This study aimed to investigate the application of Group Dynamic Assessment (GDA) to writing accuracy of EFL learners and explore whether secondary interactants could benefit from interactions between mediator and primary interactants. The idea of implementing DA (Dynamic Assessment) in dyads seems unworkable since teachers are required to teach the whole class (Guk & Kellog, 2007). Moreover, Lantolf and Poehner (2004) suggest a new approach to DA that is GDA, which involves applying DA with a large number of learners rather than individuals. Following a multiple case study design and interactionist DA, the development of ten students in a class of twenty five was tracked during the eight sessions of DA program. Data were collected though written artifacts, video-recording of interactions, interview, and observation. The results indicated that GDA was an effective way of helping learners overcome their linguistic problems and there were signs of microgenetic as well as macrogenetic development within the same DA session and across sessions. The present findings provide further insight into understanding how secondary interactants benefit from the interactions between mediator and primary interactants.

**Keywords**: Foreign language learning; GDA; Mediation typology; Primary/secondary interactants
1. Introduction

Dynamic assessment has recently received increasing attention from second language learning researchers and practitioners since it offers a conceptual framework that challenges the idea of teaching and assessment viewed as separate or oppositional activities (Lantolf & Poehner, 2011; Poehner, 2005). In DA, it is argued that instruction and assessment must be unified into a single activity in which various forms of support are provided in order to reveal the scope of learners’ abilities while simultaneously aiding their development (McNeil, 2016; Poehner, 2005; Poehner, Davin & Lantolf, 2017; Poehner & Lantolf, 2005; Poehner, Zhang & Lu, 2015; Sharples et al., 2014).

DA has its origins in Vygotsky’s Sociocultural Theory of mind (SCT) and his writings on Zone of Proximal Development (ZPD). Mediation as the core concept of Vygotsky’s theory of mind is central to ZPD and is defined as the assistance and the feedback offered by mediator to learners while engaging in the process of assessment. Vygotsky defined ZPD “as the distance 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).

A wide range of studies have explored application of DA in dyads targeting various skills (e.g. Abbasi & Fatemi, 2015; Ableeva, 2010; Ajideh, Farrokhi, & Nourdad, 2012; Davin & Herazo, 2017; Erben, Ban, & Summers, 2008; Lantolf & Poehner, 2011; Lidz & Gindis, 2003; Siwathaworn, & Wudthayagorn, 2018), especially the writing skill of learners in large classroom settings (Alavi & Taghizadeh, 2014; Lee, 2014; Rahimi, Kushki, & Nassaji, 2015; Zaho, 2014). However, only a few studies have addressed the writing accuracy of learners as a group in an EFL classroom (e.g. Tabatabaee, Alidoust, & Sarkeshikian, 2018). By writing
accuracy, we mean “the extent to which the language produced conforms to the target language norms” (Skehan & Foster, 1997, p. 232). That is, how similar the language produced by the learners is to the target language which is English in this case.

According to Lantolf and Poehner (2004), “one area of interest concerns the use of interactive procedures with groups of learners rather than individuals” (p. 7) and as Panahi, Birjandi, and Azabdaftari, (2013) argue, “feedback within DA is a meditational strategy at the teacher’s disposal at the revising stage of the writing process to provide students with support tailored to their ZPDs” (p. 8). Hence, drawing on Vygotsky’s sociocultural theory of mind in general and the principles of dynamic assessment in particular, this study sought to explore the extent of the applicability of GDA with respect to learners’ writing accuracy in an EFL classroom context. It should be born in mind that written texts were relied on three reasons. First, written performance would expedite data collection, and second it would facilitate the interaction between the mediator and the learners. Finally, writing even in a short paragraph is one of the main concerns of learners which needs to be addressed at this level (Aljaafreh & Lantolf, 1994).

More specifically, this study aimed at investigating the effect of mediation on the microgenetic and macrogenetic development of learners learning English as a foreign language at high school level, the meditational moves deployed by the mediator, and the reciprocity moves by the learners and how secondary interactants might benefit from the primary interactions.

2. Review of the Related Literature

Originated in Vygotsky’s SCT, DA is different from Static Assessment (SA) as the two have methodological differences, that is, in SA, the main focus is on the product of past development, whereas in DA, future development is
regarded as primary. Secondly, in SA, testers adopt a neutral and disinterested stance as a means of minimizing measurement error as consistency and standardization are the norm here. In DA, on the other hand, the relationship between the tester and the testee is markedly different in that the tester intervenes in the assessment process. Last but not least, the provision of feedback and mediation which is the norm in DA is in contrast to SA in which it introduces some measurement error into the assessment process per se (Sternberg & Grigorenko, 2002).

Approaches to conducting DA differ significantly in terms of how and when support is provided. These two approaches to DA are enumerated as interventionist (see Poehner & Lantolf, 2013) and interactionist perspectives, where the former takes a quantitative stance and attempts to discover the extent to which learners change or will not change when they are offered pre-specified assistance. In the latter, on the other hand, a qualitative approach is followed and the goal is to promote development and produce changes by offering assistance when required rather than using a set of pre-fabricated mediational moves (Sternberg & Grigorenko, 2002).

It is suggested, in the literature, that social mediation and interaction within the class context should be studied under a new framework known as GDA. SCT practitioners agree that it is possible for the mediator to negotiate simultaneously with a group of learners in co-constructing several ZPDs and moving the entire group forward in their ZPD (Poehner, 2009; Poehner & Lantolf, 2005). Since the mediation between the mediator and primary interactants occurs in the class and in the presence of other class members, they can indirectly benefit from the mediation potential as the secondary interactants.

