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Dynamic assessment of writing ability in transcendence tasks based on Vygotskian perspective

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Abstract

This study aimed to investigate the dynamic assessment of writing proficiency in Iranian English learners´ writing ability in transcendence tasks based on Vygotskian perspective. The questions which this research intended to answer were: 1) Does dynamic assessment affect Iranian English learners' writing ability? 2) Do the results of dynamic Assessment differ from the results of a non – dynamic assessment? 3) If learners progress, are they able to maintain their improved performance in the transcendence tasks when the assessment context changes? To answer the questions, 60 learners were selected following an Oxford Placement Test, and then randomly divided into two groups, experimental and control. The experimental group received dynamic assessment based instruction while control group received a non-dynamic writing instruction. After eight sessions, both groups were post tested and underwent a static and a dynamic assessment. The results indicated the outperformance of the experimental group over the control one. After two weeks, the experimental group undertook two transcendence tasks in order to trace their growing proficiency in more difficult and to increase innovative tasks. Moreover, upon analyzing the protocols, an inventory of meditational moves was detected as a posterior. As the result, the study suggests the use of dynamic assessment as a development-oriented procedure to diagnose and develop the learners´ emerging abilities.

Keywords: Dynamic assessment, Mediation, Writing proficiency, Transcendence

Introduction

This present research concentrates on the positive impact of dynamic assessment of L2 writing proficiency with reference to Vygotsky. L.S. Vygotsky was an early twentieth – century Russian psychologist who had a significant influence on the development of social theory. According to Vygotsky (1978), in order to understand the human mind, we need to understand the processes from which it emerges or develops. He tried to develop a theory of social, cultural, and historical formation of the human mind and emphasized the social nature of human cognition. Socio – cultural theory is linked to the work of L.S Vygotsky who attempted to provide an account of learning and development as mediated processes. Recently testing researchers have begun to express concern over the power of tests in our lives. For example, Messick (1988), states that more attention should be paid to the social consequences of introducing a test into an existing instructional setting and accepting the resulting scores as the only indicator of

learners' abilities. The impact and influence that tests have on instruction and learning cannot be denied. This is generally referred to as wash back which manifests itself in testing situations where getting high test scores come to be goal of education (Bailey, 1996). Dynamic assessment is a subset of interactive assessment that includes deliberate guided or meditational teaching. The roots of dynamic assessment are traced back to Vygotsky and Feuerstein. Dynamic assessment is based on the point that there are many obstacles and factors that can mask one's ability. It implies that every individual performs or functions at less than 100% of capacity (Tzuriel, 2000). In DA the focus is not on the success or failure of examinees at completing a given task. Instead, the focus is on the analysis of the amount and kinds of assistance they needed. From Vygotsky's perspective, analysis of examiner – examinee collaborations reveals the future performances of examinees if they are given appropriate instructions (Vygotsky, 1988). According to Vygotsky (1988) learning does not exist in isolation i.e. he believed in a non – personal view of knowledge and learning. Writing has always been present in applied linguistics and it is an important skill because it provides a way of monitoring EFL learners' language production; it is a source of stable data analysis which shows how language was learned. According to Stanley (1993), although the importance of writing has been recognized in applied linguistics, generally, it remains one of the least understood, if not misunderstood, subjects in applied linguistics. One reason is the ambiguity of the term "writing which has been used in referring to orthography, written discourse, and the act of writing in linguistic sciences. Writing continues to be marginalized in SLA research. Writing is currently considered as a dynamic, creative and contextualized process of communicating meaning. Writing is not decontextualized process; it is situated in the social and cultural context in which it is produced. Writing involves a dynamic interaction among the text, the writer and the reader. So writers need to consider these three elements and write accordingly. The need to teach this ability is crucial because writing is not only a way of discourse manifestation but a way of manifesting the linguistic, pragmatic, intercultural and strategic competence also. In doing so, teachers will raise learners' awareness of all these elements in the communicative act of writing and as a result, will encourage them to communicate through writing.

This research investigates to discover how dynamic assessment techniques influence L2 learners' writing at paragraph level, since the participants were intermediate learners, and according to ACTFL Proficiency Guidelines (2012), writers at the intermediate level are characterized by the ability to meet practical writing needs, such as simple paragraphs, messages and letters, requests for information, and notes.

The DA approach that was developed for this study follows Feuerstein's preference for flexible interaction between the mediator and the learner as the two cooperatively perform the assessment tasks. The researcher decided to start this study when she was teaching English to some Iranian university students. The researcher found that these students had always the tendency to write what they wanted to express in Farsi before turning it to English (L2). So they usually resorted to the direct translation method. The researcher observed that whenever the students did this, their answers were heavily influenced by their mother tongue grammatically. From the researcher's point of view, they were not good at converting the sentences into L2. In this relation, research questions of this study are as follow:

Q1. Does Dynamic Assessment affect Iranian EFL learners' writing ability?
Q2. Do the results of DA differ from the results of a non – dynamic assessment?
Q3. If learners progress, are they able to maintain their improved performance in the transcendence tasks when the assessment context changes?

To answer these questions the following assumptions were formulated:

H1. Dynamic Assessment does not affect Iranian EFL learners' writing ability.
H2. The results of DA do not differ from the results of a non – dynamic assessment.
H3. If learners progress, they will not be able to maintain their improved performance in the transcendence tasks when the assessment context changes.

Methods

This study design was based on an interventionist DA approach (the Sandwich format). A pretest-enrichment-posttest-transfer session format was followed in this study. A pretest was conducted to diagnose the students' independent performance abilities and their main sources of difficulties (syntactic and lexical). To address the learners' recurring problems an enrichment program lasting for eight weeks was offered. Then a posttest was administered followed by two transfer/transcendence (TR) sessions aimed at understanding the extent to which the students could extrapolate their newly acquired knowledge to novel contexts. The experimental group received the same pre-posttests at two levels: Zone of Actual Development assessment (ZAD) and Zone of Proximal Development (ZPD) assessment. Only the experimental group received TR tasks (not the control group). An experimental research design was performed. The research design is summarized as follows (See Table 1 and Fig. 1).

