SECTION:ARTICLES

Vertical Grammatical Variability in Writing: Does Scaffolding Make a Difference?

Variabilidade Gramatical Vertical na Escrita: o Scaffolding faz diferença?

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Abstract: The present study aimed to investigate the effects of scaffolding techniques on eliminating the grammatical variability in IELTS. 120 IELTS candidates were selected randomly and placed in a control, and three experimental groups. Prior to the course, the candidates and teachers were interviewed regarding the effectiveness of scaffolding techniques. The teachers were also asked to keep a diary and report every session. On the first, 10th, 20th, and 30th sessions, three essay writing topics were given to all the candidates, and their grammatical accuracy and variability were rated by official IELTS Mock examiners to check their vertical grammatical variability. The results were analyzed using SPANOVA procedure. The qualitative data were also content analyzed, coded, and compared with the quantitative results. The findings showed that the distributed scaffolding group was relatively more successful. The qualitative results showed gaps between teachers' and candidates' conceptions. The theoretical and pedagogical implications are also discussed.

Keywords: IELTS preparatory courses, vertical grammatical variability, scaffolding

Resumo: O presente estudo teve como objetivo investigar os efeitos das técnicas de *scaffolding* na eliminação da variabilidade gramatical no IELTS. Foram selecionados aleatoriamente 120 candidatos ao IELTS, os quais foram divididos em um grupo de controle e três grupos experimentais. Antes do curso, candidatos e professores foram entrevistados sobre a eficácia das técnicas de *scaffolding.* Os professores foram também solicitados a manter um diário, registrando cada sessão. Nas sessões 1ª, 10ª, 20ª e 30ª, foram atribuídos três tópicos de redação a todos os candidatos, sendo a precisão e a variabilidade gramatical avaliadas por examinadores oficiais do IELTS Mock para verificar a sua variabilidade gramatical vertical. Os resultados foram analisados utilizando o procedimento SPANOVA. Os dados qualitativos foram também objeto de análise de conteúdo, codificados e comparados com os resultados quantitativos. Os resultados indicaram que o grupo de *scaffolding* distribuído foi relativamente mais bem sucedido. As análises qualitativas revelaram discrepâncias entre as concepções dos professores e dos candidatos. Implicações teóricas e pedagógicas também foram discutidas.

Palavras-chave: cursos preparatórios para o IELTS, variabilidade gramatical vertical, *scaffolding*

IELTS is said to be an international test of English with high reliability and validity (Alshammari, 2016; Pearson, 2019). The writing test in IELTS has two tasks; task-1 in which the IELTS candidates are asked to report a chart or graph, and task-2, in which the candidates are supposed to write an essay with at least 250 words on a general topic. Certified official examiners analyze both tasks and give scores from 1 to 9 based on four criteria; task response, coherence and cohesion, lexical resource, and grammatical range and accuracy.

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Grammar has always been one of the most problematic areas of English language for most Iranian users (Afzali & Izadpanah, 2021). Thus, devising new ways to improve EFL learners' grammatical knowledge more quickly and to help them avoid repeating the same mistakes can be of significance. Success in achieving such goals can directly affect learners' writing performance in IELTS.

Knowing that context has a crucial role in learning implies that provided the learning processes happen in the same context, the results will probably be the same as well. Nonetheless, normally this is not the case. Often, there are differences among learners in terms of their performance. This discrepancy is generally known as *language learning variability*, which has mostly been seen in recent studies as a sign of deficiency (Long et al., 2020; Tagarelli et al., 2016; Valian, 2020). Naturally, when one is not consistent in his/her writing and shows systematic errors in different writing tasks, it is most likely due to their lack of knowledge. Therefore, reducing the amount of writing variability in one's writing tasks would mean improving their writing skill.

Amateur writers usually show a high range of variability in their essays, which decreases the quality of their writing. This variability in writing could basically be present in their vocabulary and grammar. The significance of studying variability in second language acquisition is an undeniable fact. For example, Fernald and Marchman (2011) believe that ideas for linguistic analysis in SLA are systematicity and variability. In the present study, grammatical variability in IELTS writing test was under scrutiny. In other words, the researchers believe that finding an effective way of improving learners' writing skill to the point that their rate of variability decreases may directly affect their writing performance in a positive way and result in higher scores on IELTS.

Learning cannot be separated from the environment in which it occurs. Hence, the context in which learning takes place is really of importance. Scaffolding is a central term in the socio-cultural view to language learning, which has been studied ever since Vygotsky introduced the 'socio-cultural theory' (Alwahibee, 2019).

Scaffolding is an interaction-based activity. This interaction could be among peers themselves or between the teacher and the learner in a two-way manner. Various researchers have emphasized the importance of scaffolding techniques in different language learning contexts (Hammond & Gibbons, 2005; Walqui, 2006).

