDA, as proposed by Poehner (2009). Within this experimental group, participants engaged in collaborative efforts to construct sentences, while the teacher facilitated individual mediation, allowing the group members to progress their ZPD. Furthermore, co-constructing ZPDs with the individuals served to propel the advancement of the collective group ZPD.

In the context of cumulative GDA, it is expected that students adopt a rotational approach, wherein each participant takes turns assuming the role of the primary interactant with the teacher. When a student provided an erroneous response, the educator supplied the student with mediation prompts in order to guide them toward an accurate solution. In order to facilitate the identification of areas of difficulty and promote the optimal development of each student, the teacher in the experimental group adopted a specific approach. This approach involved providing the initially addressed student with a prompt that ranged from implicit to explicit. This allowed the student to progressively identify their areas of difficulty and make progress toward achieving their maximum potential for development. Thus, the following steps were taken in this experimental group:

1. The researcher initially divided the participants into seven distinct groups. During the grouping process, an attempt was made to allocate learners into groups consisting of individuals with comparable levels of grammatical proficiency. This endeavor relied on the analysis of pretest scores as a criterion for grouping.
2. After teaching each unit, students were asked to do the exercises. They intend to engage students in situation-based activities working with semantically, grammatically, and situationally correct responses.

3. Each lesson ends with a practice exam in which the instructor could use Adobe's custom pods while creating new and fun ways to interact. The participants in the experimental group were asked to work in pairs or groups, talk to each other, and share their analyses or comments.
4. The researcher was in the groups to observe and provide mediation for the individual members during their analyses. When a student provided an incorrect answer, the researcher provided mediation prompts until she/he reached the correct answer.
5. According to the classroom discussion, the prompts started with the most implicit to the most explicit ones. First, the semantical aspects of grammatical structures were mentioned implicitly to remind the functions taught by the instructor, and then the structural hints in the sentence were mentioned or reminded. In the event that the students were unsuccessful in rectifying the errors following the initial feedback, the researcher endeavored to provide more explicit feedback and sought the assistance of other students to address the identified errors. In accordance with Poehner's (2009) viewpoint, the instructor endeavored to rectify grammatical inaccuracies by employing a combination of dialogic exchanges and incremental feedback, spanning a continuum from the tacitly implicit to the overtly explicit. In instances where the student was unable to rectify the error based on the initial feedback, the teacher rendered the feedback more explicit and encouraged fellow students to address the mistake.
6. In cases where the application of grammatical structures was found to be incorrect, the instructor would offer the student an alternative sentence that exemplified the appropriate use of such grammar points. If the learner possessed the ability to formulate an additional sentence, the researcher stopped here; however, if this was not the case, the subsequent actions were implemented in

the manner described below. The instructor provided a comprehensive elucidation, thereby enhancing the clarity of the grammatical concepts being discussed. If the learner was unable to effectively apply the grammar points in the preceding step, the instructor provided equivalent grammar points in conjunction with those previously covered to cultivate the learner's familiarity with various grammatical forms.

7. Ultimately, following unsuccessful attempts by the teacher to mediate and provide collective scaffolding in order to enhance the sentence, a revised version was presented to the student. This revision was accompanied by an elucidation to ensure clarity and comprehension.

In this particular methodology, the students alternated their roles as primary participants in direct interaction with the teacher, acknowledging that each subsequent individual exchange offered the opportunity to build upon preceding interactions. The GDA interaction proceeded sequentially, with subsequent sentences continuing similarly.

In the control group, the teacher had the conventional way of teaching grammar by explaining each new grammar point to the students followed by explicit instruction. Indeed, the instructor in the control group taught grammar points in the form of explicit teaching that is mainly aimed at introducing a new topic or skill, presenting guided instruction for knowing the rules, skills, and thinking, and, providing the learners with specific

instruction by modeling, which enables the L2 learners to practice.

Following the completion of a 10-session treatment on GDA, a posttest in the form of a 20-item teacher-created grammar test was administered to two distinct groups. This was conducted to evaluate and discern any notable impact of the provided treatment on the participants' acquisition of grammar knowledge.

Data analysis

Throughout this research, various descriptive and inferential statistics were utilized. The descriptive measures utilized in this study encompassed the mean and standard deviation, while the reliability indices of the grammar test were determined using the Cronbach Alpha formula. Furthermore, a t-test was conducted to examine the efficacy of the treatment, specifically GDA, on the grammatical proficiency of learners.