Participants

The participants of this study were 60 homogenous EFL learners (i.e. they had the same L2 proficiency level) who were studying at University of Applied Science and Technology, Tehran, Iran. The participants of the study were male and females, native speakers of Persian and in their early twenties and thirties. Also, they had not been to English speaking countries. Their average exposure to English was about 6 years during which they had received a traditional version of language learning syllabus and curriculum. Based on a placement test and an interview, they were considered intermediate learners (Their OPT scores were one standard deviation above the mean). Since they were studying English in Iran only, they were described as foreign language learners. Most of them had received their second language (L2) knowledge (in English language) at school; so, they were exposed to

Table 1 Research design for each group

Experimental group	Control group	Period
Pretest (ZPD, ZAD assessments)	Pretest	1 week
DA based instruction	Non-dynamic instruction	8 weeks
Posttest (ZPD, ZAD assessments)	Posttest	1 week
Transcendence 1		1 week
Transcendence 2		1 week

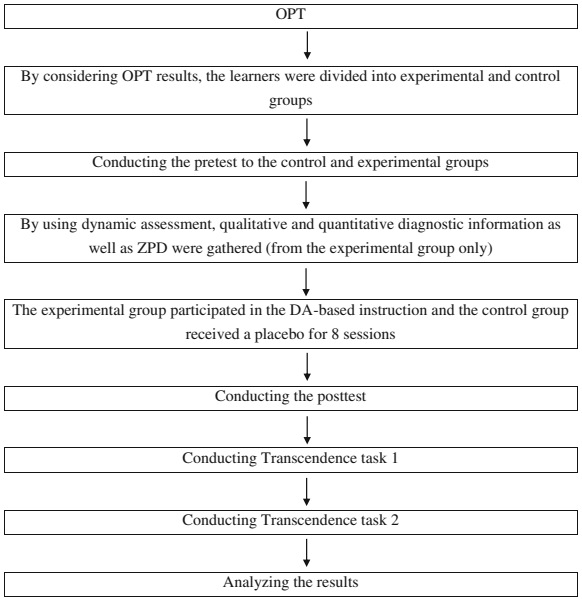

Fig. 1 Experimental research design

non-dynamic instruction of L2 learning. As a result, they had received a grammar-based, teacher-oriented method based on the course in the classroom (See Table 2).

An OPT (Oxford Placement Test) was administered to all the participants (N = 87). With their OPT results, the learners were divided into an experimental and a control group.

Research materials

In this study four types of tests (pretest i.e. DA1 and first static assessment/SA1, posttest i.e. DA2 and second static assessment/SA2, TR1, TR2) were used. The tests consist of a general subject about which the participants had to write about at paragraph level. Also, IELTS standard tests were used to assure the validity and reliability of them. One kind of pretest was used (from IELTS writing samples) for each group. So all participants underwent a static and a dynamic assessment at the beginning and at the end of the enrichment program. In addition, the enrichment learners also completed two transfer assessments. After conducting the 8th instruction session, the posttest was given to 60 students to measure the learners' achievements. The students' writings helped the students to showcase a variety of abilities which required remediation. As already stated, grammar and pragmatic use of vocabularies proved problematic for all the participants and therefore the enrichment focused mainly on grammar and usage of different words in different situations. The transfer tasks were developed to assess the extent to which learners had internalization. They assessed how far the learners had extended the mediation provided. Together with the

Table 2 Demographic information about the subjects (N = numbers)

Learners	N of classes	Ex group	Cntr group	Total
18–35 years old	1	30		30
18–35 years old	1		30	30
Total	2	30	30	60

results of the posttests, this information tracks the gains made. In the present study, two transfer tasks TR1 and TR2 were used to round out the development diagnostic of each participant at the end of the enrichment program. The SAs and DAs were centered on learners' narrative which they wrote. TR1 paralleled the SAs and the DAs in that it too involved a general subject to write about. However the genre was different, so the emotional response and the attention the subject demanded were different i.e. the students had to write about a topic was not as concrete as the initial tests. TR2 differed from the other assessments in an even more important way: the medium of prompt itself. The prompts were given only in English language and the students were allowed to use English to English language (not English to Persian or Persian to English dictionaries). So the two TRs differed from the initial tests regarding the topic factor (topics became more abstract) and the prompt factor (they were given implicit feedback mostly). A final point regarding the transfer assessment has to do with the enrichment and non-enrichment learners. The transfer tasks were designed to determine how well the enrichment learners could extend or transfer the abilities they had developed through their interactions with the mediator to novel problems. It implies that non-enrichment learners would not show substantial change over time so it did not seem likely that they had new abilities to transfer.

Procedures

The procedure of the study is based on the principles of interactional DA. Regarding the mediator's (teacher) way of offering the mediation, the strategic mediation was strongly linked to the learners' needs i.e. the mediator adjusted her assistance based on the specific response of the learners. The DA procedure took the following steps:

1. At the onset of each assessment session, the students were given a general concrete topic to write about (at paragraph level). The students were told to use any kind of dictionaries if necessary. Moreover, they could ask for help or support whenever they face difficulties in their writing process.
2. Upon the students' failure to express their ideas, the mediator intervened and offered her leading questions, prompts, hints and explanations in order to uncover the students' writing potential.
3. The meditational strategies were detected after the analysis of the teachers' interactions with the students. The teacher used them during the mediated assessment sessions. The frequency and types of meditational moves (implicit/explicit) offered by the teacher during the assessment sessions indicated the students' improved abilities and ZPD/ZAD functioning. The assessment procedure adopted in this study coincides with those of Poehner (2005). The teacher analyzed the learners' performances qualitatively on both process and product. Through dynamic assessment the teacher acquired the ZPD as well as the qualitative, quantitative diagnostic information for each learner. So, in order to interpret the data, the first step was to transcribe the audiotapes. The second step was to read the protocols to obtain an overall impression of the meaning the students tried to express.

The mediator responded to problems as they occurred and in this way the mediator helped the learners to perform the task at a higher level than were capable of on their

own. So the mediator, in this study, offered different form of help and assistance throughout the assessment. Also, the learners were free to ask for help as needed. The mediation itself was based on the principles of the mediation emerged out of the cooperative dialoguing between the mediator and the learners. Therefore there were no priorities or hierarchies of hints or prompts.