Van de Pol et al. (2015) studied the effect of teacher scaffolding on students' achievement, task effort, and appreciation of teacher support, when students work in small groups. They found that its effectiveness depends, among other things, on the independent working time of the groups and students' task effort. Kim and Lim (2019) studied the effect of scaffolding on students' problem-solving abilities in online learning. Scaffolding was found to improve the participants' problem-solving skills. Alake and Ogunseemi (2013) investigated the effects of scaffolding strategies on learners' academic achievement in secondary schools and reported positive results.

Recently, a number of researchers have shown that scaffolding can be beneficial in teaching the four language skills (Ahmadi Safa & Rozati, 2017; Beck et al., 2020; Mitchel & Pessosa, 2017; Zarei & Alipour, 2019; Zarei & Rezadoust, 2020). The findings of the above-mentioned studies mainly confirm the beneficial impact of scaffolding activities on learning various aspects of language.

Many researchers have worked on the writing abilities of IELTS candidates in IELTS preparatory courses (Green, 2006; Ostovar-Namaghi & Safaee, 2017). Iranian IELTS candidates have generally had problem with writing tasks in IELTS. Iranian researchers have mentioned this deficiency in various studies and suggested that grammatical variability is a sign of this weakness (Naghdipour, 2016; Rasti, 2009). This variability is visibly traceable in higher than intermediate proficiency level. According to the aforementioned studies, when IELTS candidates attempt to employ advanced grammatical structures in their writing and make more complex sentences, this deficiency

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is revealed. However, few, if any, studies have investigated the effects of using different types of scaffolding in IELTS preparatory courses on reducing writing grammatical variability. This is a gap which needs to be filled. This study attempts to answer the following research questions:

Q₁: Are there any significant differences among the effects of peer scaffolding, distributed scaffolding, reciprocal scaffolding and the control condition on IELTS learners' writing vertical grammatical variability?

Q₂: To what extent do the perceptions of IELTS teachers and candidates confirm the quantitative results of the study?

Literature review

The most significant and recent studies regarding grammatical variability and scaffolding techniques are summarized below.

Grammatical variability

With regard to the concept of *variation*, Ellis (2008) explicates different approaches to variation in second language acquisition. The first approach, practiced by Chomsky and his followers (such as Tarone, 1983; White, 1989), sees variation as a feature of performance, not knowledge system. As a result, variability is underestimated and is counted as 'slips' or mistakes.

The second approach, practiced by Labov (1970), is a sociolinguistic approach which sees variation as a concept embedded in learners' competence (not just performance) and instead, divides variation into two types, 'internal variation' and 'external variation'. The former contains linguistic factors which are inbuilt in the target language. The latter focuses on the social factors which influence learners in various ways. These social factors could include age, gender, social status and position, ethnic features, and the context in general. There have been sociolinguistic studies on the relationship between language learning variability and different social factors (Bardovi-Harlig, 1998; Romaine, 2003).

The third approach is psycholinguistic, which views variability as part of the learners' mental process and emphasize on their ability to process language. In this approach, the roles of learners' conditions and individual characteristics are introduced as the main reasons for variation. Therefore, individual mental factors such as memory capacity, emotion, anxiety, personality, and willingness to communicate (WTC) are responsible for variability. The present study is based on the psycholinguistic approach and tends to analyze the effects of different types of scaffolding techniques on the learners' grammatical variation in writing.

A review of the essays written by IELTS learners shows that most of them have variation in their production of grammatical features. In particular, they use complex sentences in a disparate heterogeneous manner. Variability in the writing of complex and compound structures can be put under the umbrella term *grammatical variability*.

Ellis' (2008) typology of formal variation has become a basis for variation studies ever since its introduction. He distinguished between vertical and horizontal variability. According to Ellis, vertical variation "refers to variation over time and is, therefore, coterminous with 'order/sequence of development'". On the other hand, horizontal variation "… refers to the variation evident in learner language at any single time" (p. 129).

Scaffolding

Scaffolding is a socio-cultural term that includes short-term assistance to the learner which usually comes from the teacher, peers, or even educational multimedia. This assistance is not permanent, and it could be withdrawn the moment s/he becomes independent in language learning (Zarei & Rezadoust, 2020).

Regarding the relationship between scaffolding and the writing skill, some interesting pieces of research have been published. Ahangari, et al. (2014) for instance, worked on content-retention of Iranian post-elementary EFL learners' summary writing and the impact of scaffolding on them. The result showed that EFL learners who received scaffolding remembered more details from the story which was given to them.

Amerian et al. (2014) conducted a study on the effect of three different scaffolding techniques, teacher scaffolding, class scaffolding, and peer scaffolding, on EFL learners' writing development. The results showed that the best performance belonged to the learners who experienced teacher-scaffolding, followed by the learners with class-scaffolding. However, none of the experimental groups statistically outperformed the control group. The researchers emphasized the role of *reformulation* in the class with teacher-scaffolding technique.

In another study, Faraj (2015) studied the effect of teacher-scaffolding on EFL students' writing skill using process approach, which includes pre-writing, drafting, revising, editing, and publishing. The results confirmed that using teacher-scaffolding in a process-approach writing improved the learners' writing skills.