Results

In order to initiate the study, it was necessary to select participants who possessed a uniform level of proficiency in the English language. The study involved a total of 70 participants, both male and female, enrolled in English programs at South Tehran University. The mean age of the study participants was approximately 26 years, ranging from 20 to 32 years. To ensure homogeneity in language proficiency, the participants were selected based on their performance in the proficiency test (OPT), with scores falling within a range of one standard deviation above to one standard deviation below the mean.

Table 1.
Descriptive Statistics of the Participants in Terms of English Language Proficiency

	Total	Statistic					Std. Error			
		Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis	Mean	Skewness	Kurtosis
OPT	70	25.17	5.828	9.00	43.00	.150	1.322	.696	.287	.566

The participants' scores in the OPT yielded a mean of 25.17, indicating a standard deviation of 5.828. The lowest and highest scores recorded were 9 and 43, respectively. In order to ensure a consistent level of English language proficiency

among participants, a cohort of 52 learners was carefully curated based on their mean scores within ± 1 standard deviation. This group was thus defined as the homogeneous subgroup of learners. According to the findings presented in Table 2, a

total of 52 students' scores were observed to be within the range of the mean score ± 1 standard deviation.

Table 2.

Descriptive Statistics of the Homogeneous Participants

	N	Minimum	Maximum	Mean	Std. Deviation
OPT Homogenized	52	21.00	30.00	25.38	2.737
Valid N (listwise)	52				

According to the data presented in Table 2, the average score of 52 participants with a consistent performance in the OPT assessment was found to be 25.38, with a standard deviation of 2.73. The students were subsequently divided into two groups, namely the control and experimental groups, through a random allocation process. In order to ensure homogeneity between groups in terms of

grammar knowledge, a statistical analysis utilizing an independent samples t-test was conducted to compare the two groups. Table 3 presents the descriptive statistics, specifically focusing on the grammar pretest scores, of the groups under examination. In a similar vein, Table 4 provides the outcomes derived from the independent samples t-test.

Table 3.

Descriptive Statistics of the Participants in Grammar Pretest

	Groups	N	Mean	Std. Deviation	Std. Error Mean	Kolmogorov-Smirnov ^a		
						Statistic	df	Sig.
Grammar Pretest	Control	24	6.9583	1.731	.35345	.127	24	.200
	Experimental	28	6.9643	1.971	.37261	.114	28	.200

During the administration of the grammar pretest, it was observed that the control group obtained an average score of 6.95, with a standard deviation of 1.73. Similarly, the experimental group achieved a mean score of 6.96, with a standard deviation of 1.97. The results of the Kolmogorov-Smirnov test indicated that there was no statistically significant deviation from the normal distribution in the grammar test scores of both groups ($p > 0.05$). Given that both groups exhibited normally distributed pretest scores, the appropriate statistical analysis to compare the control and experimental groups is the parametric test of

independent samples t-test. The findings obtained from the independent samples t-test (see Table 4) indicate that there was no significant difference between the two groups regarding their grammar scores ($t = 0.01$, $P > 0.05$). As inferred, it was determined that the individuals taking part in the investigation possessed a homogeneous level of grammatical proficiency prior to undergoing the intervention. Subsequently, the participants assigned to the experimental group were provided with GDA, while the control group was administered the conventional instructions.

Table 4.

Results of Independent Samples T-test on Grammar Pretest Scores between the Experimental and Control Groups

		Levene's Test for Equality of Variances		t-test for Equality of Means			Mean Difference
		F	Sig.	t	df	Sig. (2-tailed)	
Grammar Pretest	Equal variances assumed	.274	.603	.011	50	.991	.005
	Equal variances not assumed			.012	49.96	.991	.005

The study's research question aimed to investigate the effect of GDA on the grammar learning of EFL learners. The inquiry into this questions was pursued through a comparison of the grammar scores exhibited by the two groups subsequent to the intervention. As previously indicated, both groups exhibited a similar level of

proficiency in grammar knowledge prior to the intervention, suggesting that any improvement or decline observed in the subsequent grammar assessment can be attributed to the impact of the intervention. Table 5 presents the statistical data pertaining to the groups involved in the grammar posttest.