To put it another way, GDA procedure is mainly characterized by teacher/mediator engaging a group of learners as primary and secondary
interactants in the interaction and offering mediational prompts that increasingly change in their degree of explicitness. As Poehner (2009) simply puts it, when the mediator engages in a direct interaction and addresses a given learner’s error, that particular learner is considered as primary interactant because s/he is directly taking part in the negotiation and uses the support that is needed. However, “because the exchange occurs in the social space of the class and before the other group members, it has mediating potential for the rest of the group as well, who are secondary interactants but participants nonetheless” (Poehner, 2009, p. 477).

Poehner (2009) distinguishes between concurrent and cumulative GDA. In concurrent GDA, the interaction between the mediator and the primary interactant is directed to the secondary interactant when the primary interactant is unresponsive to the mediation, while in cumulative G-DA, a series of dyadic DA interactions is conducted with each primary interactant with the aim of moving the whole group forward in its ZPD, while other learners attend to the interactions. That is “cumulative G-DA attempts to move the group forward through co-constructing ZPDs with individuals, but concurrent G-DA supports the development of each individual by working within the group’s ZPD (Poehner, 2009, p. 478).

Following Vygotsky’s argument regarding dialogic interaction between novice and expert, and Poehner’s (2005) call for applying DA to a group of learners, a number of researchers have recently embraced GDA as the general framework to investigate language development in an EFL context (Azarian, Nourdad, & Nouri, 2016; Davin, 2016; Miri, Alibakhshi, Kushki, & Bavarsad, 2017; Poehner, Davin & Lantolf, 2017; Poehner & Lantolf, 2005; Saniei, Birjandi, & Abdollahzadeh, 2015; Tabatabaee, Alidoust, & Sarkeshikian, 2018).
Poehner and Lantolf (2005) report on implementing GDA in a primary school, where learners took fifteen-minute lessons in Spanish. Learners were supposed to roll a cube and describe the animal whose picture was on that particular side of the cube. The teacher had an inventory of mediation moves and prompts based on which she could record and rank learners as those who needed the most immediate help to those with the least explicit assistance. It illustrated learners’ changing abilities and needs which the teacher could track individually and in groups over time by discerning changes in the level of support they needed when more difficult tasks were introduced.

In the Iranian EFL context, Alavi, Kaivanpanah, and Shabani’s (2011) study aimed to test applicability of interactionist GDA in identifying the mediational strategies offered by a mediator during GDA interactions with a group of learners (aged 20-25) engaged in a listening task. An inventory of mediational strategies was developed which helped track the learners’ microgenetic and developmental trajectories over time. Following the same procedure, Fani and Rachtchi’s study (2015) addressed students’ reading ability through two types of GDA, namely concurrent and cumulative. It was found that mediation in these two types of GDA procedure promoted learners’ reading comprehension ability though no significant differences were found between the effects of these two types of group DA.

Although this study shed new light over the DA practice in dyads, it still faces some drawbacks including insufficient coverage for all the learners. Additionally, the impact of mediation between teacher and primary interactants on secondary interactants could not be guaranteed.

An improvement over the aforementioned studies was Shabani’s (2018) study which applied GDA in the context of writing at university
level. Forty four students formed experimental and control groups after taking a homogeneity test. The study followed a mixed methods design including quantitative and qualitative data collection and analysis. The results of Shabani’s study indicated that firstly the experimental group outperformed the control group and secondly GDA instructions could diagnose learners’ sources of writing difficulties and contribute to promoting abilities which were in the state of maturation. Overall, GDA was shown to be able to move the entire class forward in its ZPD while co-constructing ZPDs with individual learners within the social environment of the classroom.

Shabani’s study, though, an improvement over the previous studies, suffered from few shortcomings. First of all, the participants were university students who were studying translation as their major; thus, as in other studies, high school students were underrepresented. Secondly, the participants in Shabani’s study were homogenized based on a homogeneity test and this is in contrast to real class context, where heterogeneity in terms of language proficiency is of main concern.

Due to the paucity of research in the area of GDA, especially regarding writing accuracy, at highschool level, and interplay between primary and secondary interactants, attempts were made in the present study to investigate the mediation/ learning interface from within a SCT theoretical stance. The research questions that guided the study were as follows:

1. To what extent can interactions during a group dynamic assessment actually promote learners’ writing accuracy development as indicated by meditational moves required and reciprocity moves by learners?
2. What is the impact of mediation on microgenetic development of learners within a particular DA session, as well as across two sessions?

3. How do secondary interactants benefit from interaction between mediator and primary interactants?

3. Method

3.1. Participants

Convenience sampling was used to select the participants in this study who were 25 tenth-grade students studying English in an intact EFL classroom. According to Dörnyei (2007), convenience sampling is a type of nonprobability sampling in which members of the target population are selected for the purpose of the study because they meet certain practical criteria including easy accessibility, geographical proximity, availability at a given time, or the willingness to participate in the study.

