A New Perspective Towards Teaching Grammar: Inductive or Deductive? A Case Study of Iranian Elementary EFL Learners

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Abstract

This study aims to ascertain how well 65 Iranian grade 12 English as EFL learners in Chabahar City understand grammar through inductive vs. deductive methods. to respond to the research questions, i.e. The researcher used an experimental design with a complete class to investigate whether the effects of Learning and teaching about the grammar of EFL students using deductive and inductive methods are similar. 65 female learners from a high school in Chabahar, Sistan and Baluchestan, Iran, took part for this purpose. Control and experimental groups (CG and EG) were created from students with comparable performance levels. Of sixty-five students, thirty-two were in the CG and thirty-three in the EG. Ages ranged from seventeen to eighteen. Pre- and post-test results were also used to gather data and determine the effectiveness. The data from the study was analyzed using statistical tools such as SPSS version 26 and T-test. According to the findings, the group showed that the inductive approach experienced greater levels of satisfaction and achievement than the group exposed to the deductive approach. The statistical significance of this difference suggests that learners could gain more from the inductive approach than from the traditional deductive approach.

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دیدگاهی جدید نسبت به آموزش گرامر: استقرایی یا قیاسی؟ مطالعه موردی زبان آموزان ایرانی زبان انگلیسی ابتدایی

این مطالعه با هدف تعیین میزان درک 65 زبان انگلیسی پایه 12 ایرانی در شهر چابهار از طریق روش استقرایی و قیاسی گرامر را انجام می دهد. برای پاسخ به سؤالات تحقیق، یعنی محقق از یک طرح آزمایشی با کلاس کامل استفاده کرد تا بررسی کند که آیا تأثیر یادگیری و آموزش در مورد دستور زبان دانشجویان زبان انگلیسی با استفاده از روش‌های قیاسی و استقرایی مشابه است یا خیر. 65 دانش آموز دختر از دبیرستان های چابهار سیستان و بلوچستان ایران برای این منظور شرکت کردند. گروه های کنترل و آزمایش (CG و EG) از دانش آموزان با سطوح عملکرد قابل مقایسه ایجاد شدند. از شصت و پنج دانشجو، سی و دو نفر در CG و سی و سه نفر در EG بودند. سنین بین فیه تا هجده سال متغیر بود. برای جمع آوری داده ها و تعیین اثربخشی از نتایج پیش و پس آزمون نیز استفاده شد. داده های پژوهش با استفاده از ابزارهای آماری مانند SPSS نسخه 26 و آزمون تی مورد تجزیه و تحلیل قرار گرفت. بر اساس یافته‌ها، گروه نشان داد که رویکرد استقرایی سطوح بیشتری از رضایت و موفقیت را نسبت به گروهی که در معرض رویکرد قیاسی قرار داشتند، تجربه کرد. اهمیت آماری این تفاوت نشان می دهد که فراگیران می توانند از رویکرد استقرایی بیشتر از رویکرد قیاسی سنتی بهره ببرند.

کلمات کلیدی: گروه کنترل (CG)، استراتژی قیاسی، گروه تجربی (EG)، دستور زبان، راهبرد استقرایی، روش، استراتژی

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Introduction

Grammar, which is known as the science of language, is a crucial component of language teaching, which is a complicated activity (Jasmina and Farmonovna, 2023). Any language grammar is defined by its structure and system, which are expressed as syntax and morphology (Habibi, 2021). Various methodologies have been suggested for teaching English grammar, but inductive and deductive methods are more familiar due to their distinct features for effective grammar instruction (Mahdi & Ismail, 2023). According to Blašković (2022), when teaching a language as a second language, inductive teaching is preferred for teaching grammar, while deductive teaching is more frequently used for teaching the grammar of the first language.

According to Mahdi and Ismail (2023), inductive teaching is student-centered instruction in which the instructor serves as a facilitator and guide. It is a modern teaching approach to teaching English grammar and it helps to engage all the participants in the class (Abdukarimova & Zubaydova, 2021). When using an inductive approach to teaching, examples are presented first, and students must infer principles and rules from them. Through inductive teaching, students may have more contextual learning experiences, which could benefit their learning in the long run and benefit them more at this level (Benitez-Correa et al. 2019). By contrasting rules with their contextual context, learners can retain rules that are derived from examples provided (Habibi, 2021).