During the sessions in which mediation was provided (i.e. the DAs and the transfer assessments), the mediator would interrupt at different points to ask questions, offer suggestions and provide help when necessary. Sometimes the mediator attempted to provide a correction to question something that was said or to make general comments. The writing topics that were used for the compositions came from IELTS sample writings. In the following examples, the dynamic procedures revealed that the learners did have different levels of control over different structures. Some students were able to improve their performance after a simple one-time reminder but some of them needed a very explicit from of help or assistance (i.e. the choice between two alternatives). While checking the students' writings, the mediator first mentioned that something was wrong with a given sentence e.g. "something is wrong in this sentence. Guess what." If the student could not spot the problem or if the examiner could not elicit an appropriate response from him/her, she would provide a more explicit form of mediation and so on until the learner was able to spot the problem and make corrections. Eventually, if necessary, the examiner would explicitly correct the error with the needed explanation to make sure that the learner comprehended.

The learners' performances during SA1 (pretest) and SA2 (posttest) were examined for changes in their independent functioning or Zone of Actual Development (ZAD). DA1 (pretest) and DA2 (posttest) were compared to determine if there were changes in the amounts and kinds of mediation required at these two points in time as well as how learners responded to the mediator's moves. This indicated their ZPD at times 1 and 2. Finally, their performance in DA2 (posttest) was compared with TR1 and TR2 in order to assess how well the learners were able to maintain their level of functioning as changes were introduced to the assessment context. Participants´ performances in the control group were analyzed in the same way but through a two-way comparison since they did not take part in the transfer assessments. The learner-mediator interactions/explanations were transcribed for analysis. The transcripts of the enrichment lessons were examined and they demonstrated signs of struggle and development (See Appendix 1).

Data collection and analysis

Students' writings were collected by three different raters (to calculate inter-rater reliability) who were told not to count errors of capitalization, errors of lexical choice (e.g. kids vs. children) unless they impeded meaning, spelling errors and punctuation error.

In order to answer the first question of this study, a paired-sample *t*-test was applied between the pretests and posttests of the two groups.

To answer the second question of the study, an independent samples *t*-test was applied between the posttests only. In an attempt to answer the third and the fourth questions of the study, the recorded transcripts were analyzed and the protocols (i.e. examples) were used as illustrations. Micro genetic methodological procedure was conducted to analyze the developmental changes and descriptive analysis was conducted to identify the frequency of

the emerging interaction pattern. Also, inter-rater reliability and agreement was calculated and checked for each test (pretests, posttests, TR1, TR2).

Results

The results reported here take into account the DA interactions collected during the pretest, posttest, and TR sessions. The protocols have been mainly drawn from the mediated portions of the assessment sessions that involved interaction and assistance. As it was noted earlier in the previous sections, the present study aimed at investigating the impact of DA-based versus non DA-based instruction and assessment on Iranian EFL learners' L2 writing skill in transcendence tasks. So this section is concerned with data analysis in which the following terms such as group statistic, Paired Samples *t*-test and Independent-Samples t-test have been used. The main objective of this study is to examine the effectiveness of Dynamic Assessment on L2 writing proficiency in transcendence. The obtained data of this study were analyzed by utilizing SPSS (version 21) software. To reject or accept the aforementioned research hypothesis, the following procedures were taken into account and the obtained data were analyzed by T-Test (paired Samples *t*-test and Independent-Samples).

Inferential/quantitative statistics

In this section, the researcher presents the results and findings of *t*-test which confirms the positive effect of DA instruction on the experimental group. As mentioned before, OPT was administered to make sure that the participants were homogenous in terms of their language proficiency. The subjects' scores were between 33 to 41. Thus the entire participants ($N = 60$) of this study were at the intermediate level (their scores on OPT were one standard deviation above the mean). The researcher assigned the homogenized subjects to two groups: the experimental group and the control group. The subjects participated in 8 sessions of instruction during research period. Then, in order to measure the participants' writing proficiency at paragraph level, writing topics of IELTS were used as a pre-posttest for the two groups. In order to measure the reliability of the students' scores, inter-rater reliability was calculated. In this study, the researcher intended to answer the following questions:

Q1. Does Dynamic Assessment affect Iranian EFL learners' writing ability?
Q2. Do the results of DA differ from the results of a non-dynamic assessment?
Q3. If learners progress, are they able to maintain their improved performance in the transcendence tasks when the assessment context changes?

Thus to compare the performance of the experimental group and the control group on pre-posttests and the two TRs, their mean scores were subjected to Matched *t*-test (paired Samples Statistics). The analyzed data for the two groups were shown in the form of tables Table 3.

Inter-rater reliability

The students' writing compositions were analyzed for fluency, accuracy, grammaticality lexical items and content. This was done by using inter-rater reliability i.e. students' writing papers were collected by three different raters who were asked not to count

Table 3 Checklist of assessing writing

To be counted	Not to be counted
Grammaticality	Errors of capitalization, spelling and punctuation
Lexical Appropriateness	
Content	

errors of capitalization and word choice (e.g. buy vs. purchase) unless they impeded meaning. So, inter-rater agreement was checked by three scorers as explained by Wiggle (2008). All errors in spelling, punctuation and capitalization were ignored. The required checklist was adopted from Wigglesworth and Storch (2009).

As Table 4 indicates, in order to test reliability of the students' scores across the four tests in this study, inter-rater reliability was calculated. Three different raters collected the papers and scored the students' writing compositions. Their main focus was the grammar and content of the writing compositions. The results are summarized in Table 4. As Table 4 shows, the control group was given two tests (pretest = SA1 and posttest = SA2) while the experimental group was given six tests (pretest = ZAD and ZPD assessments, posttest = ZAD and ZPD assessments, TR1 and TR2).

Analysis of the first research question of the study

A paired-samples *t*-test was conducted to evaluate the impact of Dynamic instruction and assessment on students' ZAD scores on L2 writing proficiency. As Table 5 illustrates, the mean score of the posttest of the experimental group (M = 10.2667) is higher than the mean scores of the pretest (M = 6.1000) i.e. the ZAD mean scores of the experimental group were raised from 6.1000 to 10.2667. Therefore, the results reveal a significant difference from time 1 (pretest) to time 2 (posttest).

According to Table 6, df (i.e. the degree of freedom) is 29 and the 2-tailed sig is .000 which is less than 5, standard deviation is 1.28877 and standard error mean is .23530. Also, t_{obs} = 17.708 is more than the critical t. Thus, the first null hypothesis is rejected. The experimental group improved significantly after the DA instruction.