3.2. Instrumentation

The instrument employed in this study encompassed DIALANG online language proficiency test (https://dialangweb.lancaster.ac.uk) and written artifacts (both to shed light on the type of grammatical errors learners faced and their individual performance), and video recordings of DA sessions. DIALANG is used by many higher education institutions across Europe and provides the testees with their level of language skills based on the Common European Framework (CEF) for language learning.
3.3. Design of the study

This was a multiple case study which is qualitative in approach (Creswell, 2013; Creswell et al., 2003; Hesse-Biber & Leavy, 2010). Moreover, this study aligned itself with an interactionist GDA approach and a microgenetic methodology. The schematic representation of the design of the present study is as follows:

<table>
<thead>
<tr>
<th>Session</th>
<th>Assessment sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Administering DIALANG test</td>
</tr>
<tr>
<td>3</td>
<td>Pretest (NDA1),</td>
</tr>
<tr>
<td>4, 5</td>
<td>Whole classroom DA1</td>
</tr>
<tr>
<td>6</td>
<td>Post-test (NDA2)</td>
</tr>
<tr>
<td>7, 8</td>
<td>Whole classroom DA2</td>
</tr>
</tbody>
</table>

3.4. Procedure

Each assessment session in this study was characterized by two phases, an NDA elicitation stage (writing compositions after watching video-clips) and a DA/ G-DA intervention phase. The NDA stage aimed at surfacing the class's ZAD (Zone of Actual Development) or current status and the DA procedure took the learners’ ZPD into account. Learners went through eight sessions of NDA/ DA procedure during which the focus was on writing accuracy and certain grammatical structures (taught in the previous years or identified as the sources of learners’ errors in NDA sessions and DIALANG test). The selected structures included subject/ verb agreement, simple
tenses including simple past, present, present progressive and simple future, and appropriate use of adjectives before nouns or after to be verbs.

During the DA session, each student was asked to read her composition aloud as she and the mediator went through it sentence by sentence, the mediator interrupted to ask questions, give suggestions, and provide feedback which ranged from the most implicit to the most explicit and changed depending on the learner’s reciprocity to the mediation provided. This procedure occurred while other students in the class were potentially actively listening to, and benefitting from the exchanges between the mediator and the learner (Poehner, 2009). Each class meeting was video-recorded and transcribed (using pseudonyms to ensure ethical considerations). These transcripts were compared to the mediator’s mediation record and field notes taken during daily observations by the researcher/mediator.

Trustworthiness which entails employing various procedures for establishing validity in qualitative studies was ensured through different lenses in Merriam’s (1998) terms. These include data triangulation which involves using written artifacts, meditational sessions, observation, and interviews. They also involve researcher’s triangulation that is using inter-raters in the coding and analysis of the data, and the thick description of data.

3.5. Data analysis

All lesson recordings from the data set (described above) were transcribed and then analyzed microgenetically. Microgenetic development “primarily concerns the reorganization and development of mediation over a relatively short span of time” (Lantolf, 2000, p. 3). Macrogenetic development, on the other hand, refers to the development of learners across sessions and requires more time to take place. To answer the research questions, we
examined the Language Related Episodes (LREs) that corresponded to the target structures (see section 3.4) in this study.

4. Results

4.1. Mediation Typology

To addresses the first research question, a thorough analysis of the dialogues between the mediator and the individual learners and the types of moves made by the learners led to developing the mediation and learner reciprocity typologies presented below (Figures 1 & 2). The mediation typology in this study was developed based on the explicitness of each of the moves made by the mediator.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Request for Repetition of the Whole Sentence</td>
<td></td>
</tr>
<tr>
<td>2. Request for Verification</td>
<td></td>
</tr>
<tr>
<td>3. Specifying the Location of the Error</td>
<td></td>
</tr>
<tr>
<td>4. Specifying the Nature of Error</td>
<td></td>
</tr>
<tr>
<td>5. Metalinguistic Clues</td>
<td></td>
</tr>
<tr>
<td>6. Translation</td>
<td></td>
</tr>
<tr>
<td>7. Offering a choice</td>
<td></td>
</tr>
<tr>
<td>8. Providing the correct answer</td>
<td></td>
</tr>
<tr>
<td>9. Providing explanation</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1. Mediation typology*

In what follows, the most frequent mediational and reciprocity moves that emerged from the interactions between the mediator and learners in the present study are discussed. The English translations of the protocols are presented here to avoid any misunderstanding.
4.1.1. Request for Repetition of the Whole Sentence

In this type of mediation, the mediator interrupted the learner to ask for repeating what she just read as one way to help her focus on the meaning she was trying to convey and the linguistic feature used. In the following excerpt taken from Saba’s interaction with the mediator, this type of mediation helped the learner restructure the sentence and resolve the problem which involved using the wrong form of verb. However, in most cases, the request for repetition was not sufficient for the learner to correct her error. The mediator, therefore, had to use other forms of mediation.

1. S: 30 years later he *married and he had two daughter and….
2. M: (interrupts) Read it again please Saba
3. S: mm…mm 30 years ago he …mm oh no he got married

**The capital letter is the initial of learner’s first name and M stands for mediator.**

In line 1, Saba uses the incomplete form of the verb that is *married* instead of *got married*. The mediator waits for her to continue and since Saba does not notice the error, the mediator interrupts and asks for repetition of the whole sentence in line 2. Saba does so in line 3 and after a short pause corrects her mistake while repeating the whole sentence.