Other researchers have worked on the relationship between scaffolding and different aspects of the writing skill for EFL learners (Baleghizadeh et al., 2011; Gholami Pasnad & Tahriri, 2017; Hanjani, 2019). The results of the aforementioned studies have shown that different types of scaffolding, including peer-scaffolding, self-revision, and teacher scaffolding, can have facilitative effects on the learners' writing performance. The results also clearly suggest that different scaffolding techniques could have different effects on the learners' writing performance; some are shown to be more effective than others. To the best knowledge of the present researchers, there has not been any study to investigate the effects of scaffolding techniques on IELTS learners' grammatical variability (vertical or horizontal) in writing.

Methodology

The design, the participants, and the instruments used in this study were as follows.

Research design

The present study used an explanatory sequential mixed design. According to Creswell et al. (2003), the purpose in such a design is to employ qualitative methods for rejecting, confirming, or explaining the previously found quantitative results. The researchers in the present study reckon that using interviews with teachers and IELTS candidates themselves after the course can shed more light on the findings of the study.

Participants

One hundred and twenty Iranian male and female learners, aged between 18 and 34, took part in the present study. The participants were IELTS candidates who planned to prepare themselves in IELTS preparatory courses held at both branches of Kadoos Irsafam IELTS Complex in Rasht, Iran. The participants were selected from the candidates who passed the Official IELTS Mock tests at the center with overall band score of 3.5, 4, and 4.5 and the writing band scores of the same range (these scores are equal to level B1 in CEFR) during the last five months before the study.

Since the research design was explanatory mixed, the first phase was the quantitative phase, in which four groups were formed randomly, namely the control, the experimental-1, the experimental-2, and the experimental-3 groups; the quantitative phase was quasi-experimental. All the participants were selected from a nearly 400-people pool.

For the qualitative phase, both of the teachers in the courses, 15 IELTS instructors who were practicing all around the country, and 25 of the participants were interviewed after the course, hoping to collect their points of view about the course and their possible progress in writing. Two PhD candidate IELTS instructors with at least five years of experience in teaching IELTS were employed in the course.

Instruments

The following quantitative and qualitative instruments were employed in this study.

IELTS essay writing topics. To check the participants' vertical grammatical variability, the

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real randomly-selected IELTS essay question topics were given to all the IELTS candidates on four different occasions. These essay-writing questions were randomly selected from different IELTS sources, mostly used in previous official IELTS tests. Two official IELTS Mock examiners were asked to give scores, from 1 to 9, to the 'grammatical range and accuracy' of all the essays. This enabled the present researchers to measure the learners' grammatical variability over time and analyze their progress.

Teachers' diaries. The teachers were asked to keep a diary and note down the events that happened in each session. They were encouraged to write their own perception about each learner's progress during the course. These diaries were reliable qualitative instruments which were coded and analyzed after the quantitative phase and showed the teachers' perception formation regarding the impacts of the treatments on the students' grammar.

Semi-structured interview with the teachers. Both teachers were interviewed after the course, and they were asked about their viewpoints regarding the results of the study. The questions focused on teachers' perception about various reasons for discrepancy in the results of different groups.

Unstructured interview with the students. Similar to the questions which were asked from the teachers, the students were also asked to share their ideas about the success of the course, and the reasons for its possible success.

The textbooks. The first six units of the course book, *Complete IELTS- Band Score 4-5* (Cambridge University Press), were covered in a 3-month period. This course book consists of 10 units, and there are various exercises for all the four skills and sub-skills, including writing and grammar, in each unit. In each session, at least one writing exercise and one writing lesson were practiced, which lasted about 45 minutes. During this time, first some preliminary explanations were given to the students; then, the main lesson was taught, and the corresponding exercises were done, according to the type of treatment in each group. Furthermore, the book *English Grammar in Use,*

Intermediate (Cambridge University Press) (Fourth Edition) was used to teach the grammar necessary for the candidates according to the treatment type. The exercises for each unit of this book were partly done in the class, and the rest were given to the students as homework. The teachers were supposed to check the students' homework and help them with possible mistakes the following session.

Data collection procedure

The design of the present study is 'explanatory sequential mixed design'. This design includes two phases: the first phase in which quantitative data were collected and analyzed using SPSS, and the second phase, in which qualitative data were collected through open-ended interviews with the participants and observation. The objective of the second phase was to explain the initial results.

Prior to the course, the participants' proficiency level was checked with an official IELTS Mock test. The participants with the band scores 4 and 4.5, who had writing band scores between 3.5 and 4.5, were selected for the study. They were given 3 different topics for writing. The purpose was to check their writing variability prior to the course.

