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Group Dynamic Assessment of L2 Learners' Writing Abilities

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ABSTRACT

The present study was designed to test a group-based format of dynamic assessment (G-DA) in the context of writing over a time span of twelve weeks of instruction. A cohort of 60 students took a homogeneity test and based on the results, 44 students were selected to participate forming the two groups of experimental (N=22) and control (N=22). The study benefitted from a mixed methodology design comprising both quantitative and qualitative data collection and analysis. The experimental group underwent G-DA instruction for a time span of 12 weeks and received prompts, hints and scaffolding during all stages of writing including topic selection, idea generation and revising while the control group was deprived of dialogic negotiation and interaction. The results of quantitative data analysis of pretest and posttest scores using independent and paired samples t-tests revealed the outperformance of the experimental group over the control group. The microgenetic analysis showed that the G-DA instructions could diagnose quite vividly the learners' sources of writing difficulties and help promote the abilities which are in the state of maturation. It was also found that the G-DA interactions could set the ground for creating a state of intersubjectivity and positive interdependence among the more and less proficient learners in the course of which they could trial their legitimate peripheral participation. The G-DA interactions had the function of moving the entire class forward in its ZPD while co-constructing ZPDs with individual learners within the social microcosm of the classroom context. On implication side, it is argued that the G-DA serves as a precise, teacher/learner-friendly and, thus, ethical procedure for the assessment of learners' writing abilities.

Keywords: group dynamic assessment; writing; zone of proximal development; scaffolding; socio-cultural theory

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Introduction

The current research on L2 writing is replete with recurring calls for incorporating a process-oriented approach to the assessment of writing not least because of the inadequacy of product-oriented approaches that address only the students' end product and eschew any worthwhile attention to the cognitive and metacognitive processes involved in writing. The product-based approaches consider writing as a set of knowledge about the structure of language including the grammar and lexicon which is mainly the result of the imitation of model texts and guided compositions. In contrast, the process-based approaches to writing focus on the cognitive skills involved in writing stipulating a wide array of processes like idea generation, multiple drafts, interaction with more knowledgeable people, revising and drafting (Akbarzadeh, Saeidi & Chehreh, 2014; Khanlarzadeh & Nemati, 2016; Naghdipour, 2016). The rationale behind process-based approach to teaching and assessing writing is its potential to diagnose and cater for L2 writers' specific problems in the course of writing. According to Weigle (2002), writing is a self-generated, and not an imitative, process that reflects an individual's idiosyncratic styles of thinking and conceptualization. Therefore, in teaching and assessing writing we need to take on board the types of writing processes students get to grips with in the act of writing, such as appropriate lexical choices, syntactic accuracy, semantic correctness, rhetorical conventions, etc.

An advantage of testing writing in the classroom context over large-scale testing is its two inherent components namely authenticity and interactiveness, in that the teacher is able to tailor writing tasks to the interests and needs of their own students. Highlighting the merits of classroom writing, Weigle (2002) argues that a teacher can help the class come up with ideas for a timed writing assignment by conducting a brainstorming session, that is, asking the students to agree on the most favorite topic to write about and jointly thinking about the topic to generate ideas. The teachers could also incorporate a cycle of peer revision into the classroom writing, with the classmates being asked to review and comment on each other's drafts.

Surfing the literature on L2 writing shows the preponderance of strategy studies on writing and the paucity of researches which bring into prominence the role of social context. Browsing the literature on second language learning theories, we come across the socio-cultural theory (SCT), a theory which places the role of social context and mediation high in its inquiry while breaking down the Cartesian walls that isolate the individual mind from society and culture and highlights the critical role of different sources of mediation like peer (classmates), social (teacher/parent), self and artifacts (CMC i.e. computer mediated communication) (Bakhoda & Shabani, 2017; Lantolf, 2004).

A recent finding in teaching L2 writing especially in the classroom context has been the instructional value of collaborative practices among the class members including the students and teacher as sources of reference to modify and revise the preliminary drafts (Lantolf, 2004; Weigle, 2002).

A new surge of interest has been recently observed in Iranian context to do DA studies (Alavi, Kaivanpanah, & Shabani, 2012; Ebadi, 2016; Panahi, Birjandi & Azabdaftari, 2013). However, no attempt has been made to zoom in on instances of a group of L2 writers' microgenetic development in the classroom context. Considering such scant literature on writing, the present study was designed to give the report of an empirical study on dynamic assessment of L2 students' writing ability in the classroom context. In particular, attempts were made to observe the mechanisms of scaffolding taking shape and developing in the social, interpsychological space of the classroom during interaction between the teacher and students with a special focus on group functioning and its significance in accomplishing the writing tasks. The concepts of Zone of Proximal Development (ZPD), scaffolding and group dynamic assessment (G-DA) collectively

served as the theoretical bases to construct our assessment procedures. A microgenetic approach (one that allows observation of learners' moment-by-moment changes over a short span of time during reciprocal interactions) was used to analyze the instances of learners' self-regulation processing and enhanced performance in the course of collaboration and mediation from the teacher and class members.

Prior to the description of dynamic assessment, a brief sketch of Vygotsky's theoretical assumptions is in order.

Theoretical bases of dynamic assessment

The concept of dynamic assessment breaks away from the mainstream, static assessment procedures by such preeminent concepts associated with Vygotsky's Socio-cultural Theory of Mind as the Zone of Proximal Development, scaffolding and dynamic assessment.