4.1.2. Specifying the Location of the Error

Here, the goal was to determine if the learner could correct the error upon being identified by the mediator in terms of its location. A representative example of this form of mediation is taken from Razieh’s performance in which after using more implicit forms of mediation and the learner’s failure to correct the error, the mediator drew learner’s attention to the location of the error. The value of this type of mediation is that if the learner was able to correct her error, it meant that she had more control over that particular feature than when she could not fix the error and needed further assistance.
4. R: Shakespeare at this time was *very sadly
5. M: read it again. Shakespeare what?
6. R: Shakespeare at this time was very sadly
7. M: here I mean was very sadly
8. R: …was…was…sadly …was sad?
9. M: yes right

Razieh uses *sadly* instead of *sad* in line 4 and is not responsive to the first mediation that is a request for repetition of the sentence. The mediator interrupts and repeats the clause containing the error but leaves it to the learner to correct it. Interestingly, this is alerting Razieh that there is a problem, but she hesitates (line 8) as she is not sure about the answer that is going to provide. Finally she provides the correct answer that is *sad* in a tone that means she is seeking confirmation of the mediator. This technique does not always lead to correction of the error and in some cases, the mediator has to provide more explicit moves. Similar to all types of mediation, learners’ reciprocity to this move is the key to revealing important information about their ZPD.

4.1.3. Metalinguistic clues

Metalinguistic clues refer to any type of explanation that guides the learner in detecting the error and correcting it. The important point is that the mediator gives clarifications related to the error and asks questions to help the learner guess the correct answer. An example is informing the learner that she needs to insert an object or subject which is less explicit than the next forms of mediation. Consider the following example from Bahareh’s initial DA session in which she uses present tense for past in line 10 and the mediator requests for a more focused reading and identification of the error and as Bahraeh totally fails to do so, the mediator provides a more explicit
form of mediation that is questioning her about the time she is talking about in line 13 and again in line 15 and 17 and so on.

10. B: William Shakespeare was from London. He *lives in England
11. M: here again please what is wrong with it?
12. B: (Nemidoonam) (I don’t know)
13. M: what/ when is the time that you’re talking about?
14. B: William Shakespeare
15. M: yeah I know. But at what time?
16. B: … I meant (hast) (is)
17. M: now or before?
18. B: before (bood) was
19. M: so what verb should you use?
20. B: it should be in the past
21. M: The past tense of live?
22. B: (looks at other students for help) and they murmur the answer
23. B: lived
24. M: yes ok

As it can be seen from the above exchange, the metalinguistic clues did not lead to correcting the error so the mediator offers a choice between present and past tense in line 17 followed by more explicit forms of metalinguistic clues emphasizing the need for a verb in past tense which finally results in correcting the error.

4.1.4. Providing the correct answer

This technique was used when all other forms of mediation were not sufficient to help the learner correct the error or when the learner continued making more mistakes. The following exchange is taken from Razieh’s first DA session in which she struggled to use the correct form of verb in line 75.
25. R: 3000 people * reading his books
26. M: read it again please
27. R: (reads the sentence to herself)
28. M: 3000 people what?
29. R: 3000…um … do we need was again?
30. M: yeah but with a bit of change. So something is missing what is that?
31. R:…. um…I
32. M: I mean agreement with the subject
33. R: you mean except past tense and to be verb?
34. M: yeah past is all right but you need plural
35. R: peoples?
36. M: no I mean the auxiliary were …you need were
37. R: So… 3000 people were reading his books

After the learner’s failure to incorporate other forms of mediation, the mediator provides the correct auxiliary which is required to complete the verb in line 36 and Razieh is successfully able to incorporate the correct form of the verb in her sentence though this is not the case in some learners and requires more mediation. Therefore, this level of mediation does not imply the same level of development for all learners as some of them still lack the necessary knowledge to use the correct form provided by the mediator in their sentence structure. This means that they are developmentally beyond those who understand the correct form and can use it appropriately. In other words, learners who are able to incorporate the provided correct answer are successfully more autonomous and closer to interpersonal functioning (Barber, 2005).
4.2. Reciprocity Typology

Learner reciprocity highlights moves made by learners during DA sessions that were helpful in understanding their developmental level and degree of control over a particular linguistic feature and consequently their responsibility for their own learning and performance (Shrestha & Coffin, 2012). For instance, overcoming a problem is a higher level of reciprocity than incorporating mediator’s feedback because in the latter, the learner not only incorporates mediator’s feedback, but also comes up with the correct response.

Figure 2 illustrates various moves made by learners that range from the lowest to the highest level of reciprocity.

<table>
<thead>
<tr>
<th>1. Unresponsive</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Repeating the sentence</td>
</tr>
<tr>
<td>3. Responding Incorrectly</td>
</tr>
<tr>
<td>4. Translating</td>
</tr>
<tr>
<td>5. Incorporating Mediator’s Feedback</td>
</tr>
<tr>
<td>6. Overcoming Problems</td>
</tr>
<tr>
<td>7. Overcoming Similar Problems without Assistance</td>
</tr>
</tbody>
</table>

*Figure 2. Reciprocity typology*

In what follows, most frequent moves are reported.

4.2.1. Repeating the sentence

This form of reciprocity occurred when the learner responded to mediation by just repeating what she has written before without any changes even when a change in the structure was required. This type of reciprocity apparently places the learner at the low end of Figure 2 though it may be the
beginning of a longer and more fruitful interaction between the mediator and the learner in some cases. However, depending on learner’s ZPD and degree of reciprocity to the moves offered by mediator afterward, it can result in the highest form of reciprocity that is providing the correct answer. Take the following example from Negin’s first DA session:

38. N: many people *interested in his books
40. N: many people interested in his books
41. M: something is missing
42. N: were?
43. M: yes well- done

Negin misses the verb in line 38. This is followed by mediator’s request for the repetition of the sentence which is a deliberate attempt at prompting the learner to reconsider her sentence and probably correct it. Since the first form of mediation is unsuccessful and the learner just repeats the erroneous sentence in line 40, the mediator tries the second technique which is reminding her of the existence of an error in the next line. Interestingly, this form of mediation results in the learner arriving at the correct answer in line 42 though she is unsure about the correctness of her response.