The course for all the groups included 30 sessions, and each session lasted two hours. When the IELTS Mock test was done, 121 male and female IELTS candidates were randomly selected. After assigning them to four different groups with 30 candidates in each, three randomly-selected IELTS essay writing topics were given to each participant on the first session of the course. The participants wrote essays on those topics in the IELTS standard time (40 minutes for each essay task). Topics were given to the students on the first, 10th, 20th, and the last sessions of the course.

In the control group, grammar was taught directly in the classroom and exercises were given as homework. In the Experimental-1 group, grammar was first taught by the teacher, and then the students were asked to help each other in pairs and do exercises at home with each other's help. In the Experimental-2 group, grammar was taught in a reciprocal way. All the

grammatical points were taught verbally and then discussed in the classroom. The students were allowed to ask the teacher or their peers for clarification. Finally, in the Experiental-3 group, the grammatical points were taught using powerpoint presentation, relevant visual videos and audio files; the students were allowed to ask the teacher in case of having questions.

The essays were rated by two official IELTS Mock examiners. The examiners were asked to give scores between 1 and 9 to the grammar level of the essays, based on the official IELTS criteria. According to IDP and IELTS, the factors which affect the score on the grammar criteria include *grammatical range* used by the writer, *grammatical accuracy* and *the number of mistakes*, *avoiding repetition of the grammatical structures*, the usage of *complex sentences*, and *the level of grammatical structures* used by the candidate. The results were analyzed to check the participants' vertical grammatical variability. Comparing the students' essays on different occasions during the course (every 10th session) gave us information about their grammatical variability. In other words, the researchers could observe the number of variations or the extent of consistency in the students' use of grammatical structures in their essays throughout the course (vertical grammatical variability), and see which one of the scaffolding techniques was more beneficial for eliminating this undesirable variability.

In each of the experimental groups, one scaffolding technique was employed for teaching grammatical structures. Three scaffolding techniques included peer scaffolding, reciprocal scaffolding, and distributed scaffolding, which were practiced in the Experimental-1, Experimental-2, and Experimental-3 groups, respectively. After the course, the students took another official IELTS Mock test, and again, they were given 3 different topics to write on.

Since part of the treatment process included grammar lessons and the learners were assigned to do grammar exercises as homework in each session, and since the candidates were taught various writing techniques and were given tips on the proper use of grammatical structures in their essay writing, the candidates were expected to show improvement in their writing skills and, hence, to perform progressively better.

In the second phase, which was qualitative, 26 randomly-selected participants were interviewed online regarding their perception of their possible improvement, their attitude toward the treatment, the changes in the number of their grammatical mistakes in any essay writing effort, and their general and personal opinion about the learning process they experienced. Furthermore, the two IELTS teachers' diaries were coded and analyzed to fish relevant insights which might shed light on the quantitative results. The teachers were afterwards interviewed about the reasons why, in their view, the results in different groups were different.

Data analysis

To answer the first research question, the vertical writing grammatical variability of the participants prior to, during, and after the course were checked. Then, the statistical significance of the learners' improvement in essay writing for each of the experimental and control groups was checked. This process involved SPANOVA (Split-plot ANOVA).

To answer the second research question, two independent qualitative instruments were employed. First, the teachers were asked to write a diary during the course and note their observation for each session. Second, when the course was finished, a semi-structured online interview was conducted with 26 participants (which were selected randomly). These data were coded and analyzed to find common themes which could potentially confirm or reject the quantitative result of the first phase.

Results and discussion

There were two research questions in this study and the results of data analysis, as well as discussion of each one, are reported below.

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The quantitative results

The first research question of this study aimed to investigate the effects of peer scaffolding, distributed scaffolding, and reciprocal scaffolding, on IELTS candidates' vertical grammatical variability. Since the learners' writing performances on four different occasions were checked and measured based on the IELTS criteria, both between-subjects and within subjects variables needed to be analyzed. Hence, a mixed between-within subjects analysis of variance (SPANOVA) was used. Descriptive statistics for the IELTS candidates' writing performance in different groups based on their grammar criteria in IELTS is presented in Table 1.

TABLE 1 – Descriptive Statistics for Writing Performance over time

	Groups	Mean	Std. Deviation	N
GRAMMARsession1	control	3.950	.4424	30
	experimental-1	3.983	.5645	30
	experimental-2	4.100	.4235	30
	experimental-3	4.033	.4722	30
	Total	4.017	.4760	120
GRAMMARsession10	control	4.083	.3957	30
	experimental-1	4.217	.4086	30
	experimental-2	4.267	.4097	30
	experimental-3	4.283	.3395	30
	Total	4.212	.3925	120
GRAMMARsession20	control	4.300	.3620	30
	experimental-1	4.450	.4015	30
	experimental-2	4.667	.3790	30
	experimental-3	4.800	.3851	30
	Total	4.554	.4240	120
GRAMMARsession30	control	4.550	.3560	30
	experimental-1	4.667	.4420	30
	experimental-2	4.817	.3075	30
	experimental-3	5.200	.3620	30
	Total	4.808	.4405	120

Before checking the main effect, the interaction effect was checked. The result (Time*Groups Wilks' Lambda F= 5.22, df = 9, p < .005, partial eta squared = .11) showed that the interaction effect was significant. Therefore, we had to split data and use a repeated-measures one-way ANOVA for each group.