The zone of proximal development (ZPD): Vygotsky christened this phrase to account for the child's learning potential which is brought to surface as a result of assistance and more technically he defined the ZPD as "the difference between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Everything the child is able to do with the assistance and support of a more capable person like teacher, supervisor or peer is claimed to lie within the ZPD. Cole defines the ZPD as "any joint activity in any context where there are participants who exercise differential responsibility by virtue of differential expertise" (1996, p. 155). What is fundamental to understanding the concept of ZPD is a distinction being made between two capacities: an intra-psychological and an inter-psychological capacity. The former represents the child/learners' independent performance ability, that is, what s/he can do alone without mediation. It reflects the learner's mental functioning that has become fully matured, that is, his Zone of Actual Development (ZAD). On the other hand, there is another higher level of learner's mental functioning which is manifested with the help of a more significant/proficient individual. This ability is inter-psychological because its appearance is contingent upon the presence of another individual who provides the necessary ancillary and minimal props for the blossoming of the abilities. It reflects the learner's mental functioning that is in the state of maturation and ripening. This assisted performance ability constitutes the learner's Zone of Proximal Development. In the words of Poehner (2008), the concept of ZAD defines the human abilities retrospectively, but the ZPD treats them prospectively. Moll (1990) argues that Vygotsky introduced ZPD to emphasize the importance of social conditions in understanding thinking and development. The following lines clarify the learning aspect of Vygotsky's SCT theory.

Scaffolding: Drawing on Wood, Bruner, and Ross (1976), the process of supportive dialogue which directs the attention of the learner to key features of the environment, and which prompts them through successive steps of a problem is known as *scaffolding*. Donato (1994) argues that scaffolding is conceived as any kind of assistance delivered to the learner for the successful accomplishment of the task and not necessarily for the acquisition of the concerned skills and abilities.

Wood, Bruner and Ross (1976, p. 90) describe scaffolding as a "process that enables a child or a novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts". They enumerate six functions of scaffolding as follows: a) recruiting interest in the task, b) simplifying the task, c) maintaining pursuit of the goal, d) marking critical features

and discrepancies between what has been produced and the ideal solution, e) controlling frustration during problem solving and f) demonstrating an idealized version of the act to be performed.

The concept of scaffolding needs to be differentiated from Vygotsky's seminal notion of *mediation* which is taken as an intensive effort by the instructor/assessor to provide as much and as many forms of assistance to the learner while noting the learner's responsiveness and making cognitive changes accordingly. The motive behind mediation is to diagnose and promote the learners' emerging abilities through calibrated assistance (Poehner, 2008).

Dynamic assessment: The term dynamic assessment is originated in Vygotsky's colleague Luria (1961), who coined it in his English writings on Vygotsky's research. What distinguishes dynamic assessment from other forms of assessment which are altogether categorized under the term non-dynamic assessment (NDA) is its simultaneous pursuit of diagnosing and promoting learners' abilities. Lantolf and Poehner's illustration of 'dynamic assessment' seems quite picturesque since they define it as a procedure that

integrates assessment and instruction into a seamless, unified activity aimed at promoting learner development through appropriate forms of mediation that are sensitive to the individual's (or in some cases a group's) current abilities. In essence, DA is a procedure for simultaneously *assessing and promoting development* that takes account of the individual's (or group's) zone of proximal development (Lantolf & Poehner, 2004, p.50, italics added).

As should be understood, DA advocates a monistic conception of assessment and instruction that focuses on developing abilities through intervention (Lidz, 1991), an ambition totally absent in other forms of assessment like portfolio assessment, performance testing and even incidental formative assessment, let alone the traditional static testing (Poehner, 2008). For an outsider watching a DA session, it is difficult to discern whether s/he is observing an assessment or instructional lesson because they are the one and the same during dynamic assessment. According to Poehner (2005), every DA session performs both an instructional and an evaluative function. DA rests on Vygotsky's belief that abilities are not innate but emergent and dynamic, meaning that abilities must not be considered stable traits that can be measured (Lidz & Gindis, 2003) but are the result of social interaction and participating in various communicative activities and mediation. In other words, an estimation of abilities in decontextualized, non-communicative and isolated settings provides only a static measure of individuals' underlying abilities. Vygotsky captured this notion nicely by stating that "it is only in movement that a body shows what it is" (Lidz & Gindis, 2003, p. 99). Moreover, in DA context, the role of examiner changes from a dispassionate neutral observer to a collaborative partner.

Aljaafreh and Lantolf (1994): An exemplary study

A ground-breaking DA-focused research on writing is reported in Aljaafreh and Lantolf (1994), who studied the effects of negative feedback (error correction) and scaffolding on adult ESL learners' development of English tense, articles, prepositions and modal verbs in writing. The authors followed a clinical interactionist methodology in their DA collaborations describing their procedure as "one of continuous *assessment* of the novice's needs and abilities and the *tailoring* of help to those conditions" (Aljaafrah & Lantolf, 1994, p.468, italics in original). Their assessment procedure included the process of jointly working out appropriate mediation to continuously assess the learners' needs and abilities and the tailoring of help to emergent needs. According to these authors (1994), three principles govern the tutor's act of mediating behavior, namely, graduation (i.e., the intervention being sensitive to the learners' level of help required), contingency (i.e., offering help and assistance when needed and withdrawing it when signs of autonomous functioning are observed) and dialogic negotiation (i.e., having collaboration with the