Table 5.

Descriptive Statistics of the Participants in the Grammar Posttest

	Groups	N	Mean	Std. Deviation	Std. Error	Kolmogorov-Smirnov ^a		
						Statistic	df	Sig.
Grammar Posttest	Control	24	12.1250	2.507	.511	.105	24	.200
	Experimental	28	15.3214	1.886	.356	.11	28	.200

In the posttest on grammar skills, the control group, which was instructed using conventional methods, obtained a mean score of 12.12 with a standard deviation of 2.50. On the other hand, the experimental group, which received instruction through the GDA, achieved a higher mean score of 15.32 with a smaller standard deviation of 1.88. The data distribution in both groups was found to be normal, as indicated by the Kolmogorov test of

normality ($P > 0.05$). Consequently, a parametric test of independent samples t-test is deemed suitable for comparing the groups. Subsequently, an independent-sample t-test was employed to assess the statistical significance of the disparity between the two groups in relation to the grammar post-test. The outcomes of the independent samples t-test on the grammar post-test for the two groups are presented in Table 6.

Table 6.

Independent Samples T-test on the Grammar posttest

		Levene's Test for Equality of Variances		t-test for Equality of Means			Mean Difference
		F	Sig.	t	df	Sig. (2-tailed)	
Grammar Posttest	Equal variances assumed	1.747	.192	5.237	50	.000	3.196
	Equal variances not assumed			5.124	42.259	.000	3.196

According to the findings obtained from the independent samples t-test, a statistically significant distinction was observed between the experimental and control groups in terms of their performance on the grammar post-test ($t=5.23$, $P=0.000$). The present study concludes that the posttest results of the experimental group exhibited superior mean

scores compared to those of the control group, thereby indicating a significant improvement in the grammar knowledge of EFL learners through the use of GDA. The paired samples t-tests were conducted to examine the difference between the pre and post-tests for both the control and experimental groups.

Table 7.
Paired Samples t-Tests

Group	Pretest Mean	Posttest Mean	t-value	Degrees of Freedom	p-value	Result
Control	6.958	12.125	8.239	23	0.000	Significant Improvement
Experimental	6.964	15.321	14.305	27	0.000	Significant Improvement

The results indicate a statistically significant improvement in grammar scores after the intervention for both groups. The "t-value" represents the magnitude of the difference relative to the variability in the data, and the "p-value" of 0.000 indicates a highly significant change in grammar proficiency. The t-value represents the magnitude of the difference relative to the variability in the data. For the control group, the t-value is 8.239, indicating a substantial improvement in grammar performance. Similarly, for the experimental group, the t-value is 14.305, signifying a significant enhancement in grammar knowledge. The degrees of freedom are determined by the sample size. For the control group, with 24 participants, the degrees of freedom are 23. For the experimental group, with 28 participants, the degrees of freedom are 27. The p-value is the probability of obtaining results as extreme as the observed ones. In both cases, the p-value is 0.000, which is less than the commonly used significance level of 0.05. This indicates a highly significant change in grammar proficiency for both groups. The result column interprets the findings. In both the control and experimental groups, there is a significant improvement in grammar performance. The p-value less than 0.05 suggests that the observed improvements are not due to chance and are statistically significant.

Discussion

The research findings have demonstrated that the utilization of online GDA has manifested

efficacy in enhancing the grammatical aptitude of learners. The implementation of GDA within an interactionist framework has proven to be efficacious in fostering the acquisition of accurate grammar among Iranian EFL learners. The findings of the current investigation are comparable to those of previous studies undertaken within this domain. This comparative analysis can facilitate a more profound comprehension of the impact of dialectal acquisition on the attainment of grammatical competence. The results of the present investigation align partially with the findings reported by Kazemi and Tavassoli (2020). The findings of the study demonstrated the superior performance of the experimental group in comparison to the control group. The improved grammatical knowledge can be attributed to the opportunities provided by GDA regarding the creation of appropriate ZPDs. This is because learners are exposed to enriching input embedded in an interactive context. Such mechanisms make sure that learners are not overwhelmed by too difficult grammatical structures. Indeed, learners are provided with suitable feedback by their peers and teachers, which enables them to make effective adjustments.