Before proceeding with this statistical technique, its assumptions had to be checked. There was no violation of the assumptions of interval data and independence of observations. The assumption of normality was checked. For this, Kolmogorov-Smirnov statistic was checked ($KS_{(120)}$= .12, p > .05). Moreover, the histogram, Q-Q plot, and Box plot were drawn. The results confirmed that the data were normal. Next, the assumption of homogeneity was checked. The result of Levene's test of equality of error variances ($F_{(1, 16)}$ = 476, P > .05), showed that this assumption was not violated. Mauchly's test was also used for each group to check the assumption of sphericity.

Table 2 shows the results of one-way repeated

measures ANOVA for the control group (Wilk's Lambda = .22, F= 30.41, df = 3, Sig. < .05, Partial eta squared = .77), implying that the participants' improvement in vertical grammatical variability during the course was significant with a strong effect size.

TABLE 2 – One-way Repeated Measures ANOVA for the Control Group

	Effect	Value	F	Hypothesis df	Sig.	Partial Eta Squared
time	Pillai's Trace	.772	30.415[a]	3.000	.000	.772
	Wilks' Lambda	.228	30.415[a]	3.000	.000	.772
	Hotelling's Trace	3.379	30.415[a]	3.000	.000	.772
	Roy's Largest Root	3.379	30.415[a]	3.000	.000	.772

To locate the significant differences, pair-wise comparisons were made. The results (Table 3) showed that the participants' improvement from time 1 to time 2 (Mean difference = -1.33, Sig. = .34) was not significant. However, they improved significantly from time 2 to time 3, and from time 3 to time 4.

TABLE 3 – Pairwise Comparisons for the Vertical Grammatical Variability of the Control Group

(I) time	(J) time	Mean Difference (I-J)	Sig.a
1	2	-.133	.347
	3	-.350*	.000
	4	-.600*	.000
	3	-.217*	.004
2	4	-.467*	.000
	4	-.250*	.001
3			

For the experimental-1 group (peer scaffolding group), the results of Table 4 (Wilk's Lambda = .19, F = 38.4, df = 3, Sig. < .05, Partial eta squared = .81) suggest that in the peer scaffolding group, the participants' improvement in vertical grammatical variability during the course was significant.

TABLE 4 – One-way Repeated Measures ANOVA for the Experimental-1 Group

	Effect	Value	F	Hypothesis df	Sig.	Partial Eta Squared
time	Pillai's Trace	.810	38.469[a]	3.000	.000	.810
	Wilks' Lambda	.190	38.469[a]	3.000	.000	.810
	Hotelling's Trace	4.274	38.469[a]	3.000	.000	.810
	Roy's Largest Root	4.274	38.469[a]	3.000	.000	.810

To locate the significant differences, pair-wise comparisons were made. According to Table 5, the participants' improvements from time 1 to time 2, from time 2 to time 3, and from time 3 to time 4 were significant.

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TABLE 5 – Pairwise Comparisons for the Vertical Grammatical Variability of the Experimental-1 Group

(I) time	(J) time	Mean Difference (I-J)	Sig.a
1	2	-.233*	.016
	3	-.467*	.000
	4	-.683*	.000
2			
	3	-.233*	.001
	4	-.450*	.000
3			
	4	-.217*	.000

As it can be seen in Table 6 (Wilk's Lambda = .17, F = 43.6, df = 3, Sig. < .05, Partial eta squared = .82), in the reciprocal scaffolding group, the participants' improvement in vertical grammatical variability during the course was significant, too.

TABLE 6 – One-way Repeated Measures ANOVA for the Experimental-2 Group

	Effect	Value	F	Hypothesis df	Sig.	Partial Eta Squared
time	Pillai's Trace	.829	43.687[a]	3.000	.000	.829
	Wilks' Lambda	.171	43.687[a]	3.000	.000	.829
	Hotelling's Trace	4.854	43.687[a]	3.000	.000	.829
	Roy's Largest Root	4.854	43.687[a]	3.000	.000	.829

To locate the significant differences, post-hoc comparisons were made (Table 7), which showed that the participants' improvements from time-1 to time-2, from time-2 to time-3, and from time-3 to time-4 were significant.

TABLE 7 – Pairwise Comparisons for the Vertical Grammatical Variability of the Experimental-2 Group

(I) time	(J) time	Mean Difference (I-J)	7Sig.a
1	2	-.167*	.014
	3	-.567*	.000
	4	-.717*	.000
2			
	3	-.400*	.000
	4	-.550*	.000
3			
	4	-.150	.104

For the experimental-3 group (distributed scaffolding group), the result (Wilk's Lambda = .12, F = 63.5, df = 3, Sig. < .05, Partial eta squared = .87) showed that improvement in vertical grammatical variability was significant.