A paired-samples *t*-test was conducted to evaluate the impact of the Dynamic instruction and assessment on students' ZPD scores on L2 writing proficiency. As Table 7 indicates, the mean score of the posttest of the experimental group (M = 12.5000) is higher than the mean scores of the pretest (M = 8.2333) i.e. the mean scores of the DA group were raised from 8.2333 to 12.5000. The results of the two paired samples *T*-test show that experimental group's ZPD scores are higher than their ZAD scores. That is, by providing help and mediation during the ZPD assessment of posttest, the students' performances were changed positively.

Table 4 Inter-rater reliability

Test	Control group	Experimental group
Pretest (ZAD, ZPD)	ZAD = 0.74	ZAD = 0.82, ZPD = 0.77
Posttest (ZAD, ZPD)	ZAD = 0.81	ZAD = 0.79, ZPD = 0.76
TR1	……	0.83
TR2	……	0.85

Table 5 Descriptive Statistics of the Experimental group's ZAD performance

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post Exp ZAD	10.2667	30	1.33735	.24417
	Pre Exp ZAD	6.1000	30	.92289	.16850

According to Table 8, df (i.e. the degree of freedom) is 26 and the 2-tailed sig is .000 which is less than 5. Also, t_{obs} = 28.235 is more than the critical t. Thus, the first null hypothesis is rejected. The experimental group improved significantly after the DA instruction.

Table 9, indicates that a paired-samples *t*-test was conducted to evaluate the impact of a non DA-based instruction on students' scores on L2 writing proficiency. In other words, a Matched *t*-test was conducted between the pretest and posttest of the control group. The number of students in the non-DA class (i.e. the control group) was 30. The mean scores of the non-dynamic assessment (NDA) group were raised from 6.1667 to 6.9000. So, the mean scores of the control group were not raised significantly. Table 8, includes descriptive information of the control group i.e. number (30), per-post mean scores (6.1667 and 6.9000), standard deviation (.74664 and 1.49366) and standard error mean (.27270 and .13632) respectively.

According to Table 10, the observed t value is calculated to be 3.832 and the degree of freedom is 29 (df = 29). Also 2-tailed sig is .001 which is less than 5. According to the results of the paired-samples *t*-test, the control group's performance on the posttest (time 2) was not significantly different from the pretest (time 1) which shows that the non-dynamic method of teaching and assessing writing skill are not useful.

Analysis of the second research question of the study

According to Table 11, two types of assessment were employed in the current study i.e. DA (Dynamic Assessment) and NDA (Non-Dynamic Assessment). The number of participants in each group was 30. Independent-Samples T-test was conducted between the posttests of the two groups only (i.e. DA and NDA) Also, the mean scores of the DA group (10.2667) are higher than the mean scores of the NDA one (6.9000). Therefore it reveals that the DA group outperformed the NDA group because their mean scores are significantly higher.

According to Table 12, there were two groups each containing thirty students. The two groups received two different types of L2 writing instruction (i.e. dynamic assessment and non-dynamic instruction). The experimental group was exposed to Dynamic Assessment of writing proficiency while the control group was exposed to

Table 6 Paired samples T-test of the experimental group's ZAD performance

Paired samples test									
Paired differences							t	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	Post Ex ZAD- Pre Exp ZAD	4.16667	1.28877	.23530	3.68543	4.64790	17.708	29	.000

Table 7 Descriptive statistics of the experimental Group's ZPD assessment

Paired samples statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post Ex ZPD	12.5000	30	1.10641	.20200
	Pre Ex ZPD	8.2333	30	.77385	.14129

a placebo. Sig (2-tailed) is .000 which is less than 5 so the second null hypothesis is rejected. Also, the mean scores of the experimental group who received a DA (mean = 10.2667) is higher than the mean scores of the control group who received SA (mean = 6.9000).

Table 13, illustrates a matched *t*-test which was conducted between the ZPD and ZAD of the experimental group on the posttest. The number of students in both tests was 30. Also, the table provides the descriptive analysis of the two tests such as mean (ZAD = 10.2667, ZPD = 12.5000), standard deviation (ZPD = 1.10641, ZAD = 1.33735) and standard error mean (ZPD. 20,200, ZAD = .24417).

Table 14, shows that the posttest of the experimental group had two levels: ZAD assessment and ZPD assessment. That it, first, the students were given a ZAD assessment and the then a ZPD assessment based on the same test. Table 13 reveals the calculated standard deviation = .62606, standard error mean = .11430, df (degree of freedom) = 29 and 2-tailed sig = .000 which is less than 5. Thus the second null hypothesis was rejected. Also the calculated t_{obs} = 19.539. The current table confirms that the ZPD scores of the experimental group are higher than their ZAD scores. In other words, there was significant difference between the mean scores of the solo performance of the experimental group and their assisted performance.

Analysis of the third and fourth research question of the study

Table 15, shows a matched *t*-test which was conducted between the posttest and TR1 (of the experimental group). The number of students in both tests was 30. Also, the table provides the descriptive analysis of the two tests such as mean (TR1 = 13.7000, pest Ex = 12.5000), standard deviation (TR1 = 1.87819, post Ex = 1.10641) and standard error mean (TR1 = .34291, post Ex = 20,200).

Table 16, reveals the calculated standard deviation = 1.20000, standard error mean = .18815, df (degree of freedom) = 29 and 2-tailed sig = .000 which is less than 5. Thus the third null hypothesis was rejected. Also the calculated t_{obs} = 6.378.

Table 8 Paired-Samples T-Test of the Experimental Group's ZPD performance

Paired Samples Test									
Paired Differences							t	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	Post Ex/ZPD-Pre Exp/ZPD	4.26667	.82768	.15111	3.95761	4.57573	28.235	29	.000

Table 9 Descriptive statistics of the Control Group: Non-DA-based

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Post Control	6.9000	30	1.49366	.27270
	Pre control	6.1667	30	.74664	.13623

One of the question that the current study tried to was whether the students could apply their newly gained knowledge in new contexts i.e. transcendence. The writing topic of TR1 was more difficult than the posttest. However, the learners' mean scores reveal that they could successfully apply their newly learned knowledge to TR1.

A Paired Samples t-test was run between the posttest of the experimental group and TR2 in order to see whether the students could apply their newly learned skills to TR2. This test was used to show whether progress could be transferred to TR2 (which was even more challenging than TR1). Table 17, provides descriptive information such as number, mean standard deviation and standard error mean of TR2 which are 30, 9.8667, .93710, .17109 respectively.