In teacher-centered deductive learning, the instructor explains the syntax and rules of sentence construction. According to the guidelines provided, students are expected to construct sentences (Ismail et al. 2023). The teacher remains an active participant in the class helping learners to construct new sentences as per the rules taught to them because it is difficult for students to construct new sentences independently without contextual learning experiences (Kim and Won, 2020). According to studies by Latifjono'g'li (2022) and Lafta (2019), students have never had an easy time learning rules and regulations, and once they are memorized, they quickly forget them.

Research has suggested that empirical evidence can assist in selecting effective methodologies for teaching English grammar (Munir et al., 2023). Both methods have been recommended in literature as effective for teaching English grammar, but each has its advantages and disadvantages. To determine which method is more effective for teaching English grammar, empirical evidence is needed. For this reason, a study has been designed to investigate it.

Literature review

The entire process of choosing and implementing pedagogy, concepts, and classroom management techniques for instruction is referred to as a teaching method. An important factor is the methodology. The topic being taught, the teaching methodology used by the instructor, and the nature of the subject being taught are the only factors that influence the choice of teaching method (Nur, 2020).

A study by Jong-Won (2007) also looked into whether deductive or inductive instruction would significantly differ in how well Korean university-level EFL students learned English relative clauses. A mixed-method design was employed in this data collection and analysis. Ninety undergraduate EFL students at Korea's Cheongju University served as the subjects. One of the treatments was randomly allocated to two groups. The findings showed that overall learning outcomes accelerated significantly between scores. As a result, the explicit-deductive/individualistic instruction was less successful than the explicit-inductive/cooperative instruction.

Tammenga and Helmantel (2014), for instance, compared the efficacy of implicit, incidental, deductive, and inductive grammar instruction in a quasi-experimental study. The sample comprises 981 Dutch students pursuing a second language in either German, English, or Spanish at the lower secondary level. The design included a pre-test and several lessons. Tests were given for both the production of the grammatical structure and knowledge of metalinguistics.

Al-Emami (2005) researched to compare how teaching methods—deductive and inductive— affect students' acquisition of relative clauses in the English language. 160 male and female students studying science and literature made up the sample. This sample was given a pre-test. The findings revealed a significant difference.

According to Sharofovna (2021), the deductive approach allows teachers to teach more rules in less time while the inductive approach requires more time for discussion and thought while drawing rules from the examples provided.

Takimoto (2005) researched to find out how these approaches influenced how pragmatic competence developed. The sample, sixty native Japanese speakers with intermediate English proficiency, was split into three experimental groups at random—one for structured input tasks, one for problem-solving, and one for deductive reasoning—as well as a control group. There are

fifteen people in each group. The study must be finished in six weeks. There were pre- and post-tests given. The findings demonstrate that the three EGs are by a significant margin and that the inductive method is effective. The researcher suggested that if teachers teach pragmatics using the inductive method, they might benefit from the results.

Bamadi (2014) did research on inductive and deductive approaches of teaching grammar.

There is no research done in the setting of Chabahar and the novelty goes back to this.

The following research questions are the focus of this investigation:

Q1. Does inductive teaching and learning improve the proficiency of EFL students in grammar?

Q2. Does deductive teaching and learning improve the proficiency of EFL students in grammar?

Q3. Do inductive and deductive methods of instruction and learning have an equivalent impact on EFL students' grammatical knowledge?

Methodology

Table 1

Design of the Study

Groups	Grade	Pretest	Treatment	Posttest
Control	Grade 12	O1	-	O2
Experimental	Grade 12	O1	X1	O2

During the treatment, the EG received inductive instruction over specific grammatical points but CG was taught the same grammatical points using a deductive approach. Based on their pre-test results, which were examined using SPSS software, 32 students were assigned to the CG and 33 students to the EG after they were divided into two groups. This allowed researchers to determine which method of teaching grammatical structures was more successful. The same instructor led a 90-minute instruction session for each group. For both groups, the materials used to complete the instructional periods and the learning objectives were the same.

Participants

Participants in the current study were Iranian EFL students in Grade 12 in Chabahar. They were between the ages of 17 and 18. Each participant completed the Nelson Proficiency Test before the

study. (Fowler & Coe, 1976). The participants were split up into two sets. of learners including CG and EG. The population of the study was 65 female students. The researcher administered and implemented the study as a teacher of English language at the same school.