learner so as identify his emerging ZPDs). They reported significant development in learners' ZPD leading them to independent performance. Throughout the assessment procedure, upon the students' failure to accomplish the task and when making errors, the mediator offered gradual scaffolding and feedback. He came up with a regulatory scale of mediation in offering hints and prompts which was developed a posteriori after interactions with the learners. The scale (Table 1) consisted of 13 types of feedback arranged from most implicit to most explicit. The type of prompt offered depended on the learners' responsiveness and was finely grained to their emerging ZPDs. After the mediation sessions, they came up with a regulatory scale which consisted of 13 forms of mediatory moves. The scale helped the teacher provide contingent feedbacks that were finely tuned to each learner's emerging need starting the mediation with the less explicit ones to let the learner identify the location of error and then providing gradually more explicit ones to help the learner arrive at the correct form until the learner totally failed. Finally, the tutor provided the correct form and gave examples as the last type of feedback in her scale.

Table 1

Regulatory Scale – Implicit (strategy) to Explicit (Aljaafreh & Lantolf, 1994, p. 471)

Regulatory Scale-Implicit (strategic) to Explicit
0. Tutor asks the learner to read, find the errors, and correct them independently, prior to the tutorial.
1. Construction of a "collaborative frame" prompted by the presence of the tutor as a potential dialogic partner.
2. Prompted or focused reading of the sentence that contains the error by the learner or the tutor.
3. Tutor indicates that something may be wrong in a segment (e.g., sentence, clause, line)- "Is there anything wrong in this sentence?"
4. Tutor rejects unsuccessful attempts at recognizing the error.
5. Tutor narrows down the location of the error (e.g., tutor repeats or points to the specific segment which contains the error).
6. Tutor indicates the nature of the error, but does not identify the error (e.g., "There is something wrong with the tense marking here").
7. Tutor identifies the error ("You can't use an auxiliary here").
8. Tutor rejects learner's unsuccessful attempts at correcting the error.
9. Tutor provides clues to help the learner arrive at the correct form (e.g., "It is not really past but something that is still going on").
10. Tutor provides the correct form.
11. Tutor provides some explanation for use of the correct form.
12. Tutor provides examples of the correct pattern when other forms of help fail to produce an appropriate responsive action.

The outstanding advantage of using this scale was that it enabled the mediator to track the learners' developing capability (microgenetic growth) on the concerned grammatical points. They found that the learners required different mediatory prompts from the mediator. As the study proceeded the number and quality of requested feedback (mediation) changed and learners showed a tendency towards self-correction which indicated the reduction of their dependency on the mediator and improvement towards self-regulation.

Poehner (2009) argues that a major challenge to implementing dynamic assessment in the classroom is that these contexts do not permit the one-on-one format of DA which has characterized most DA and ZPD studies because the teacher in the class interacts with a group of ZPDs, hence the need for group dynamic assessment.

Group Dynamic assessment (G-DA)

Researchers of group assessment hold that although group-based assessments are useful approaches to evaluating learning, their results do not render an appropriate basis for making inferences about individuals' abilities since the group setting obscures the true focus of assessment i.e., the individual; however, they emphasize that one must distinguish individuals' abilities from what they are able to do when working with others (Lejk, Wyvill & Farrow, 1996; Webb, 1992).

Poehner (2009) notes that due to the intra-group and intra-individual variability emanating from the highly volatile nature of individual ZPDs, it is difficult to clearly establish *a priori* the 'boundaries' of a group ZPD. Rather, the teacher should strive to create conditions for the emergence of the group ZPD through analyzing learners' independent work to identify common areas of difficulty, but they must also remain attuned to the responsiveness of individuals during interactions with the group. He argues that by engaging learners in tasks which are challenging to all and providing support that benefits the group, the teacher can establish a network of social cohesion that helps create a joint orientation towards solving the problems at hand. Poehner attributes the dearth of research on G-DA to the lack of studies on group learning and a theory of *group* that can explain developmental dynamics of groups. He contends that the gap in experimental psychological research, communicative-oriented language pedagogies and even cooperative learning is caused by the failure to consider the group as "a psychological entity composed of individuals with different forms of expertise working cooperatively to carry out activities that no single group member could do independently" (Poehner, 2009, p. 475).

To meet the purposes of the study, the following research questions were raised:

- 1) Does G-DA instruction have significant effects on L2 learners' writing performances?
- 2) What types of mediational strategies diagnose and promote L2 learners' writing abilities in group dynamic assessment?
- 3) What do learners' reciprocity patterns reveal about their microgenetic development of writing in group dynamic assessment?

Method

Study design

The study employed a mixed method design to confirm the effects of G-DA on the students' writing ability. Moreover, it adopted a microgenetic method as its analytical framework to sketch the underlying principles of SCT and dynamic assessment. This method fitted the purpose of our study as it allowed the tracking of learners' development over a certain period of time. During the course of the study, the procedure used was of the *cumulative* and *concurrent* interactionist nature (Poehner, 2009) since the teacher's main concern was to move the group forward through co-constructing ZPDs with individuals, and support the development of each individual by working within the group's ZPD. The rationale behind adopting the G-DA format was the group nature of the context of the study where a mediator interacted with a group of language learners inside a classroom and not on a one-on-one basis.