As Table 18, indicates the mean difference between posttest of the experimental group and TR2 is 2.63333 and the degree of freedom is 29. Also, 2-tailed sig is .000 (which is less than 5). The calculated t_{obs} is 25.939. The calculated standard deviation is .55605 and the standard error mean is .10152.

Performance of the DA group across assessment sessions.

Table 19, is an indication of the mean scores of the experimental group (which was exposed to DA – instruction) across assessment sessions. The experimental group was given four different tests (pretest, posttest, TR1 and TR2). The raised mean scores from the pre-to posttest reveals the significant effect of dynamic assessment. Also the scores of the two TRs are close to the mean scores of the posttest (however not higher); this indicates that the students could successfully transfer their knowledge in more difficult tests. TR1 was near far i.e. a little more difficult than the posttest and TR2 was even more difficult. Both of them were taken from the book 'for and Against' which is for advanced level L2 learners.

Figure 2 illustrates the development of the experimental group across assessment sessions. DA1 is the pretest which was given to the experimental group and DA2 is the posttest which was administered to the experimental group. As the figure shows, there has been a significant growth on the posttest i.e. DA2 (after the treatment of the study). TR1 was to some extent more difficult than the posttest so

Table 10 Paired Samples Test of the Control Group (non-DA-based)

Paired Samples Test									
Paired Differences							t	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	Post control Pre control	.73333	1.04826	.19139	.34191	1.12476	3.832	29	.001

Table 11 Descriptive statistics of the two groups' ZAD assessments on the posttests

Group Statistics					
	Instruction Type	N	Mean	Std. Deviation	Std. Error Mean
Writing	DA-bases	30	10.2667	1.33735	.24417
	NDA-based	30	6.9000	1.49366	.27270

there is a bit of decline in the performance of the experimental group. However, the participants could still apply their newly gained knowledge to this task. TR2 was even more difficult than TR1 so the subjects' performance dropped even more but it is still better than their functioning on the pretest.

Qualitative analysis of the data

Following the analysis of interactions, an inventory of meditational strategies emerged which is as follows: Confirming/rejecting response, Repeating the erroneous guess with a questioning tone, Asking leading questions, Using the Internet,Using dictionary, Translation Providing correct response and explanation. Following Aljaafreh and Lantolf (1994), the menu of meditational strategies offered here was arranged from the most abstract (implicit) to the most concrete (explicit). The strategies outlined here were not prescribed in advance but developed out of interactions between the mediator and learners. Like Aljaaferh and Lantolf (1994), the mediational strategies developed in this study followed the abstract-concrete (implicit-explicit) principle. A description of detected meditational strategies along with on-the-spot examples mentioned in Appendix 2.

Descriptive analysis of the data: Frequency of mediator's strategies in the ZPD

From an SCT perspective, one can track the learners' progress in the ZPD by referring to the number of mediations offered (Poehner, 2005). This section presents the frequency of the mediator's strategies identified during the DA interactions between the mediator and learners. Table 20 represents a summary of frequency of meditational strategies over time at three stages of DA sessions (the pretest, posttest, and TR sessions).

The first meditational strategy (MS1) is the most implicit strategy because the teacher just rejects or confirms the learners' response; it is left in the hands of the

Table 12 Independent Samples Test

Independent Samples Test										
		Levene's Test for Equality of Variances		*t*-test for Equality of Means						
		F	Sig	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Mean	95% Confidence Interval of the Difference	
									Lower	Upper
Writing	Equal variances assumed	.182	.671	9.198	58	.000	3.36667	.36604	2.63396	4.09937
	Equal variances not assumed			9.198	57.305	.000	3.36667	.36604	2.63377	4.09956

Table 13 Descriptive Statistics of the ZPD and ZAD of the Experimental Group on the Posttest

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	ZPD-Exp	12.5000	30	1.10641	.20200
	ZAD-Exp	10.2667	30	1.33735	.24417

learner to find the correct answer. MS2 just informs the learner that something is wrong whit his/her response. MS3 acts as a prompt or clue because it leads the learner towards the right path so it is less implicit. MS4 provides a model for the learner because according to Bandura (1971), human being needs a model to follow; thus, it shows that the meditational strategies are becoming less and less implicit and more explicit. MS5 is even more explicit because learners can look up unknown items in a dictionary. MS6 is the most explicit meditational strategy because the teacher gives the correct answer and explains the reason. A comparison of the frequency of meditational strategies indicates the microgenetic growth of the students' ZPD. An important idea underlying DA perspective is that the students' reduced demands for external and explicit mediation is an indication of self-regulation, more control over their knowledge and last but not least cognitive development (Poehner, 2008). According to Table 20, this claim is supported because it is illustrated that there is a decline in the use of meditational strategies in the posttest.

Discussion

This research presented the results of a qualitative and quantitative study of dynamic assessment across the pretest, posttest and TR assessment sessions. This study provided insights into the learners' independent/solo as well as joint/dependent writing performance qualitatively and quantitatively through close examination of different types of meditational strategies offered by the mediator during her DA interactions with the learners. The analysis of the dialogic interactions between the mediator and learners was presented and illustrated with protocols from the assessment sessions. The typology of meditational strategies paved the way to know how to offer DA – based mediation and thus gives and thus gives new insights into how to incorporate DA procedures in a classroom to assess and teach L2 writing. A close analysis of the DA interactions showed the employment of assess and teach L2 writing. A close analysis of the DA interactions showed the employment of 7 types of meditational strategies which were placed on a regulatory scale (Table 20). The strategies were arranged based on the abstract/concrete (i.e. implicit/explicit) criterion (Aljaafreh and

Table 14 Paired Samples Test of the ZPD and ZAD of the Experimental Group on the Posttest

Paired Differences							t	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	ZPD- Exp ZAD- Exp	2.23333	.62606	.11430	1.99956	2.46711	19.539	29	.000

Table 15 Descriptive statistics of the posttest of Ex. and TR1

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TR1	13.7000	30	1.87819	.34291
	Post Ex	12.5000	30	1.10641	.20200

Lantolf, 1994) which are as follows: confirming/rejecting response, asking the erroneous response with a questioning tone, asking leading questions, using a dictionary, translation, providing correct response asking the erroneous response whit a and explanation. The detected strategies were classified into five categories on their functions:

1) Managing the interactions.
2) Helping the learners to reconsider their L2 production.
3) Helping the learners to notice the clues.
4) Helping the learners to use the artifacts.
5) Enhancing writing abilities.