The fact that Negin required less mediation was indicative of the fact that she had the ability to write sentences using to be verbs, and decide to select the appropriate tenses and persons. In other words, she was ready to take more responsibility for her own learning and could embark on more challenging tasks of the same nature.

4.2.2. Responding Incorrectly

Some learners responded to the mediation, however, incorrectly due to either lack of knowledge of the particular structure or inability to fully
comprehend the mediation offered. This places this type of reciprocity at the third level of Figure 2 which indicates more dependence on mediator’s assistance. Consequently, this leads the mediator to turn to more explicit forms of mediation. Consider the following example from Sahel’s first DA session:

44. S: Einstein always *was hole in his socks
45. M: read it again
46. S: Einstein always was hole in his socks
47. M: ok here there’s something wrong with it
48. M: was always hole in his socks
49. S: reads it again
50. M: yeah something is wrong
51. S: where? The verb?
52. M: yeah
53. S: Do I need to be? I need is?
54. M: no

Sahel uses the wrong verb in line 44 and mediator’s implicit mediation in the next line fails to bring about the appropriate response on the part of the learner. This interaction continues up to the point, where the mediator has to provide more explicit form of mediation; however, this only results in Sahel answering incorrectly in line 53, where she asks for mediator’s confirmation of the response as she is not sure whether to use to be verb or more specifically is before hole in his socks. Towards the end of interaction, the mediator offers two choices which result in provision of the correct verb by the learner.

Responding incorrectly leads the mediator to conclude that the target structure is beyond the current level of the learner and to offer more explicit mediation that is more clearly tailored to learner’s needs and current level of
ability. Moreover, this type of reciprocity move indicates that the learner is far from being autonomous and self-regulated from a Vygotskyan perspective.

4.2.3. Overcoming Problems

This category of reciprocity emerged when the mediation led the learner to properly identify and correct the problem after receiving some forms of mediations from the mediator. The following excerpt is from Razieh’s first DA session in which she misses the verb in line 55:

55. R: William Shakespeare *an English writer and poet
56. M: ok someth thing is missing in this sentence
57. R: (quiet)
58. M: what do you think is missing?
59. R: …uhmm he was
60. M: well done right. you’ve missed the verb

Razieh was able to correct her error after two meditational moves and this can be considered as a sign of Razieh’s being more responsive to the mediation in comparison to some other learners who needed more mediation in terms of quality and more explicit moves as for quality.

This type of reciprocity clearly illustrates learner movement from inter to intrafunctioning plane, i.e. moving from other to partial regulation with regard to a particular structure and sets the ground for self-regulation that is the ultimate aim of most educational settings working within the domain of sociocultural theory of mind.
4.2.4. Overcoming Similar Problems without Assistance

Some learners were confident enough to overcome their grammatical errors in the same or in the second DA session without any need for assistance from the mediator. This could be due to the fact that they had internalized the structure. Zahra, for example, had a high degree of reciprocity in her second DA session, especially in terms of tense, since she could overcome the problem without receiving any mediation from the mediator. The following excerpt is from Zahra’s second DA session in which she corrects the mistake she makes upon producing it and without the need for receiving any type of mediation from the mediator. Upon mediator’s request for her reason for correcting the error, she explained that she remembers this from another interaction between the mediator and one of the learners.

61. Z: in his comments he wrote that he cannot …could not quit it
62. M: ok

Overcoming similar problems without assistance, which reflects internalization of the target structure and self-regulation, could be due to being exposed to mediation between mediator and primary interactants addressing the same problem. This, therefore, highlights the significance of GDA in moving the entire group forward in its ZPD through negotiations with individual learners in their respective ZPDs (Poehner, 2009).

4.3. Movement in Learners’ ZPD/ Learner development

To answer the first research question, in addition to analyzing the interactions between the mediator and the individual learners in classroom setting, mediator field notes were also scrutinized. The present section, therefore, focuses on presenting the results of the analysis of field notes which included the type of error, frequency and the quality of mediations required by each learner which was based on Aljaafreh and Lantolf’s (1994)
The five general levels of movement “from intermental to intramental functioning as the learners moved through the ZPD toward self-regulation and control over the target structures” (P.470). The levels are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The learner is not able to notice, or correct the error, even with intervention from the tutor</td>
</tr>
<tr>
<td>2</td>
<td>The learner is able to notice the error, but cannot correct it, even with intervention.</td>
</tr>
<tr>
<td>3</td>
<td>The learner is able to notice and correct an error, but only under other-regulation.</td>
</tr>
<tr>
<td>4</td>
<td>The learner notices and corrects an error with minimal, or no feedback from the tutor and begins to assume full responsibility for error correction.</td>
</tr>
<tr>
<td>5</td>
<td>The learner becomes more consistent in using the target structure correctly in all contexts.</td>
</tr>
</tbody>
</table>