Participants

The participants of this study were 60 students recruited from a community college. They were all freshmen majoring in Translation with little English background, ranging in age from 18 to 21 (mean=31.21; SD=6.05). To ensure the homogeneity of the participants, an Oxford Placement Test (OPT) was administered. The following tables display the descriptive statistics and normality indices of the administered OPT:

Table 2
Tests of Normality for OPT

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
OPT	.102	60	.198	.963	60	.069

a. Lilliefors Significance Correction

As can be seen, the group bears normality since the p value is greater than .05. Based on the OPT results, 44 students whose scores were with one SD above and below the mean (i.e. 18 and 38) were selected for this study. They formed two groups of experimental and control each consisting of 22 participants.

Instrumentation

To conduct the study, the researcher used the following tests and devices:

- a) An OPT (Oxford Placement Test) consisting of 100 items to test the students' overall language proficiency;
- b) Two essay writing tests, one used as the pre-test and the other as the post-test
- c) The TOEFL Writing Scoring Guide (2007) developed by ETS used to score the writing scripts in the writing pre-test/post-test.

Procedure

After homogenizing the participants, the researcher randomly divided the selected sample into two groups (experimental = 22, control = 22). Then, a pre-writing test was administered non-dynamically and students were asked to write about the given topic: "Many people believe that grades do not encourage learning. Do you agree or disagree with this opinion? Explain your answer using detailed reasons and examples". Then, the G-DA procedure took place in the experimental group in a time span of 12 weeks of instruction and the interactions were audio recorded for the later qualitative analysis. The control group received a traditional instruction (placebo) with no interaction and dialogic negotiation. The entire process of the enrichment program (i.e. the treatment interval) in the experimental group was dynamic in the sense that the participants were involved in the three stages of writing process including topic selection, idea generation and revising. At the topic selection stage, the teacher negotiated with the students in advance on a favorite topic. During the idea generation phase, the teacher interacted with the learners to discuss innovative concepts about the selected topic and sometimes provided his own suggestions about the topic and related issues in order to activate their imaginative power. Finally, in the revising stage, the main G-DA interaction began and learners received a wide range of leading questions, hints, explanation and explicit/implicit feedbacks when engaged in the correction process of the writings with the purpose of improving their performances.

At the onset of the interactions, in order to understand the learners' Zone of Actual Development (ZAD) and independent functioning, the teacher (mediator) asked the class to detect and correct the sentence and once finding their inability to overcome the revision task alone he started offering his prompts and leading questions. In doing so, the teacher was careful to *graduate* his interventions and provide the minimum level of guidance required to successfully perform the task. His assistance normally started at a highly strategic or implicit level and progressively became more specific and concrete until the intended response was reached. The second principle that the teacher exercised in tandem with graduation (=intentionality) was contingency. The teacher showed a tendency to withdraw his scaffolding when he noticed signs of agency and autonomous functioning. Finally, in order to discover the learners' appropriate levels and tailor his help to their needs, he interacted with the learners in a dialogic collaboration without which he believed it was virtually impossible to identify the learners' ZPD.

The G-DA procedure proceeded more precisely as follows:

1. The teacher negotiated with the learners on a certain topic on which they were supposed to write an essay and submit the next session;
2. The next session proceeded with the selection of one from among twenty-two essays collected from the students;
3. The selected essay was written on the board and students were asked to assess the quality of sentences providing the required revisions;
4. The G-DA interaction started with the teacher's selection of a sentence and asking the students to detect the problematic parts and correct them.
5. Then, following Aljaafreh and Lantolf (1994), upon the students' failure to detect or correct the existing errors, the mediator offered his prompts starting from the most implicit towards the most explicit mediation until the intended correct forms were elicited.
6. Finally, when the teacher's mediation and collective scaffolding failed to improve the sentence, the corrected form was offered along with some explanation to make the linguistic points clear;
7. The G-DA interaction proceeded with the next and then other sentences in the same fashion.

After the treatment, a composition writing post-test was administered to see whether the G-DA interactions had any effects on the students' writing performance. Students were asked to write about another topic namely "If you could change one important thing about your country, what would you change? Use reasons and specific examples to support your answer." Both compositions were rated by two expert colleagues with more than ten years of teaching and assessing writings/essays independently to ensure the inter-rater reliability. The following sections present the result of quantitative and qualitative analysis.

Data analysis

The students' writings were assessed based on Jacobs et al.'s (1981, cited in Weigle, 2002) scoring scale on five grounds namely, content, vocabulary, language, organization, and mechanics with each one having four rating levels of *very poor*, *poor to fair*, *average to good*, and *very good to excellent*. The range for each of the writing skills was as follows: content 13–30, organization 7–20, vocabulary 7–20, language 5–25 and mechanics 2–5.

The inter-rater reliability for the two raters was computed using Pearson product-moment correlation and the correlation showed an overall agreement between the two raters. The inter-rater reliability obtained for the pre-test scores of the experimental and control groups were 0.80

and 0.83, respectively and those for the post-test scores of the experimental and control groups were 0.93 and 0.93, respectively, which were considered acceptable.

After computing the correlation between the two raters, the average of the two raters' scores was used as the subjects' final writing score. Before running the statistical tests, the data were checked for normality, the results of which are summed up in the following table.