TABLE 8 – One-way Repeated-Measures ANOVA for the Experimental-3 Group

	Effect	Value	F	Hypothesis df	Sig.	Partial Eta Squared
time	Pillai's Trace	.876	63.593[a]	3.000	.000	.876
	Wilks' Lambda	.124	63.593[a]	3.000	.000	.876
	Hotelling's Trace	7.066	63.593[a]	3.000	.000	.876
	Roy's Largest Root	7.066	63.593[a]	3.000	.000	.876

Pair-wise comparisons (Table 9) indicated that improvements from time 1 to time 2, from time 2 to time 3, and from time 3 to time 4 were significant.

TABLE 9 – Pairwise Comparisons for the Vertical Grammatical Variability of the Experimental-3 Group

(I) time	(J) time	Mean Difference (I-J)	Sig.a
1	2	-.250*	.009
	3	-.767*	.000
	4	-1.167*	.000
2			
	3	-.517*	.000
	4	-.917*	.000
3			
	4	-.400*	.000

After the repeated-measures ANOVA, which was within-groups analysis, between-groups analysis was conducted using a one-way ANCOVA. All the assumptions underlying this procedure were checked beforehand. The results showed that none of the assumptions, including homogeneity of regression slopes and equal variances, was violated.

The main ANCOVA results (Table 10), showed that the groups were significantly different regarding their writing vertical grammatical variability scores ($F_{(3, 115)}$=23.7, Sig.< .05, Partial eta squared = .38). The covariate (GRAMMARsession1) was also significant (Sig. < .05, Partial eta squared = .34).

TABLE 10 – Tests of Between-subjects Effects for Vertical Grammatical Variability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	12.633[a]	4	3.158	34.726	.000	.547
Intercept	14.569	1	14.569	160.193	.000	.582
GRAMMARsession1	5.424	1	5.424	59.644	.000	.342
Groups	6.478	3	2.159	23.742	.000	.382
Error	10.459	115	.091			
Total	2797.500	120				
Corrected Total	23.092	119				

To locate the significant differences, post-hoc comparison was made (Table 11).

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TABLE 11 – Post-hoc Comparisons for the Groups

(I) Groups	(J) Groups	Mean Difference (I-J)	Sig.a
control	experimental-1	-.102	.679
	experimental-2	-.199	.075
	experimental-3	-.612*	.000
experimental-1			
	experimental-2	-.097	.104
	experimental-3	-.511*	.000
experimental-2			
	experimental-3	-.413*	.009

The result shows that the participants of the third experimental group (distributed scaffolding) have significantly outperformed those of the other three groups, while the other group differences were not statistically significant.

The qualitative results

Qualitative instruments were used to answer the second research question. The results are explained below.

The coding results of the teachers' diaries. The contents of the teachers' diaries were analyzed; the results showed that at the beginning, the learners seemed anxious about their grammar knowledge. According to the teachers' diaries, the majority of the participants had serious grammar deficiencies and showed a wide range of grammatical errors. Both teachers mentioned some possible reasons for the numerous grammatical errors and mistakes in the candidates' essay writings. The most emphasized reason, which was highlighted by both teachers, was that in previous language learning classes, grammar was not taught appropriately. That is, English grammar was not understood properly. This may be a traditional deficit for many Iranian English learners (Afzali & Izadpanah, 2021).

Another point which was implied in one of the teachers' diaries was the huge gap between the last English grammar learning class some learners had and the course they started for IELTS. Consequently, these learners had forgotten most of the grammatical details necessary for writing an essay. For such learners, the job was easier; just a quick review could help them to remember most of the forgotten grammar. The notes in the diaries showed that the grammatical variability for such learners swiftly amended.

An interesting theme in both diaries was the learners' involvement load in different classes. Both teachers noticed a visible connection between the amount of interaction and the pace of learning grammar. According to their observation, in the control group, interaction between students and the teachers was at a minimum. On the contrary, in the experimental classes, the learners seemed to generally learn grammar faster. Both teachers agreed that interaction can be beneficial for learning.

The results of the semi-structured interview with 15 IELTS teachers. Thirteen IELTS teachers from various cities in Iran with at least 5 years of experience in teaching, plus both teachers who participated in this study, were interviewed online before the course started. The questions were about 'the reasons for grammatical variability', 'how to eliminate this variability', and 'which scaffolding technique will probably be more successful'. As for the first question, different reasons were presented. The most favorable explanation for grammatical variability was that the methods of teaching grammar in Iran have always been outdated; therefore, students' knowledge of English grammar is defective. However, most of the teachers interviewed claimed that they try to employ more contemporary techniques for teaching grammar in their own classes. Another

explanation was that most of the English learners who show high variability in grammar show the same types of errors in their mother tongue as well. In fact, their variability may not be related to the learners' English learning history, but originates from their grammar learning knowledge in general. Furthermore, some teachers argued that high grammatical variability can also be a sign that learners who left language learning process a long time ago, and re-started English classes probably for extrinsic reasons (such as emigration).