In this study, the mediator interacted with the students and the mediations were adjusted to an individual student's reactions. The regulatory scale was developed after the learners' developmental path. Also, the frequency table helped track the learners' developmental processes. The comparison of the learners' L2 production in the pretest with those in the posttest and TR sessions clearly showed the learners' reduced demands for explicit meditational and their tendency towards self – regulation. This observation was documented with reference to the learners' reliance on more implicit kinds of meditational moves in the TR tasks. The observation revealed how DA interactions could create a sense of belonging in the social atmosphere of the classroom and how the learners could benefit from the help and scaffolding provided by their classmates and teacher to improve their L2 writing skill problems. The teacher assigned a writing topic to the students and asked them to write about it and put their ideas into written words. The evidence reported in the present research showed the significant role of interaction and mediation in providing the learners with an opportunity to resolve their writing problems. The DA procedure helped the mediator identify certain problems learners faced during L2 writing which were not visible during unmediated assessment i.e. NDA. For example the data clearly showed that one major problem of

Table 16 Paired-Samples *t*-test (between the posttest and TR1 of the experimental group)

Paired Samples Test									
Paired Differences							T	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	TR1-Post Ex	1.20000	1.03057	.18815	.81518	1.58482	6.378	29	.000

Table 17 Descriptive statistics of the Post-Ex and TR2

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	TR2	9.8667	30	.93710	.17109
	Post Ex	12.5000	30	1.10641	.20200

the learners in this study was their undeveloped grammar and Vocabulary. The results of diagnostic analysis of mediator – learner interactions supported this claim. Another problem was their unfamiliarity with English expressions and sayings. The findings of the current study go in line with the ex-researchers' findings such as Baek and Kim (2003), Poehner (2005), Wigglesworth and Storch (2009), and Shabani (2014) confirm them. This study followed Poehner's (2005) study on French speaking proficiency; however in this study, the researcher focused on L2 writing abilities. Also, Poehner's study was exclusively qualitative and based on interactional model of DA but in this study the data were analyzed both quantitatively and qualitatively. As a result, the design of the study was based on the Sandwich format of DA (i.e. interventional DA) but the procedure was based on the interactional model of DA.

Conclusion

A humanistic approach sheds lights on the idea that learners are different individuals and it aims at helping learners become more like themselves and less like each other. A DA-based instruction which has it's roots in Humanism minimizes anxiety and maximizes the sense of security. DA extends and increases the aspect of learning. The analysis of this study reveals that the participants gained more proficiency than did the ones who were in the control group being exposed to a static and standardized practice of L2 writing instruction. As the results indicate, a DA approach of writing proficiency to Iranian EFL learners proves to be useful in uncovering the underlying traits. The present study examined each participant's performance during the assessments and presented frequencies of the different kinds of meditational moves produced. Comparisons of interactions during the dynamic session at time 1 (prior to the enrichment program) and time 2 (following the enrichment program) provide evidence regarding the extent to which learners have control over their knowledge and performance. In order to confirm and ascertain the quality of the observed changes, the interactions during DA2 (i.e. the

Table 18 Matched *t*-test between Post-Ex and TR2

Paired Samples Test									
Paired Differences							T	df	Sig (2- tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	TR2- Post Ex	-2.63333	.55605	.10152	−2.84097	−2.42570	-25.939	29	.000

Table 19 Mean Scores of the Experimental Group across Assessment Sessions

Test	Mean scores
	6.1000
Pretest (ZAD assessment)	8.2333
Pretest (ZPD assessment)	10.2667
Pretest (ZAD assessment)	12.5000
TR 1	13.7000
TR 2	9.8667

second dynamic assessment) were compared to the two TRs (i.e. the transfer assessments). From a Vygotskian perspective, development means going beyond the here-and- now performance on a given challenging tasks. Therefore, the reduced amount of support the learners needed as they performed more challenging tasks, showed their improvement and development. The learners' verbalization can reveal learners' problems, insufficient knowledge, etc. As it was mentioned earlier, the analysis of students' performance during the mediated sessions is based on Aljaafreh and Lantof's (1994) argument that development can reflect itself not only in improved solo performance but also through changes in the amount and kinds of mediation learners need. With this in mind, the meditational sessions i.e. DA1, DA2, TR1, TR2 were developed for the presence of the different meditational moves that were included in the typology. During the TRs, the students were asked to write about topics of varying complexity. All the participants found TRI to be more challenging and to some extent, it was because of the task's specific lexical demands. The participants performed mostly independently during TR2. They needed little interaction with the mediator. One of the major contributions of dynamic assessment over static assessment is that the inclusion of mediated interaction gives us more information apropos of a learner's abilities After all, two heads are better than one.

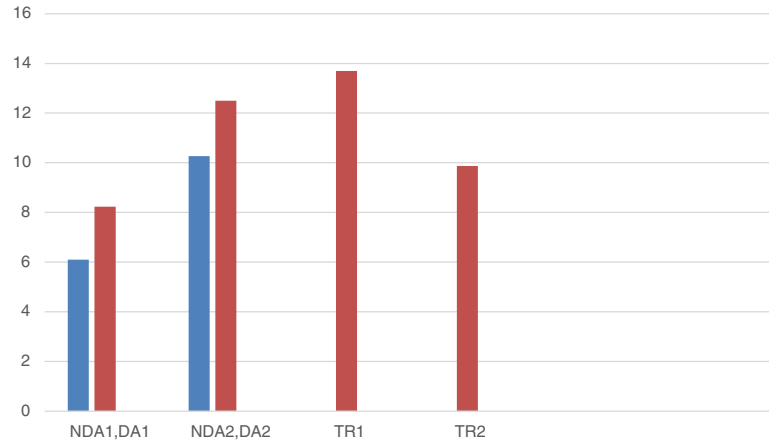

Fig. 2 The progress of the experimental group

Table 20 Descriptive Analysis: Frequency of Meditational Strategies

	Pretest	Posttest	TR1	TR2
1. Confirming/rejecting response	65	60	54	57
2. Repeating the erroneous guess with questioning tone	60	55	46	45
3. Asking leading questions	80	58	55	56
4. Using the Internet	100	61	70	83
5. Using dictionary	94	69	62	62
6. Translation	98	47	15	18
7. Providing correct response and explanation	74	37	0	10
Total	570	387	302	331

Appendix 1

Protocol 1 (taken from the posttest)

1. **T:** You wrote some of your sentences in the past tense and some others in the present!
2. **S:** Yes
3. **T:** When did this happen? When did you have trip?
4. **S:** Last year.
5. **T:** Okay. Last year is past or present?
6. **S:** Past
7. **T:** Okay then, everything must be told in which tense?
8. **S:** Past
9. **T:** Right, go ahead

If the above learner had been evaluated only on the basis of his solo performance, his ability to control the tense would have been underestimated. It was only through interaction with the examiner that the depth of the student's understanding became clear. However in the next protocol (Example 2), the source of the problem is lexical in nature. The teacher and the learner returned to the narrative but the student's performance began to breakdown as he struggles with the right usages of some words. During the first sessions, the examiner had to provide very explicit mediations and prompts, and she had to spot the problems herself but in the next session, students become more responsive and they become more capable in spotting their problems.