Table 3
Results of Normality Tests for Pretest, Posttest and Difference Cores of the Experimental and Control Groups

Group		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest	Control	0.189	22	0.040	0.914	22	0.058
	Experiment	0.110	22	0.200	0.921	22	0.079
Posttest	Control	0.140	22	0.200*	0.914	22	0.057
	Experiment	0.126	22	0.200*	0.964	22	0.585
Difference	Control	0.110	22	0.200*	0.921	22	0.079
	Experiment	0.152	22	0.200*	0.933	22	0.141

As can be seen, the group bears normality since the p values of the pretest, posttest and difference scores are greater than .05, hence, a good justification for running parametric tests. To compare the writing scores of the control and experimental groups in the posttest, an independent samples t-test was performed and the results are presented in Tables 4 and 5 below:

Table 4
Descriptive Statistics for Control and Experimental Groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest	1.00	22	9.0455	5.25971	1.12137
	2.00	22	13.6818	4.11890	.87815

Table 5
Comparison of the Mean Scores of Experimental 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	
posttest	Equal variances assumed	2.300	.137	-3.255	42	.002	-4.63636	1.42430	-7.51072	-1.76201
	Equal variances not assumed			-3.255	39.717	.002	-4.63636	1.42430	-7.51562	-1.75711

Drawing on the Tables, we found a significant difference between the experimental group and control group. The results suggested that the experimental group ($M=13.68$, $SD=4.11$) outperformed the control group ($M=9.04$, $SD=5.25$); $t(42) = -4.63$, $p = 0.002$. Specifically, the results indicated that after the G-DA instruction, the learners' performance in the experimental group was enhanced.

Moreover, to further confirm the significant change in the experimental group, a comparison was made between the writing scores of the experimental group in the pretest and posttest. The results of paired samples t-test are displayed in the following Table:

Table 6
Descriptive Statistics of the Experimental Group

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pretest	9.0909	22	3.88721	.82876
	posttest	13.6818	22	4.11890	.87815

Table 7
Comparison of the Mean Scores of Experimental Group in the Pretest and Posttest

		Paired Differences				t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	pretest - posttest	-4.59091	2.31782	.49416	-5.61857 -3.56324	-9.290	21	.000

Based on Tables 6 and 7, a significant difference was observed between the pretest ($M=9.09$) and posttest scores ($M=13.68$) of the experimental group ($M= -4.59$, $SD=2.31$), $t(43) = -9.29$, $p = 0.000$. The difference scores (DS) of the two groups from the pretest to the posttest were also computed which are displayed in the following tables:

Table 8
Difference Scores of the Control and Experimental Groups

	Group	N	Mean	Std. Deviation	Std. Error Mean
DS	1.00	22	-.0455	1.83166	.39051
	2.00	22	4.5909	2.31782	.49416

Table 9
Independent Samples Test of Control and Experimental Groups' Difference Scores

		Levene's Test for Equality of Variances		t-test for Equality of Means					
Difference		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
Difference	Equal variances assumed	1.991	.166	-7.361	42	.000	-4.63636	.62984	-5.90743 -3.36530
	Equal variances not assumed			-7.361	39.870	.000	-4.63636	.62984	-5.90944 -3.36329

As can be seen in Tables 8 and 9, the difference scores of the control and experimental groups were $-.045$ and 4.59 , respectively, which indicated that only the experimental group underwent a significant change from the pretest to the posttest ($df = 42$, $t = -7.361$, $p = 0.000$).

These quantitative results confirmed the effects of G-DA instruction on the learners' writing performances, an evidence which answered the first research question of the study. To shed more light on the learners' writing processes, a qualitative analysis was conducted and an attempt was

made to bring to light other aspects of learners' performances which had remained unknown in the quantitative analysis. The following section presents the qualitative findings.

Qualitative Analysis

In the qualitative analysis, a microgenetic framework was used to analyze the G-DA protocols and uncover the learners' writing changes. The analysis was made at three levels: the completion of the task, the amount and quality of mediation used to help the learners understand the text and learners' reciprocity patterns to understand their responsiveness to mediation and gain evidence for micro validity of the interpretations (Poehner, 2011).

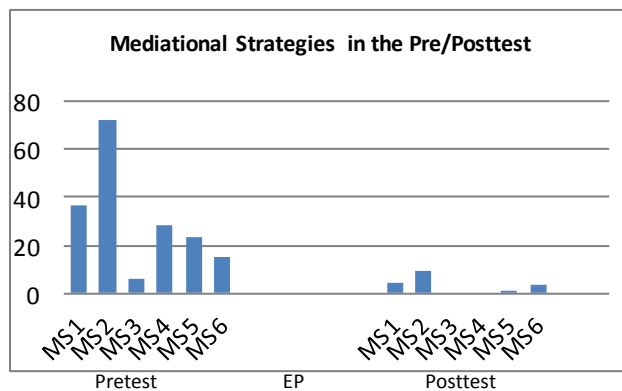
To address the first qualitative question of the study (i.e. 'What types of mediational strategies diagnose and promote L2 learners' writing abilities in group dynamic assessment?', the first and last G-DA session of the experimental group's performances were compared. The analysis revealed a typology of mediational strategies offered by the mediator during his G-DA interactions with the learners:

Table 10

Typology of G-DA-based Mediational Strategies

- | |
|----------------------------------------------|
| 1. Identifying the source of error |
| 2. Narrowing down the location of error |
| 3. Raising students' awareness |
| 4. Nominating potential sources of error |
| 5. Proposing probable correct response |
| 6. Offering correct response and explanation |

Following Aljaafreh and Lantolf (1994), the menu of mediational strategies was arranged from the most abstract (implicit) to the most concrete (explicit). The strategies outlined here were developed *a posteriori* following the dialogic interactions between the mediator and learners. The mediation typology allowed for analysis of the *quality* and *frequency* of the mediations offered. It also provided insights into the learners' developmental changes. The learners' relative comfort observed in the last DA session can be explained by the effects of G-DA instruction during the enrichment program, which is shown in the following figure.