Similarly, Poehner and Infante (2017) assert that providing learners with appropriate feedback tailored to their needs enables them to synchronize their knowledge and awareness. This allows them to go beyond their current level of capabilities. According to Poehner (2009), as far as GDA is concerned, the exchanges that take place in the

presence of group members in the classroom are beneficial to other members of the group, as well. Accordingly, he makes a distinction between the main interactants and secondary interactants. The former has to do with the joint role played by the teacher and the learner. They are involved in the negotiation of meaning and linguistic resources. By the secondary interactant, he means the learners who benefit by listening to these interactions. This is also consistent with an important principle of Vygotskian SCT, according to which the early stage of knowledge construction is realized in an interactive milieu.

The findings of the present study were corroborated by a previous investigation carried out by Shabani (2018). In this particular scholarly investigation, the researchers aimed to leverage the foundational concepts and principles of GDA to enhance the writing skills exhibited by the study participants. The study's results indicate that the implementation of GDA has an indirect positive effect on writing skills. Specifically, the inclusion of DA in writing instruction was found to enhance grammatical proficiency, consequently resulting in overall improvements in writing abilities. The findings of the present study are consistent with a study conducted by Mehri and Amerian (2015), which demonstrated that students who underwent GDA exhibited greater success on a grammar assessment compared to those in the control group. The findings of this investigation are additionally congruent with the outcomes of the research conducted by Alemi et al. (2019), which investigated the impacts of GDA on augmenting the grammatical precision of EFL learners within an online educational environment.

Conclusion and Pedagogical Implications

The present study aimed to investigate the impact of online GDA on EFL learners' proficiency in grammar. Based on the results, we have deduced that online grammar development and GDA possess significant prospects for constructive implementation within foreign language instructional settings. Moreover, it was concluded that such strong learning theories like sociocultural theory and ZPD supporting DA are strong contributors to the success of GDA. Finally, it might

be concluded that cumulative GDAs are in agreement with other approaches to learning grammar.

This study showed that GDA can raise EFL learners' grammatical knowledge. This approach taps into the affective and cognitive aspects of learners, which have proven to be one of the main contributors to failure or success in L2 classes. As pointed out by Krashen (2002), highly motivated students are more likely to make progress in L2 learning. GDA plays an important role in motivating learners as it enhances positive attitudes towards the L2 and decreases anxiety, thanks to the exciting nature of interactions made possible in GDA (Alavi et al., 2011). Indeed, the students find themselves in a collaborative situation where they lower their egos, enjoying engagement with both the teacher and their peers. GDA, which is considered a process-oriented method to deal with directing assessments, depends on the Vygotskian codes of mediation that help the ZPD. Following GDA, students are assisted and supported each time they require.

This study has implications for various stakeholders involved in L2 education. In particular, L2 teachers are advised to draw on these findings to back up their position when it comes to devoting a portion of teaching to GDA, which can make learning more enjoyable and more effective as evidenced in this study. This research has suggestions for L2 teachers by using examples of dialogic mediation given in the method to address the students' needs dependent on their ZPD. Additionally, educators' consciousness of the ZPD can be practiced and strengthened through DA approaches in teacher education that would ultimately influence how educators settle on choices in deciding on students' current presentation and other growing capacities. Language teachers need to know the principles of GDA to be aware of the way these types of assessments are challenging for EFL learners. Through this study, teachers can be aware of how cumulative GDA contributes to improving learning. Since the practice of GDA is novel to some extent in the educational system or at least in the researcher's teaching context, language teacher trainers should also focus on the incorporation of DA in their course content to better prepare the

teachers for delivering DA in their classrooms. It requires training on the side of teachers by teacher trainers to conduct these assessments, because if it is practiced unsystematically, it may lead to the learner's resistance. According to the findings of this study, using GDA is effective in grammar, and helps learners improve their ability to learn it better. To encourage learners to become good language learners, the advantages of using this type of assessment should be provided for them. Indeed, giving more clarifications to the learners may help them have more comprehensive viewpoints of the procedures of GDA which is providing mediation.

Suggestions for Further Research

Other studies need to explore the effects of GDA on learning other skills or particular aspects of language. Also, qualitative studies are suggested to see whether the same results are replicated. One type of GDA, namely cumulative DA was used in the present study on Iranian EFL learners' grammar. Further studies are suggested to investigate other types of assessment such as concurrent DA in learning grammar.

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