Instruments

First, to obtain parental consent and provide some information regarding the goals of this educational period, the researcher created two consent forms for students. Next, the researcher used the Nelson Proficiency Test. Following PowerPoint software to go over the grammatical structures that both groups had been taught. The participants were then given a second Nelson Proficiency Test as a post-test.

Procedure

Following the students' enrollment in this experimental period and the researcher's collection of their consent forms from parents, the students took part in three research activities: a proficiency test, a term treatment, and an achievement test. Learners were introduced to the deductive and inductive approaches in the first session. They were given clear instructions on the purpose of the test when it came to treatment (sessions 2–17). While the CG received traditional grammar instruction, the EG students practiced learning structures of the teaching grammar (inductive grammar).

Before the control instructional class, the researcher used a deductive approach or a self-driven data worksheet to collect preliminary data (pretest). A pamphlet explaining the grammatical points in English and Persian was sent to the CG; it reads like a textbook description. The pamphlet of the control group provided a direct explanation of how to use grammar structures, listed general exceptions to the rules, and provided some exercises and examples of how the rules should be applied in sentences written in the target language. The researcher or the class instructor highlighted important aspects of the structure and explained the grammatical rules the primary attention. However, the EG was given a pamphlet that took a different tack than the CG (http://ww. ESLLibray.com & http://ww.really-learn-english.com). The conversation between two or three people (telling a story) and a few descriptive passages with several images to support and activate the meaning-focused approach came together to form this pamphlet. The paragraph used the

English language and applied grammatical rules to a cultural text, presenting the ideas in their natural context. The dialogue or passage made use of numerous examples of the rule, all of which were highlighted with bold type to call attention to them specifically.

The students collaborated to understand the passage without focusing exclusively on the grammar structure. During the second reading, the teacher assigned three students to role-play a conversation about themselves or discuss the descriptive passage, matching vocabulary words to their meanings more precisely. In addition, after reading texts and identifying grammatical errors, students completed a few exercises. Occasionally, the instructor expounded on the meaning of text in Persian.

The identical reinforcement exercises from "Oxford Living Grammar" (Coe, N., 2013) were finished by students in both CG and EG. To help the students understand the application and arrangement of the structures they had learned, the researcher created culturally sensitive activities in which they were asked to practice applying grammatical rules in various contexts. After the treatment session, the instructor went over every topic that the two groups had learned via PowerPoint. During these lessons, the students assisted the teacher by imparting grammar knowledge.

Pre-test

Learners were given a proficiency pretest before the commencement of the instructional period. Every participant received an exam paper during the first phase (Week 1). We could comprehend their situation regarding grammatical competence. The learners' homogeneity was administered by examining the proficiency test results. In this study, the group instructor served as the researcher. The participants received instruction utilizing both the deductive and inductive methods.

The treatment

They had class three times per week also the entire process took about a term. Each of the five weeks of the teaching phase had 90 minutes. The first meeting covered consent forms, the effectiveness of the project, and the introduction of approaches. We conducted a pre-test in the second session, and then another session focused on the post-test. Before the post-test session,

there was another class where both groups reviewed prior grammatical topics using PowerPoint software. The same amount of time and practice was given to students in two different classes. Furthermore, when students received explicit explanations of the grammatical forms in CG, EG students had to induce the structures and they were attracted to activities or tasks that taught structures implicitly. Real objects, images, and translations were displayed alongside certain materials in the target grammatical texts. Students who had studied the grammatical text rules in the inductive approach group inferred them. For example, after providing the participants with a text or multiple sentences, the researcher asked them to note the variations between the sentences. Students were encouraged to present their research by the instructor. The researcher gave direct explanations of the rules and sentences to the students in the deductive strategy group. The pamphlet focused on germane structures, patterns, and exceptions, and the control group started their course by learning about grammatical structure using a deductive approach. The instructor identified the examples that demonstrated the structure and presented and clarified the grammatical rules. Ultimately, the group finished several exercises meant to reinforce the lesson.