Note: MS = mediational strategies; pretest = first DA; posttest = last DA.

Figure 2. Frequency of mediational strategies in the pre- and posttest of the experimental group

The figure above clearly illustrates the scarce occurrence of mediational moves in the posttest (i.e. last DA session). The frequency of explicit strategies decreased dramatically to a minimum or zero in some cases and the teacher relied mostly on implicit type of mediation (i.e. *identifying the source of error and narrowing down the location of error*). This reduced mediation from the teacher indicates the stretching of learners' ZPD to higher levels. Learners' reduced demands for external meddling and their rejection of mediation as an indication of their fledgling reciprocity confirm their growing autonomous functioning and self-regulation performance in tackling the tasks.

To answer the second research question of the study (i.e. 'What do learners' reciprocity patterns reveal about their microgenetic development of writing in group dynamic assessment?', attempt was made to identify the learners' growing reciprocity as an indication of their independent functioning and levels of internalization (Poehner, 2005). The following table sums up the learners' reciprocity patterns along with their reciprocating acts:

Table 11
Reciprocity Patterns

Reciprocity patterns	Reciprocating acts
a. No reciprocity	Taking no action after receiving the first mediations
b. Use of mediator as a resource	Asking for hints
c. Self-initiated moves (emerging autonomy)	1) Providing a partial correct response 2) Rejecting the incorrect response
d. Accomplishing the task	1) Making use of the teacher/peer's mediations and providing the correct response 2) Providing the correct response after the mediations
e. Full autonomy	Providing the correct response independently and with confidence

As table 11 illustrates, the reciprocity moves by the learners were classified into 5 main patterns starting from 'no reciprocity' move which indicated the learners' unresponsiveness at the early stages of their course towards 'full autonomy' to represent the most implicit one. Similarly, the 7 reciprocating acts in the table represented an explicit-implicit inventory starting from 'other-regulation' towards 'self-regulation' in the continuum. The following table exhibits the learners' progression in their ZPD from dependent to independent functioning through reciprocity:

Table 12
Frequency of Reciprocating Acts in the Pre- (first DA) and Posttest (last DA)

Reciprocating acts	Pretest	Posttest
Taking no action after receiving the first mediations	42	2
Asking for hints	28	2
Providing a partial correct response	3	1
Rejecting the incorrect response	3	4
Making use of the teacher/peer's mediations and providing the correct response	0	9
Providing the correct response alone after the mediations	0	9
Providing the correct response independently and with confidence	2	23
Total	78	50

Based on this table, two observations are made: a) an increase in the number of implicit mediations and b) a decrease in the total number of reciprocity moves in the posttest. These two observations provided evidence for the learners' microgenetic development and increased self-regulated functioning across time.

Selected protocols given below are instances of class interactions which can more vividly illustrate the effects of group dynamic assessment on the students' writing ability and enhanced performances. At the outset of interactions, the teacher usually took the lead and initiated the exchanges. The teacher did not favor voluntary participation only as it would have discouraged other students from taking part in the class discussion and making contributions. The main aim of G-DA interaction was to lure every individual into participating, use contributions from both more and less knowledgeable students for the enhancement of the group ZPD and create a state of intersubjectivity in the state of which class members jointly worked towards the solution of the task problem.

Episode 1

The population in big cities growing nowadays.

T: Is there anything wrong in this sentence?

Ss: [silent]

T: what is the verb of this sentence?

S1: growing

T: Good, then what is its tense, past, present or future?

S2: present

T: ok, simple present or present continuous?

S3: present continuous

T: That's right. Now, is it correct to say 'growing' here?

S4: No, it should be 'is growing'

T: Good

In this episode, the teacher wants the class to check the accuracy of the sentence and asks if there is anything wrong in the sentence. After noticing their inability to detect the error independently, he begins to offer his mediation first by drawing their attention to the location of the error, that is, the verb of the sentence to make sure if they can recognize the verb and its components. After posing a couple of questions about the tense of the verb and involving a number of students, and in this way, raising the class consciousness about the problematic part, the teacher, turning to the class, asks if it is grammatically correct to say 'growing' alone and recruits the correct response ('is growing') from S4. This example demonstrates the weak performance of the class in unaided setting but when assisted by the teacher with a number of prompts and scaffolding from primary participants, the class was able to correct the error.

Episode 2

The facilities in the urban areas including cinema attracts people.

T: what is wrong in this sentence?

Ss: [silent]

T: what is wrong with the verb?

Ss: [silent]

T: what is the verb?

S1: attracts

T: ok, but is it correct?