As for the second question, updating the conventional methods and techniques for teaching English grammar was the most common idea. Some of the teachers believed that these techniques should be altered based on each student's personal characteristics and learning experience. Hence, a preliminary needs analysis should be done prior to the grammar course.

Regarding the use of different types of scaffolding for grammar teaching, a majority of the teachers (9 out of 15) opted for reciprocal scaffolding. When they were asked the reason why they voted for this type of scaffolding, they mostly referred to the highly interactive context which is inherent to it. Distributed scaffolding (4 out of 15) and peer scaffolding (2 out of 15) were in the next ranks. To explain this, most of the teachers argued that peer scaffolding will not probably be successful due to the fact that peers are not expert enough to clarify the occasional misunderstandings. Additionally, distributed scaffolding may not be as effective as reciprocal scaffolding simply because it is less interactive.

The results of the unstructured interview with the students. Thirty randomly-selected IELTS candidates who participated in this study were interviewed online before and after the course. The answers to the questions before the course showed that a majority of the candidates had a skeptical view toward their success in grammar. Generally, according to the answers, Iranian learners consider grammar as one of the most difficult parts of learning English.

When they were asked about each of the scaffolding techniques, most of the interviewees, surprisingly, had negative ideas toward peer-scaffolding. However, they were mostly optimistic about the other two scaffolding techniques, although they were not sure these techniques could actually improve their grammar knowledge significantly in such a short time period.

Discussion

The first research question aimed to study the effects of peer, reciprocal, and distributed scaffolding on IELTS candidates' vertical grammatical variability. The findings showed that in the distributed scaffolding class, the learners had significant improvements in their grammatical variability. The findings seem to be in accord with some previous studies. For instance, according to Maximilian (2014), peer scaffolding techniques, including peer feedback and peer correction, have positive effects on second language learners' writing grammatical accuracy. In the present study, Repeated-measures ANOVA showed significant improvement for peer scaffolding group, in which the students helped each other with peer feedback and peer correction. However, this improvement was less than other scaffolding groups.

In addition, the results of the present study were partly in accord with Zarei and Alipour's (2020) views about scaffolding techniques in language classrooms. Our findings show that the use of multimedia audio-visual devices (distributed scaffolding) has in fact significant effects on the improvement of the learners' grammatical knowledge and has decreased the grammatical variability. However, in the peer scaffolding group, no change was visible in the learners' grammatical variability. This was incongruous with Maximilian's (2014) emphasis on the power of peer scaffolding on EFL learners' language development.

An explanation for this finding could be that, sometimes, peers may not be competent enough to guide their classmates and correct their mistakes properly. This is a fact which was considered by Ruegg (2015), too. She asserts that for grammar, especially for writing in English,

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teachers should be the ones who give feedback, not peers. However, peers could be helpful in tuning each other's academic style and writing organization. Van de Pol and Elbers (2013) also highlighted the superiority of teacher scaffolding over other types of scaffolding for language learning. Another congruent study is that of Krzic et al. (2018), who employed a range of distributed scaffolding (multimedia lessons, online games, pamphlets, etc.) and interactional scaffolding (such as lectures, discussion groups, hands-on experiments, direct teacher-student seminars, etc.) as complementary activities to facilitate learning. The results, like our findings, showed that the aforementioned scaffolding techniques could have a significant effect on the learning process. Eitel et al. (2013) found that using even one piece of multimedia scaffolding to explain a text can have huge positive effects on the learning process. This confirms that distributed scaffolding should probably be treated as a 'must' in any learning process.

Another interesting issue which was marginally mentioned in Ruegg (2015) is the role of students' cultural background. Taking cultural context into consideration, Iranian students show relatively traditional attitudes in educational environments. For instance, Mahvelati (2021) believes that although peer-feedback has positive effects on Iranian EFL learners, the role of a teacher-centered environment is still powerful and can be clearly sensed. Kaivanpanah et al. (2015) also refer to the prominence of the traditional educational background in Iran. The discrepancy between the learners' grammatical variability in the peer scaffolding group and the other experimental groups in this study might be explained by the traditional view toward teachers as authority figures in the classroom. It seems that Iranian learners are more likely to trust the teacher and the multimedia for both explaining a grammatical structure and correcting.

The significant interaction effect suggests that to describe the effects of different scaffolding techniques, the levels of time factor (the 10-session intervals) had to be taken into consideration. Furthermore, to describe the extent of the effect for each group, post-hoc analysis was necessary. Since the post-hoc results of within-groups analysis showed that in the control group, from time 1 to time 2, the difference was not significant, and the significant difference was seen between Time 2 and Time 3, it could be suggested that even for the control group in which the teacher did not employ scaffolding techniques, improvement in learners' vertical grammatical variability took place.