Protocol 2 (Taken from the posttest):

1. **S:** The history of my passport finished.
2. **T:** History of your passport?
3. **S:** ……. (Silence).
4. **T:** Okay, what are you trying to say here?
5. **S:** My passport ……. Finished.
6. **T:** Okay. 'History' is not used here. What does it mean?
7. **S:** Tarikh

8. **T:** Okay but it refers to the subject of history. It is a field of study. 'History' and 'date'… both mean tarikh in farsi but they are used differently. You could use your dictionary to see the usages. You should replace an appropriate word. Have you heard about the word 'expire'?
9. **S:** No. What does it mean?
10. **T:** Look it up in you dictionary.
11. **S:** be payan reseidan.
12. **T:** Right. When something expires, you cannot use it anymore. For example if your driving license expires, you cannot use it anymore because it is not legal. Passport is the same. You were trying to say that you wanted your passport to continue so that you could use it, Right?
13. **S:** Exactly. I needed a new passport.
14. **T:** You had to renew your passport. To renew means to make a document such as a passport to continue.
15. **S:** Yes. I had to renew it.
16. **T:** Okay, let's get back to the word 'expire'. You had to renew your passport because your passport had …….?
17. **S:** Expire?
18. **T:** Expired. 'Had expired'. The present tense is 'expire' but is gets 'ed' in the past tense.

In protocol 2, different meditational strategies are used to assist the learner realizes his mistakes.

He had used the wrong word (lexical error) so the mediator first used an implicit meditational strategy (line 2). When the student failed to correct his mistake, the mediator used more concrete or explicit meditational strategies (lines 6 and 10).

Protocol 3 (taken from the posttest):

1. **S:** Is there anything wrong with this sentence? (I gone to the hospital that day.)
2. **T:** something is wrong with the verb
3. **S:** (pointing to the verb).
4. **T:** Okay, 'gone' comes from….?
5. **S:** Go
6. **T:** Correct. 'Go' is the present tense. What is the past tense? 'Gone' is the past participle not simple past.
7. **S:** Want.

In protocol 3, when the teacher targets the problem with a leading question, the learner succeeds in providing the correct form. This is different from his ability to handle the same problem three weeks earlier. In the first session, the teacher had to point to the specific verb phrase in order to focus the learner's attention on the source of the problem; in the fourth session it is the learner who points the verb phrase in response to the teacher's questions. So although this student needed support during both sessions, his level of understanding and control over the grammatical feature apparently changed. So it is only through cooperating with the individual that his ongoing understanding can be understood.

8. **T:**'Want' is another word. It means to desire. For example I want an ice cream. Want is the present tense. Want/wanted/wanted.
9. **S:** …… (Silence).
10. **T:** check your dictionary.
11. **S:** went. Go/went/gone

Appendix 2

Confirming/rejecting response

This meditational strategy was used by the teacher to accept or reject an L2 sentence produced by the learners i.e. a sentence or a phrase about which the student was uncertain or unsure. The confirming response strategy shows Vygotsky's affective-volitional aspect of learning because it help the less experienced learner becomes aware of their influential roles as questioners who seek for clarification (Shabani, 2014). The excerpt below taken from TR1 confirms this meditational move:

Protocol 1:

1. **T:** What have you written?
2. **S:** Vegetarians is the best way to live.
3. **T:** Some this is wrong in your sentence. That's not acceptable.
4. **S:** (Silence)
5. **T:** Vegetarians is the best way?
6. **S:** Yes.
7. **T:** No, what is the meaning of 'vegetarian'?
8. **S:** Giahkhari
9. **T:** You are close to its meaning. Look it up in your dictionary.
10. **S:** Vegetarian means Giahkhari in farsi.
11. **T:** Well-done. So you need to replace it with what?
12. **S:** Vegetarianism
13. **T:** That's it.

Teacher's confirming response move in this protocol can be observed in line 11 and 13 which had the function of encouraging the student to keep cooperating. This strategy provided affective scaffolding because the complimentary feedbacks by the teacher like 'well-done' 'that's it' energized and motivated the learner to cooperate. Likewise, the teacher's rejecting response in lines 3 and 7 had the function of encouraging the learner to be more careful.

Repeating the erroneous guess with a questioning tone

It was assumed that repeating the ungrammatical or unacceptable sentence would help the students pay more attention. At times reproducing the learners' wrong attempt in a questioning tone provided the student with the hint or clue that their response was incorrect. This technique prompted students to reconsider their production and select a better choice. This mediation is illustrated in protocol in 2 below:

Protocol 2:

1. **S:** The hospital expenses was high.
2. **T:** The expenses was high?
3. **S:** Were high
4. **T:** Good for you. When the subject is plural, the verb must be plural.

This mediation provides the student with an estimate that the word 'was' is not a good match with the rest of the sentence and a better suggestion is needed.

Asking leading questions

This meditational move was used to direct students' mind towards the correct items. Asking leading questions proved to be helpful in making students realize their mistakes in order to undo them. Asking leading questions was observed in the following protocol:

Protocol 4:

1. **S:** The university sandwich made me poisoned.
2. **T:** Something is wrong in your sentence. See to it.
3. **S:** ..... (Silence)
4. **T:** The sandwich made you sick?
5. **S:** Yes.
6. **T:** Okay. What does poison mean?
7. **S:** In Farsi it means sam.
8. **T:** You mean that the sandwich made you feel like vomiting?
9. **S:** Yes, its taste was good but I became sick.
10. **T:** 'Poison' is a verb and a noun also. What is the adjective?
11. **S:** I don't know.
12. **T:** Consult your dictionary.
13. **S:** poisonous. It means masmum.
14. **T:** The university sandwich was poisonous.