Ss: [silent]

- T: what is the subject?
 S1: cinema
 T: [looking to the class] Is 'cinema' the subject?
 S2: yes
 S3: no, the word 'facilities'
 T: Good, the word 'facilities' is the subject. Now, what is the correct form of the verb?
 Ss: [silent]
 T: Is the word 'facilities' singular or plural?
 S3: plural
 T: Good, therefore what is the correct form of the verb?
 S4: we should say 'attract'
 T: That's right

Here, the teacher as in Episode 1 asks the class to find the source of error but observes silence which indicates the students' inability to detect the trouble source. The teacher uses a narrowing strategy by asking several queries to focus the class attention on the verb but receives no response from the students. Then, he draws the students' attention to the subject and the verb as two probable sources of difficulty. But, again he observes no improvement in the students' answers. Then, he decides to identify the sources of learners' difficulty by asking them to find the subject. S1 responds 'cinema' followed by no reaction from his classmates which showed their consent with the given answer. Having identified the trouble source and rejecting the wrong answer, the teacher wants the class to look for the error somewhere else. S2 informs the class of the subject ('families') but the class still seems unable to make the correction. Next, the teacher negotiates his last prompt by asking if the word 'facilities' is singular or plural which implicitly conveyed the message that there should be an agreement between the subject and the verb. Finally, upon the reception of all these explicit and implicit forms of mediation and scaffolding from primary and secondary participants, S4 provided the correct form of the verb.

Episode 3

But rural life don't have these conditions; everything is natural there and people are friendly.

- T: what is wrong in this sentence?
 Ss: [silent]
 T: what is the verb of this sentence?
 S1: have
 T: Good, is it positive or negative?
 S2: negative
 T: right, and what is the subject?
 S3: rural life
 T: Great! Now what is wrong with the verb?
 S5: the verb should singular, 'doesn't have'
 T: That's right

In this episode, upon the observation that the students have come to a grinding halt and are not able to correct the error, the mediator asks if they can identify the verb. Then, he recruits their attention in the status of the verb and elicits correct response. Next, he asks the class to find the subject. Again, he obtains the correct response. The only question remaining was whether the learners can distinguish the singularity of the subject. Following his next consciousness raising prompt ('what is wrong with the verb?'), S4 contributes by providing the correct form of the verb ('doesn't have'). This example shows that the learners could not provide the correct answer not because they were not able to identify the subject or recognize its singularity but merely because they did not know to bring '-es' after the auxiliary ('do') when a verb is used in its simple present tense in juxtaposition to a third person singular subject.

Episode 4

Traffic, factories and industrial places cause air pollution and diseases like: cancer, lung and heart problems.

T: What is wrong in this sentence?

Ss: [silent]

T: What is the verb?

Ss: Cause

T: What is the subject?

Ss: Traffic, factories industrial places

T: Is the punctuation correct?

S1: Yes

S2: No, we need a comma after places

S3: No, 'places' is the subject, we don't need a comma

T: Great! What else? Is the colon correct after 'like'?

S4: No, we should remove the colon

In episode 4, the problematic point was punctuation and more precisely the wrong use of comma after the word 'like'. The teacher, as before, tries to discover the source of error by asking questions about the subject and the verb to see if the students can distinguish the basic elements of the sentence. Then, he moves on to call their attention to the punctuation. He asks 'Is the punctuation correct?'. S1 answers 'yes'. But, S2 comments 'no, we need a comma after 'places'', which was a wrong attempt. Then, to correct S2, S3 provides other-regulation by *instructing* or *giving a minilesson* (Villamil & Gerrero, 1996) on the wrong use of comma after the subject. The teacher intervenes by praising his comment and asks the class to turn attention to the colon after 'like'. Finally, S4 explains that we should omit the colon after 'like'.

Episode 5

The first different between urban and rural life is facilities.

T: What is wrong with this sentence?

Ss: [silent]

T: Is the word 'different' correct here?

Ss: No, we should say 'difference'.

T: That's right

In this exchange, the grammatical point in question was the knowledge of part of speech and, more precisely, whether the students know the usage of 'different' and 'difference'. When asked to find the error, the students remained silent but with minimal assistance and by turning their attention to the problematic part, the teacher could help the class to provide the correct form of the word. This example shows that students knew the noun form of the word ('difference') but were wavering in applying their knowledge.

Episode 6

The people destroyed already the jungle and the greeneries.

T: what do you find wrong in this sentence?

Ss: [silent]

T: nothing wrong?

S1: the word greeneries

T: is that wrong?

S2: No. greeneries means green land

T: So, which part is problematic?

Ss: [silent]

T: Think about the position of the words in the sentence. Are the words in the right places?

Ss: [silent]

T: Is it correct to put 'already' here?

S3: No, we should put it before 'destroyed'

T: You're right

Another writing problem examined in the G-DA protocols concerned the knowledge of word order. At the outset, offering no prompts, the teacher asked the class to detect the erroneous part. But, the students remained silent which indicated that they were satisfied with the quality of the sentence in terms of subject-verb agreement, tense marking, etc. One of the learners hazarded a guess on the usage of the word 'greeneries' which was immediately rejected by one of his classmates. Then, in his next scaffolding move, the teacher narrowed down his focus and resorted to a more explicit strategy reminding them of the word order of the sentence. After this consciousness raising, S3 informed the class of the right position of the adverb.

Episode 7

Clean whether is the main different between rural and urban life.

T: What is wrong with this sentence?