On the other hand, the EG started by having a class discussion or examining descriptive text. Students noticed the structure typed in bold letters because of the text. Without demonstrating any grammar rules, the teacher started the lesson with a discussion that was pertinent to the scenario that was written in the text and could be inferred from the images, title, and text. Next, using the pertinent images to emphasize the significance of the text and focus on meaning, the teacher led the class in a thorough and careful reading of the text. Students therefore had the chance to identify the grammatical rules that are pertinent to the construction and their position to complete lesson follow-up exercises by skimming and closely reading. Occasionally, the subject matter of their writing and the paragraph they read coincided. The teacher gave the students an assignment at the end of class to explain a specific rule, including how to use it in a text and how to apply it. Following that, the students finished a series of drills. The instructor assessed their progress after the treatment by giving them an achievement test.

The post-test

To ascertain the outcomes, a posttest was given to each participant in the third stage (week 7). The post-test consisted of an achievement test in grammar comprehension that the researcher created

using the guidelines that were given. The aim was to figure out the understanding following their instruction in grammar rules. The Nelson Proficiency Test formats also levels stayed the same. The effectiveness of the learner development program on the students' grammar performance was then evaluated by combining the scores from the two classes of students.

Discussion and Conclusion

Statistical Data Analysis: Comparison between Pre-test Scores of the CG & EG

First, the total proficiency levels of the EG and the CG were compared using an independent samples t-test to confirm the homogeneity of the groups before the experiment.

Table 2

Pre-test of CG & EG

	N	Min	Max	Mean	SD
performance	65	10.00	24.00	16.7077	3.24386
Valid N (listwise)	65				

Table 1 demonstrates the pre-test scores range from 10 to 24 with a mean of 16.70 (SD = 3.24).

Table 3

Comparison between the Pre-test of the CG & EG

Statistics of the Group					
	groups	N	Mean	SD	SE Mean
Performance	EG	33	16.6970	3.45945	.60221
		32	16.7188	3.06104	.54112

In Table 2, it is shown that there were 33 subjects in the EG and 32 in the CG. In the EG, the mean pre-test scores were 16.69, and in the CG, 16.71. The standard deviation for the EG was 3.45 and for the CG was 3.06.

Figure 3
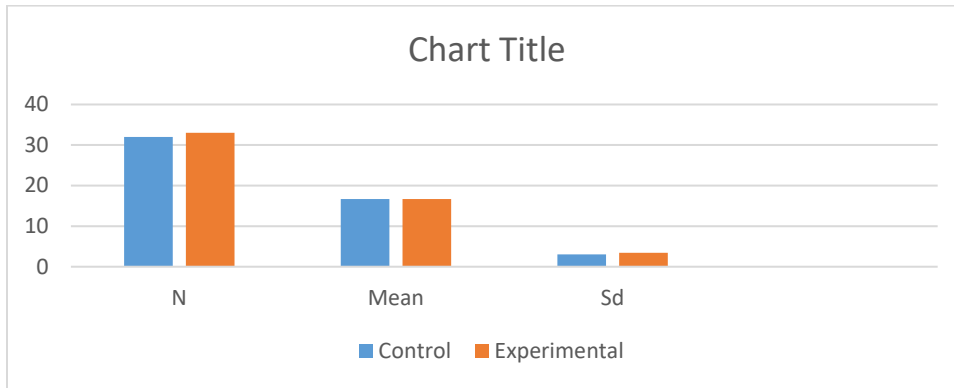
Comparison between Pre-test Scores of the CG & EG

Table 4

Independent Samples T-test on the pretest:

		Levene's Test		t-test						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig.	Mean Difference	SE Difference		Lower	Upper
Performance	Equal variances assumed	.548	.462	-.027	63	.979	-.02178	.81115		-1.64274	1.59918
	Equal variances not assumed			-.027	62.486	.979	-.02178	.80961		-1.63992	1.59636

Table 3 displays the pre-test performance of the EG & CG. The researcher can find the following results in Table 3. It was determined that the two groups had similar grammatical abilities and could participate in the research.

Comparison between post-test scores of the CG & EGs

Table 5

Descriptive Statistics for Posttest of both CG & EGs

	N	Min	Max	Mean	SD
			Descriptive Statistics		
performance	65	12.00	27.00	17.6462	3.12965
Valid N (listwise)	65				

Twelve was the lowest score and 27 was the highest. The post-test mean score is 17.64. Moreover, the standard deviation is 3.12.