According to Aljaafreh and Lantolf (1994), the five transitional levels described above represent three different stages of development which include levels 1 to 3 that represent other regulation, level 4 which characterizes partial self-regulation and level 5 which symbolizes self-regulation.
As Table 2 displays, in DA1, Saba required the least explicit forms of mediations to correct her errors while other learners had lower ZPDs and in most cases, required more explicit meditational prompts. Negin and Fatemeh, for example, moved from other-regulation (3) in DA1 to complete self-regulation (5) at DA2 which places them at a higher position in terms of their ZPD relative to other learners. Ferial and Bahareh, on the other hand, remained at the same level of explicitness (other-regulated) in DA2. Aida was either completely dependent or in some cases, partially dependent on other-regulation using some target structures in both DA sessions.
Table 3. Decrease in Mediation across DA Sessions

<table>
<thead>
<tr>
<th>No.</th>
<th>Learner</th>
<th>No. of interactions in DA 1 (2 sessions)</th>
<th>No. of prompts required in DA 1</th>
<th>Average No of prompts / DA1</th>
<th>No. of interactions in DA 2 (2 sessions)</th>
<th>No. of Prompts required in DA2</th>
<th>Average No. of prompts / DA2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Saba</td>
<td>3</td>
<td>5</td>
<td>1.6</td>
<td>2</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>2</td>
<td>Mahtab</td>
<td>3</td>
<td>10</td>
<td>3.3</td>
<td>3</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Fatemeh</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Zahra</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>10</td>
<td>3.3</td>
</tr>
<tr>
<td>5</td>
<td>Bahareh</td>
<td>7</td>
<td>34</td>
<td>4.8</td>
<td>6</td>
<td>24</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Ferial</td>
<td>4</td>
<td>16</td>
<td>4</td>
<td>5</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Aida</td>
<td>4</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Sahel</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>26</td>
<td>3.2</td>
</tr>
<tr>
<td>9</td>
<td>Negin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>28</td>
<td>98</td>
<td>3.07</td>
<td>32</td>
<td>99</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The average number of prompts required by each individual was calculated in each session of the whole group instruction by dividing the total number of prompts required for that day by the total number of interactions that occurred between the mediator and the learner.

Table 3 indicates that the average number of prompts required for each learner decreased from DA 1 to DA 2 except one case (Mahtab). The average number of prompts required per interaction was 3.07 on DA 1 and 2.5 on DA2. By viewing the interactions that occurred on both DA sessions (DA1 & DA1) and considering the average number of the prompts per interaction for each learner, a clear decrease in the amount of mediation is observed in DA2. Figure 3 clearly indicates the changes observed in the number of mediations required in both DA sessions.
Figure 3. Decrease in mediation (DA 1 versus DA 2)

Table 4. Types of Reciprocity Moves across DA Sessions

<table>
<thead>
<tr>
<th>No of Reciprocity moves</th>
<th>Saba</th>
<th>Mahtab</th>
<th>Fatemeh</th>
<th>Zahra</th>
<th>Ferial</th>
<th>Aida</th>
<th>Bahareh</th>
<th>Sahel</th>
<th>Negin</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA1 DA2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 5</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>7 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>13 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>11 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>31 20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>7 25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Type One (lower levels)

- DA1: 0=0% 3=43% 1=25% 5=56% 7=54% 5=46% 21=68% 4=52% 1=20%
- DA2: 0=0% 5=50% 4=40% 4=34% 2=40% 9=45% 16=64% 0=0%

Type two (higher levels)

- DA1: 3=100% 4=57% 3=75% 4=44% 6=46% 6=54% 10=52% 3=48% 4=80%
- DA2: 5=100% 5=50% 4=100% 6=60% 8=66% 3=60% 11=55% 9=36% 5=100%
As further evidence from reciprocity moves of the learners during DA1 and 2 indicates, most of the learners were closer to independent performance (see Table 4 above), i.e. they required less assistance from the mediator. All learners were generally responsive at a higher level during DA2 except Mahtab who made more independent moves during her first DA while this remained unchanged in her second DA. In Sabaa’s case, the reciprocity moves were all from the category of the more independent moves which place Saba among those learners who have high ZPD and ready to take responsibility for their own learning. As for other learners, the number of reciprocity moves including unreciprocity, repeating the sentence and answering incorrectly which are indicative of more dependence on the mediator are greater in DA1. However, these moves are reduced in DA2 which highlights more independent performance and consequently higher ZPD levels of the learners. These types of moves include incorporating mediator’s assistance, providing the correct answer, and providing the correct answer without assistance. To clarify the point, take Zahra as an example. Fifty-six percent of her moves were from type-one category in DA1 that is more dependent on the mediator and the rest (44%) were from category two. In contrast, this amount decreased to 40 percent in case of type one moves and increased to 60 percent as for type two reciprocity moves. This is clearly showing that this particular learner is moving in her ZPD from DA 1 to DA2.

As stated earlier, most learner showed a similar pattern (except Saba and Mahtab). Thus, they interacted differently with the mediator during the second DA session, relied less on the mediator during DA2, and required less help from the mediator to identify and correct errors. They were better positioned to do this on their own.

To answer “What is the impact of teacher mediation on the microgenetic and macrogenetic development of learners within a particular
DA session, as well as across sessions?” Two DA sessions were compared in terms of mediations required by each learner and their reciprocity. Comparisons of learners’ performance across two DA sessions would reveal important information about their ZPD over time. To clarify the issue, consider a learner who requires fewer prompts and less explicit mediation in DA 2 relative to DA1, it can be concluded that the learner has developed, even if she has not gained full control over the target structure. Mediational and reciprocity moves and shift in control over the target linguistic feature as main strands of development, contribute to differentiating the results of dynamic and static assessment in terms of their effectiveness in a single session as well as changes in learners’ performance over time (Poehner, 2005).