Ss: [silent for a few seconds]

S1: 'Different' is not correct, 'difference'

T: You're right

This episode exemplifies a DA task which tests learners' knowledge of part of speech, a syntactic point previously encountered in Episode 5. Quite differently from Episode 5, here the class displays an improved performance. When exposed to a familiar problem, this time one of the learners voluntarily detects the error and suggests the right part of speech ('difference') which shows he has been able to transfer his recently gained acquaintance with the word 'different'. This example demonstrates the learner's ability to recontextualize his learning in new context, a phenomenon technically known in DA context as transcendence (TR) (Poehner, 2008). In this vein, Feuerstein et al. (1979, p. 92) argue that learning is claimed to have occurred when learners move beyond the here-and-now demands of a given task and that "true development transcends any specific task and manifests itself in a multitude of differing conditions". Quite commensurate with Poehner and Feuerstein's arguments, Episode 7 illustrates learners' improvement across innovative tasks since it shows signs of increased contingent responsiveness in the form of reduced demands for explicit prompts in accomplishing the task. However, it needs to be explained that for a task to be truly characterized as TR, it must not only be innovative but also increasingly more difficult and challenging (Shabani, 2014). Students' learning in this episode provides an evidence for transferring their new learning from a given to an innovative situation but whether or not they have been more challenging needs further exploration.

Discussion and conclusion

The present study used a mixed methodology to see the effects of G-DA instruction on L2 learners' writing abilities both quantitatively and qualitatively. The quantitative analysis revealed the outperformance of the experimental group over the control group. The results of paired samples and independent samples t-test indicated that the G-DA brings about a change in the learners' writing performances on five grounds namely content, vocabulary, language, organization, and mechanics. In the qualitative section, the G-DA interactions exemplified in the

protocols illustrate the subtle occurrence of microgenetic development of writing in the second language learners over a short period of time within the classroom context. Throughout the interactions, the teacher's expertise in standing loyal to the G-DA criteria like intentionality, contingency and dialogic collaboration was preeminent.

Viewed from the pedagogical standpoint, the G-DA interactions paved the way for creating a state of intersubjectivity (Romemetveit, 1985) in the social space of the classroom where interactions exchanged between primary interactants served as scaffolders to move forward the secondary interactants into higher levels of functioning. The class members marshaled their efforts to establish a community of practice by seeking a temporary shared goal, providing scaffolding and helping each other out to jointly carry out the revision tasks. Cooperation among the more and less knowledgeable learners reinforced collective scaffolding (Donato, 1994) and legitimate peripheral participation (McCafferty et al., 2006) among the learners in the course of which the novice and more expert learners mutually benefitted each other. The mediations offered acted as a consciousness-raising activity which made prominent those writing features that seemed quite elusive. The highlighting strategy helped notice such aspects of writing as the word order, punctuation, tense-marking, etc. which lay in the learners' ZPD but were not accessible without assistance. The G-DA procedure could help diagnose more precisely the learners' sources of writing difficulties, whether syntactic, lexical, etc.

Another interesting point that merits attention is that when the revision task was presented it was the learners who took the lion's share of the responsibility and the mediator provided only the minimal assistance to smooth the accomplishment of the task. The G-DA assistance proved as a successful scaffolding strategy to help a) recruit the learners' interest in the task, b) simplify the revision process, c) reduce degrees of freedom in the task in order to make it more manageable, d) keep direction in terms of the goals, e) mark critical features, f) control frustration and g) model solutions (Guerrero & Villamil, 2000; Wood et al., 1976).

The episodes demonstrate a high degree of skill and fine tuning on the mediator's part and his intuitive understanding of "an implicit theory of the learners' acts" (Wood, et al., 1976, p. 99), meaning that the mediator had an awareness of not only a theory of how the task or problem was to be completed, but also a theory of the learners' performance. These two theories allowed the mediator to generate effective feedback as the mediator proceeded with the task. It goes without saying that much of the success in scaffolding depended on the mediator to skillfully manage the interaction between the task and his learners' demands.

The improved performance on the part of learners in the classroom context provided evidence for the social nature of the human's mental development. It was confirmed that human mental activity is rooted in the discursive practices of the community and that the development of higher forms of cognitive functioning and acquisition of complex skills are initiated and shaped by social interaction. Examples of improvement in the classroom context attest to an underlying maxim of sociocultural theory that learning is socially situated and not a solitary, cognitive process.

The results demonstrate the effects of G-DA interactions on students' ZPD progression across different writing tasks and illustrate how G-DA can successfully promote not only individuals' but group's writing abilities in innovative contexts. The mediatory exchanges between the teacher and learners served as instances of G-DA interactions which shifted rapidly between primary and secondary interactants with the teacher moving the entire class forward in its ZPD while constructing ZPDs with individual learners. An intriguing line of research which requires more in-depth and focused investigation concerns the study of learners' progressive trajectories towards higher levels of ZPD functioning in not only innovative but also increasingly more difficult and challenging tasks aptly known as transcendence (TR) (Ebadi & Saeedian, 2016; Poehner, 2008;

Shabani, 2014). One striking finding in the light of our observations concerned the discrepancy between group performance and individual performance. The closer scrutiny of the G-DA interactions brought to surface the learners' differential and higher levels of abilities since following a weak performance during independent performance at the time of collaboration and collective scaffolding they were able to display enhanced performances. This reinforced the conclusion that the group ZPD was different from individual ZPD. However, what remained unknown is the role of teacher gestures as a supplementary technique to mediate and help the learners accomplish the tasks. A complementary study supported by audio-visual data can definitely redress this shortcoming.

A final point addressed in the present study which merits particular attention is the need for delving more deeply into the potential benefits of interindividual help that arises in social interactions. Discussions of the effect of peer scaffolding alternatively referred to as guided participation (Rogoff, 1990) and learning apprenticeship (Brown, Collins & Duguid, 1989) and the role of learners as a vital source of knowledge in the classroom context are the issues still in their infancy which beg for further exploration.

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