Teacher: Good for you so it made you feel nausea. Or you could say it nauseated you. You felt nauseated after eating it. Or you were nauseous after having the sandwich.

In the above protocol, asking leading questions in lines 4, 6, 8 and 10 helped the learner realize his mistake.

Using the Internet

This meditational move was used when a learner did not know how to use a particular word in a sentence. So the mediator asked him/her to use the Internet sample sentences provided by online search gates. The learner would search the particular word though Google and would find loads of sample sentences. Then, by reading and going through the sample sentences and examples for a few minutes, (s)he would gain some insight into how to use the word. In other words the student would use the Internet sample sentences as a model.

Protocol 5

1. **S:** It is not your dignity.
2. **T:** What are you trying to say here?
3. **S:** I'm trying to say dar shane to nist.
4. **T:** okay, you could use the word 'suit'.
5. **S:** It's a pair of clothes.
6. **T:** As a noun yes but as a verb, it has other meanings and usages. Just check Google.com and see some sample sentences with the word 'suit'. Type 'suit in a sentence' in the search spot and see the results.
7. **S:** …… (Searching the web on her cellphone).
8. **T:** Open the links one by one and see the examples. Take your time. I'll get to you in a few minutes.
9. **T:** (After 10 min) what did you find?
10. **S:** As a verb it means being good or acceptable. One of the examples is 'the flat suits because it has two bedrooms'.
11. **T:** Correct. In your writing, you were trying to say that something was not acceptable for your friend right. Something did not suit, right?
12. **S:** Right.
13. **T:** Okay, how could you say that?
14. **S:** It does not suit a person like you.
15. **T:** Well – done.

As illustrated in protocol 5 line 6, the mediator encouraged the learner to use the Internet as a source of available help. The Internet sample sentences provided by www.google.com helped the learner to gain some insight into how to use the needed word. As Bandura (1971) explained, when individuals are provided with a model to observe and follow, they will learn more effectively. This is because humans learn by observing something or someone as a model.

Using a dictionary

This meditational move was used when a word was absent in the learners' inter language. Using a dictionary had two main functions: 1) To test a word which was familiar but unrecognized against a number of other hypothetical options in order to find the correct one. 2) To check the meaning of a totally new word. After making sure of the failure of other meditational strategies, the mediator directly asked the learners to use their dictionaries to find the word and check its meaning. The important role of books, dictionaries etc. has already been emphasized by Vygotsky who had stressed the crucial role of 'psychological tools' and 'cultural artifacts' in triggering learning processes. This meditational strategy is used in protocol 6 below:

Protocol 6:

1. **S:** The food which was used in the cake was out of date.
2. **T:** Your sentence is understandable but not acceptable. A cake itself is a kind of food so as a kind of food, in a cake we have …….?
3. **S:** …… (Silence).

4. **T:** Consult your Farsi to English dictionary.
5. **S:** mavade tashkildahande. Materials?
6. **T:** Well, the right word is 'ingredients'. Have you heard it?
7. **S:** No
8. **T:** We bake a cake with the needed ingredients like milk, flour, sugar, eat. So you are trying to say that something must have been wrong with the ingredients?
9. **S:** Yes
10. **T:** The ingredients were not fresh and maybe that was why the cake was stale. What does stale mean?
11. **S:** I don't know.
12. **T:** Look it up your dictionary.

Student: It is written that stale means not fresh. In Farsi we say mundeh or bayat.

Protocol 5 provides evidence that the student's repertoire lacks two words and the mediator understands this gap.

Translation

This meditational strategy was used when the students did not know the meaning of a word and could not look it up in a dictionary either because they could not understand the L2 definition of the dictionary or because they had forgotten to bring a dictionary. As a result, they mediator had no choice other than translating the unknown word to L1. This meditational strategy was observed in protocol 7 below:

Protocol 7:

1. **S:** You must plane for an examination.
2. **T:** What is the meaning of plane?
3. **S:** To decide.
4. **T:** You have mistakenly used 'plane' instead of 'plan'. Plan is a verb. Plane is a noun it is a vehicle that flies in the sky.
5. **S:** …… (Silence)
6. **T:** What is that vehicle that flies in the sky?
7. **S:** Havapeyma.
8. T: That's a plane which means havapeyma. But' to plan' means to decide. Plan and plane are similar in spelling so you got them wrong.

Providing correct response and explanation

When other meditational strategies failed to be of any help, the mediator had no option other than offering the correct response along with some explanations to improve students' writing skill i.e. helping the learners move up to a higher level of ZPD performance through explicit teaching and instruction. This meditational strategy is illustrated in the episode below:

Protocol 8:

1. **S:** Last week, I enjoy my meal but my friend becoming ill.
2. **T:** Last week, I enjoy my meal but my friend becoming ill?
3. **S:** …… (Silence).

4. **T:** What is the tense of your sentence?
5. **S:** You mean the time?
6. **T:** Yes. You are talking about past or present?
7. **S:** Past. Last week.
8. **T:** Have you written your sentence in the past?
9. **S:** ..... (Silence).
10. **T:** Check your verbs.
11. **S:** Becoming is wrong. My friend become ill.
12. **T:** Become or became?
13. **S:** Become
14. **T:** Look it up in your dictionary.
15. **S:** Become/Became/Become
16. **T:** Which one do you need?
17. **S:** Become?
18. **T:** became. Because 'become' is the present tense and the past participle. But the past tense is 'became'
19. **T:** What about enjoy?
20. **S:** Enjoyed

Abbreviations

ACTFL: American Council on the Teaching of Foreign Languages; Cntr: Control; DA: Dynamic Assessment; Ex: Experimental; N: Number; NDA: Non- Dynamic Assessment; OPT: Oxford Placement Test; S: Student; SA: Static Assessment; T: Teacher; TR: Transcendence; ZAD: Zone of Actual Development; ZPD: Zone of Proximal Development

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Authors' contributions

This work was carried out in collaboration between the two authors. Author PF supervised the work, decided upon and provided the sources, and revised and edited the drafts. Author AR collected the data and wrote the drafts of the manuscript, performed the statistical analyses, and implemented the revisions. Both authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

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