Table 6

Comparison between post-test of the EG & CG

	groups	N	Mean	SD	SE Mean
			Statistics of the group		
performance	EG	33	18.4848	3.27033	.56929
		32	16.7813	2.76772	.48927

Based on Table 5, the EG group consists of 33 students, while the CG group has 32 students. The CG group received a score of 16.78, while the EG group received an average of 18.48. The standard deviation of the EG is 3.27, while the CG group is 2.76.
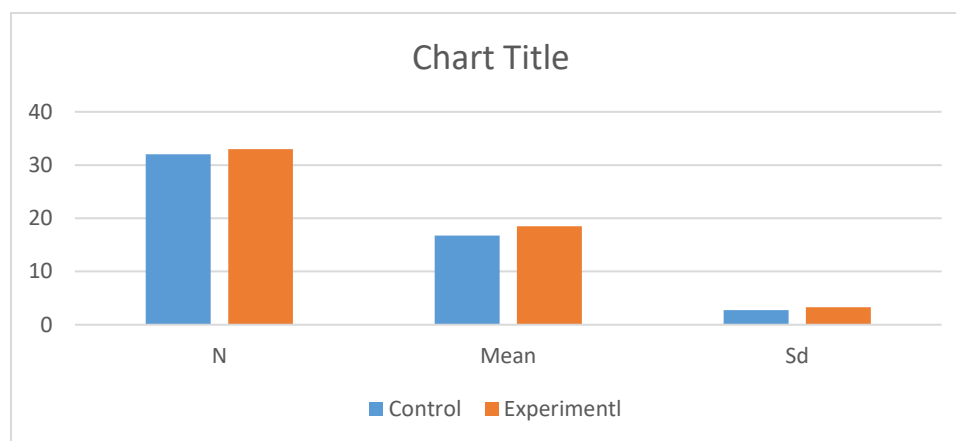
Comparison between Posttest Scores of the CG & EGs

Table 7

Independent Samples T-test of two groups on the post-test:

		Levene's Test		t-test							
		F	Sig.	T	DF	Sig.	Mean Difference	SE Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
Performance	Equal variances assumed	1.018	.317	2.264	63	.027	1.70360	.75259	.19966	3.20754	
	Equal variances not assumed			2.269	61.881	.027	1.70360	.75065	.20301	3.20419	

The researcher can refer to Table 4.6 for the detailed results of the analysis. It was determined from the two results of two groups the that there were differences between them in terms of their grammatical proficiency.

Table 8

Paired Samples Statistics for the EG

		Paired Samples Statistics			
		Mean	N	SD	SE Mean
Pair 1	pretest	16.6970	33	3.45945	.60221
	posttest	18.4848	33	3.27033	.56929

There were 33 subjects in each of the experimental groups, as Table 7 shows. Additionally, the pre-test mean score was 16, however, their post-tests mean scores were 18. Because of the inductive teaching methodology, the experimental group's students outperformed the control groups.

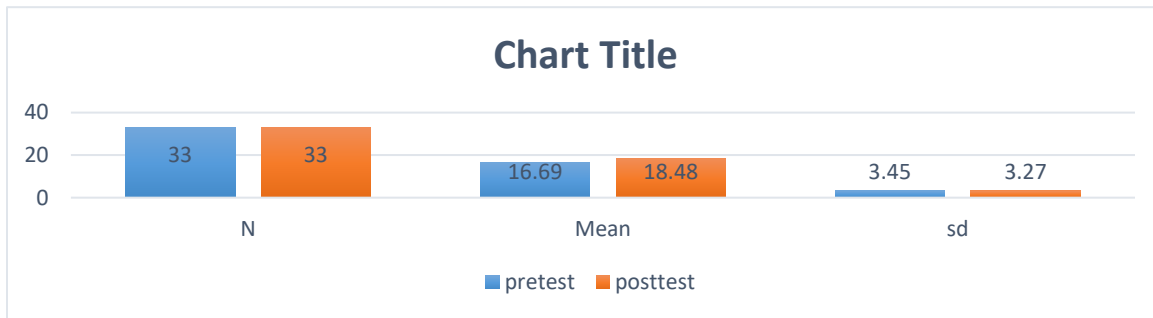**Paired Samples Comparison for the EG**

Table 9

Paired Samples Test of EG

		Paired Differences					t	Df	Sig.
					95% Confidence Interval of the Difference				
		Mean	SD	SE Mean	Lower	Upper			
Pair 1	pretest - posttest	-1.78788	1.99621	.34750	-2.49570	-1.08005	-5.145	32	.000

Paired Samples Test

Upon comparing the experimental groups before and after the treatment, the investigator can understand there is a difference.