Bahareh, one of the participants, struggled with applying the correct tense in DA1 and as it can be seen in the following protocol from her DA1, she uses present for past in line 63. The mediator assists her by providing less explicit forms of mediation followed by more explicit moves, such as metalinguistic clues as a result of learner’s unreciprocity. Bahraeh required seven meditational moves to correct the error while this was reduced to two meditational moves in her forth interaction in the same DA session. This is clearly a sign of learner’s microgentic development over a single session. Moreover, her reciprocity moves are mostly of type one moves (far from being independent), such as unresponsiveness or repeating the sentence while this progressed to level two of reciprocity moves such as thinking aloud or offering explanation in the next interaction.

**DA1 (third interaction):**

63. G: originally he *is British
64. M: ok something is wrong here
65. G: repeats the sentence
66. M: ok you are talking about past
67. G: Past  
68. M: so you need to use what?  
69. G: ......ehmm...  
70. M: which one is the verb?  
71. G: (quite)  
72. M: he is originally british. Which one is the verb?  
73. G: (quiet)  
74. M: is, I mean  
75. G: (quiet)  
76. how do you say it in the past?  
77. G: was  
78. M: yeah  

**DAI (fourth interaction):**  
79. G: his wife’s name *is Susana  
80. M: something is wrong with the verb  
81. G: (reads the sentence to herself)  
82. M: the same problem as before  
83. G: the tense should be past  
84. M: yeah so what verb should you use?  
85. G: shall I use was?  
86. M: yeah right  

In some cases, although the learner was not able to come up with the correct structure, she showed signs of development in terms of the requirement for less mediational moves and being more responsive in her later performances. A similar pattern was observed by Anton (2003) in her work with advanced learners of Spanish and Poehner’s (2005) study of advanced learners of French. This clearly indicates that although, as in Vygotskian’s term, control of that particular structure has not been fully developed, it has qualitatively changed or ripened across the DA sessions and should be
recognized and valued as sign of improvement. This type of insight into the development of the learners as they mature is usually what is missing in traditional assessments (Poehner, 2005).

The following protocols are from Fatemeh’s interactions during DA1 and DA2 and clearly illustrate how she has developed across sessions and not only requires less direct mediations and is at a higher level in terms of reciprocity, but has reached a level, where she can perform independently regarding certain structures. Ferrial’s, Bahareh’s, Aida’s interactions followed the same pattern.

Fatemeh’s DA1

87. C: 3000 people *can go there
88. M: again please
89. C: reads again
90. M: read again I mean the last sentence
91. C: … is it the vocabulary or something else?
92. M: vocabulary is okay
93. C: can go? Is it can go? Oh it should be could
94. M: yes right

Fatemeh’s DA2

95. C: his parents thought that their son *isn’t clever
96. M: read it again please
97. C: his parents…oh… was’t clever

To address the third research question: “How do secondary interactants benefit from the interaction between primary interactants and mediator?”, the mediator asked all learners to attend to the interaction between each primary interactant and the mediator, underline, and correct their errors while being exposed to related mediations offered to primary interactants. It should be pointed out that these errors were identical to the errors made by
primary interactants and addressed in the interaction with the mediator. The compositions were later collected to check for frequency of revisions made by secondary interactants.

Table 5. Number of Corrections Made by Secondary Interactants

<table>
<thead>
<tr>
<th>No</th>
<th>Learner</th>
<th>Role</th>
<th>No of interaction being exposed to (DA1 &amp;2)</th>
<th>No of corrections by SIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Saba</td>
<td>PI</td>
<td>0</td>
<td>------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Mahtab</td>
<td>SI</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Fatemeh</td>
<td>SI</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Zahra</td>
<td>SI</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Bahareh</td>
<td>SI</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Ferial</td>
<td>SI</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Aida</td>
<td>SI</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Sahel</td>
<td>SI</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Negin</td>
<td>SI</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>

PI= Primary Interactant  
SI= Secondary Interactant

As can be seen from Table 5, Saba acted as the primary interactant because she was the first learner who received mediations from the mediator and this excludes her from the list of secondary interactants. On the other hand, other learners were exposed to a range of interactions in both DAs and acted as secondary interactants which provided them with the opportunity to correct the errors to which they were exposed during the interaction between the primary interactant and the mediator. Overall, all learners benefitted as secondary interactants although this was different for each individual and ranged from one correction for Mahtab and five correction for Negin. This could be explained in terms of the learner’s attentiveness and psychological characteristics and many other factors including the correspondence between the primary and secondary interactants errors.
More evidence came from interviewing secondary interactants and asking them if listening and attending to primary interactants’ interaction with mediator had any impact on their performance. In addition to corrections they made (Table 5), there were cases where secondary interactants benefitted in a way that they identified their errors as secondary interactants. Here is an example from Zahra’s second DA session. Zahra used a preposition with the verb married, where she didn’t need one. After receiving the first mediation from the mediator, she argued that she knew it was wrong as she remembered it from the interaction between the mediator and one of the learners, but she was not sure how to correct it. Interestingly, this awareness which resulted from the interaction between the primary interactants and the mediator resulted in an improvement in Zhara’s ZPD as it clearly can be seen from the number of mediations required and her reciprocity in line 100 which is providing the correct answer though she is no sure about it.

98: E: then he *married with his cousin  
99: M: ok read it again please  
100: E: married his cousin?  
101: M: right that’s it

5. Discussion

A thorough analysis of the dialogue between the mediator and the individual learners and the types of moves made by the learners involved in the primary interactions led to developing the mediational move typology and learner reciprocity, both of which were useful in judging learner development within and across DA sessions.