As for the experimental groups, the effects were seen quicker than the control group. For the peer-scaffolding group, the significance of the effects is consistently visible in each time interval. For the reciprocal-scaffolding group, the significant effects are recognizable for all time intervals except time 3 to time 4. This may imply that reciprocal scaffolding may show quick results, but the efficacy may not be stable over time. For the distributed-scaffolding group, similar to the peer-scaffolding group, the effect was significant for all time intervals. In fact, as the findings of between-groups analysis later showed, this group was the only group in which the scaffolding techniques had significant effects on the IELTS candidates' vertical grammatical variability.

Theoretically speaking, any scaffolding can potentially facilitate language learning. It is probably because scaffolding requires interaction; either between students and teachers, or between students and multimedia devices. This interaction is proven to be beneficial for second language learning. Long (1981), in his 'interaction hypothesis', discussed that modified input, if combined with interaction, can have strong facilitative effects on second language acquisition. Others, like Ellis (1999), however, emphasized the role of interlocutors and laid stress on the quality and complexity level of the data used by the interlocutor. Nevertheless, they, and some others (such as Larsen-Freeman, 2007; Pica et al., 1989, affirmed the importance of interaction in language learning.

The results of the qualitative phase of the present study revealed some interesting points.

First of all, it seems that there is little mismatch between experienced IELTS teachers and IELTS learners, at least when it comes to English grammar. Both groups prefer more interactive contexts and believe that this interaction can be beneficial. To understand this, we should probably take a look at the history of English learning pedagogy in Iran, where grammar is mainly taught in traditional ways and the teacher explicitly teaches the grammar and the students are expected to do exercises. Consequently, IELTS candidates are pessimistic about improving their grammar.

The fact that IELTS teachers have generally positive outlook toward the effectiveness of using scaffolding techniques for teaching grammar may be because they are familiar with these techniques. This familiarity is either due to their academic background or their teaching experience, or both. With the same explanation, the reason why IELTS candidates are not generally optimistic about these scaffolding techniques is that they have not experienced them during their learning process and do not have relevant academic background.

The results of the interview with teachers also showed that they are in favor of the reciprocal scaffolding techniques compared to the other techniques. However, the quantitative findings showed that the distributed scaffolding was more effective in reducing grammatical variability in essay writing. According to these findings, probably a combination of discussion-based activities and employing multimedia devices for teaching English grammar can be the best suggestion.

The teachers' diaries revealed that both of them were aware of the positive impacts of reciprocal and distributed scaffolding on candidates' grammatical variability since around session 14 in the course. They reported that for the control and peer scaffolding groups, the improvement was normal. However, both teachers noticed that the reciprocal scaffolding class was doing better than others.

The after-the-course interview with the IELTS candidates showed that those who attended the experimental classes, generally had better feelings about their progress in comparison with the control group. This was more visible for the reciprocal and distributed scaffolding groups. These positive feelings probably come from the new experience they had and the fewer grammatical mistakes they made in their essays. The interview after the course showed that the difference between the perceptions of teachers and IELTS candidates about the effectiveness of scaffolding techniques disappeared.

Conclusion

The findings of the present study can help us understand which type of scaffolding has more positive effects on writing grammatical variability. These findings can influence IELTS preparatory courses and the way teachers teach the writing skill in these courses. These findings can convince language learning stake-holders to realize that practical implications of socio-cultural theory and concepts like *'corrective feedback', 'scaffolding techniques', 'self-correction', 'peer evaluation',* and *'ZPD'*, can help the process of grammar learning. Moreover, the constructivist view toward language learning, which has been neglected in Iran, could guide teachers to pay more attention to learners as individuals with specific learning history and unique characteristics.

The results of this study can benefit IELTS teachers and trainers. The findings clearly suggest that, at least for learning English grammar, scaffolding techniques can be useful. Teachers should be encouraged to teach grammar in a communicative and interactive context. It seems that employing instruments like multimedia devices can accelerate grammar learning. According to the findings of this study, starting the class with a relevant discussion which contains the target grammatical structure, teaching the grammatical point via powerpoint presentation or video clips, doing exercises with peers, and receiving corrective feedback from the teacher as the final stage, could be a proper prescription for Iranian IELTS candidates.

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The possible positive effects of scaffolding on linguistic variability in writing can save precious time for IELTS candidates. These candidates, who mostly are in IELTS preparatory classes due to an extrinsic motivation, are almost always under time pressure. Thus, alternative techniques that can help them improve their score will be appreciated.

The findings of the present study will also hopefully be beneficial for various stake-holders. Materials developers are encouraged to use the findings of this study to create the types of materials suitable for scaffolding techniques. In addition, the course books can be designed in a more compatible way with these techniques. Furthermore, English institutes, especially those that focus on IELTS preparatory courses, can benefit from the results of this study and design their curriculum and syllabuses more to the needs and requirements of their students.

Author statement (contribution)

Hamed Abbasi: Data collection and drafting; Abbas Ali Zarei: Statistical analysis, revising and formatting.

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