Table 10

*Paired Samples Statistics for CG*

Paired Samples Statistics			
Mean	N	SD	SE Mean

Pair 1	pretest	16.7188	32	3.06104	.54112
	posttest	16.7813	32	2.76772	.48927

Regarding Table 9, the post-test mean score (16.78) is greater. For the post-test, the Standard deviation is 2.76, and for the pre-test, it is 3.06. The means of the control pre- and post-test groups do not differ statistically significantly.

Paired Samples Comparison for Control Group
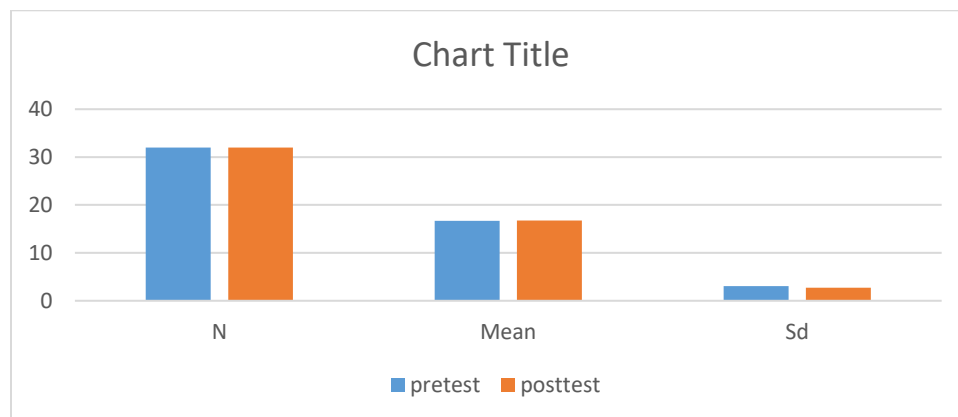
Since the value is higher than 0.05, the researcher understands there is no significant difference.

Research Question 1

Q1.   Does inductive teaching and learning improve the proficiency of EFL students in grammar? In terms of target structure knowledge, the EG participants' mean scores improved from 16.69 to 18.48 between the pre- and post-tests. One could argue that learners' grammatical knowledge is significantly improved by the inductive approach.

Research Question 2

The second question that was examined in this study was:

Q2. Does deductive teaching and learning improve the proficiency of EFL students in grammar? The participants of the CG did not significantly improve their mean score on their knowledge of grammatical structures. The deductive approach may not significantly affect the grammatical knowledge of the learners, according to this research question.

Research Question 3

The third question that was investigated in this research was:

Q3. Do inductive and deductive methods of instruction and learning have an equivalent impact on EFL students' grammatical knowledge?

Based on the mean scores, the EG outperformed the CG on the post-test. Consequently, the inductive approach is a useful teaching strategy that works well in language classrooms.

Pedagogical Implication

The outcome is useful for teacher preparation, particularly guidelines for the Iranian educational system. Additionally, the results highlight the necessity of doing similar research with a smaller sample size to avoid some of the issues associated with teaching grammar to students—for instance, ensuring that every student has an opportunity to put the new rules into practice. A similar study looking into how the length of time spent on each lesson would affect the outcomes might be beneficial.

Limitations and Suggestions for Further Studies

The effectiveness of teachers' methods for teaching grammar to language learners was examined in this study. However, there are still more topics to research in the future. First off, there were 32 and 33 students in each of the two groups that were observed in the current study. The classroom had to be somewhat lecture-styled. For future examination, it is beneficial to employ some well-crafted questionnaires. Furthermore, a future study involving a wider range of participants and teachers should be conducted. Lastly, to identify the primary grammatical issues that need to be addressed during the teaching and learning process, analytical research must be conducted in Iranian English classes.

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Biodata

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