Several cases of micro-genetic and macro-genetic learner development were also observed. These were indicated by the type of
mediational move the learner required and their reciprocity to those mediations.

The results of the study confirmed the findings of other studies (e.g. Ajideh & Nourdad, 2012; Gibbons 2003; Hesse, Care, Buder, Sassenberg, & Griffin, 2015; Hidri, 2014; Lidz, 2002; Mardani & Tavakoli, 2012; Poehner & Lantolf, 2005; Shabani, 2014, 2018) regarding better performance of the learners in joint activities and through mediation. The findings also provided evidence in support of the previous studies such as Feuerstein, Rand and Hoffman (1979), Johnson and Golombek (2016), and Poehner and Infante (2017) in which they indicated that offering mediation during testing procedure can result in development through the assessment process itself. The results supported the argument made by Vygotsky (1986) that the goal of instruction should be to bring to light the invisible and maturing abilities.

The results provided empirical support for the claim made by Poehner and Lantolf (2005) that applying DA can make classroom formative assessment practices more effective through providing assistance that is continually adjusted to learners’ needs. Additionally, some learners reported benefitting from the interactions between the mediator and other learners and found these interactions useful in correcting their errors. This was because they actively participated in the dialogues taking place at the inter-psychological plane. Active participation involves overt verbal and non-verbal contributions that can be accomplished by embodied movements such as gazing, turning or nodding heads, or eye-shifting. All learners benefitted as secondary interactants although this was different for each individual and ranged from one correction for some learners and more for others. This could be explained based on the learner’s attentiveness, psychological characteristics, and other factors including the correspondence between the primary and secondary interactants errors. It
should be born in mind; however, that “Internalization of the constructed or co-constructed knowledge does not occur automatically but learners need to realign their objectives with class objectives and participate in ZPD oriented sessions either overtly or covertly” (Miri et al., 2017, p. 21).

This study highlighted the significant role of GDA in the ZPD progression in groups of learners rather than individuals and how group ZPD might develop as learners are engaged in the interaction with the mediator in front of their classmates. In other words, the social space of the classroom created an atmosphere of indirect interaction or intersubjectivity (Romemetveit, 1985; Shabani 2018) between the primary and secondary interactants and supported collective scaffolding (Donato, 1994) and indirect and peripheral participation (McCafferty et al., 2006) which moved the secondary interactants forward in their ZPD. GDA, on the other hand, could remedy the inefficiency of DA in dyads which might not be sufficient for the language development of all students due to time limitation (Davin & Donato, 2013).

Applying GDA would eradicate teachers’ concern regarding Saniei’s (2012) finding in that Iranian EFL teachers mostly believe that the application of DA in dyads in classroom contexts with more than twenty students would seem time and energy-consuming and less feasible.

This study had theoretical, pedagogical, and methodological implications which could be addressed for future research in the area of GDA. As for the theoretical implications, results of the study shed light on the fact that there should be an interface between language learning and assessment in order to help the learners reach the stage where they can perform with less or no assistance from others. It is assumed that improving teaching and assessment is one of the pedagogical implications of this study, where assessing the learners based on a dynamic procedure could help
locate the areas of weaknesses in the language program or in the learners’ cognitive and metacognitive strategies. To remedy these weaknesses, as a methodological implication, teachers can rely on qualitative forms of assessment including dynamic assessment to come up with solutions based on the dialogue between the learner and the mediator. The findings of the study call for teachers and assessors to avoid overestimating or underestimating learner’s abilities (Budoff, 1968), determine the extent of a learners problem; find out the source of difficulty; and explore or document gradual/ sudden changes in a learners performance by utilizing GDA in the classroom. That is the test should bring about information about prognosis rather than simply diagnosis (Poehner, 2005, p. 279).

There are possible orientations which can be considered for future research. First, there is a need for investigating the application of GDA to other skills rather than writing. Since the participants in this study were females, other researchers are recommended to replicate the same study with the male learners. Another area to examine concerns future studies of application of dynamic assessment to compare low and high achievers’ taking advantage of dynamic assessment. The results of this study suggest that further research on the effects of mediations in dynamic assessment on learners’ writing skill is warranted. More importantly, how primary and secondary interactants benefit from each others and how this works as a two way process must be subject to more scrutiny and investigation. Last but not least, research on DA has mostly focused on expert-novice relationship, but future research can work on the peer-peer interactions as possible sources of mediation.

6. References


Notes on Contributors:

Soroor Ashtarian is an English teacher with an experience of over 20 years of teaching in high schools and pre-university institutes, and ESP courses. She accomplished her masters in TESOL and ICT at the University of Leeds, UK and is currently doing her PhD in TEFL at Razi University. Her research interests are integrating ICT in language teaching, strategic teaching of language skills, collaborative learning and dynamic assessment.

Saman Ebadi holds a PhD in Applied Linguistics. His academic specializations include dynamic assessment, qualitative research, Vygotskian sociocultural theory, and computer-assisted language learning. His research has appeared in a number of national and international applied linguistic journals and he has regularly attended the international conferences on computer-assisted language learning.
**Nouroddin Yousofi** holds a PhD in TEFL and is currently working as an assistant professor and faculty member in Department of Foreign Languages of Razi University, Kermanshah. His Research Interests are language studies and translation and he has published many papers in national and international journals. He has also attended numerous national and international conferences and has supervised a large number of MA and PhD students.