

# A Comparison of the Effectiveness of Inductive vs. Deductive Instruction of Grammar to EFL Students

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## Abstract

The present study determines the effectiveness of inductive and deductive methods of grammar teaching on two groups of EFL students of a language institute in Shiraz, Iran. The researcher hypothesized that inductive method of teaching results in a higher learning outcome. Sixty students of the intermediate level were randomly assigned into two groups. First, a pretest was administered to both groups, after which the treatment stage, lasted 3 weeks, was performed. Getting benefit of the presence of the same teacher, 6 grammatical points adopted from targeted textbook were taught inductively to one group and deductively to the other. Soon after, a grammar test of the points taught was administered to both groups. Then the data was analyzed through t-test. Findings revealed that although there were differences in mean grade point average of both groups, no statistically significant difference was observed. There was no support for the researcher's hypothesis.

## Keywords

Inductive Approach, Deductive Approach, Grammar Teaching

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## 1. Introduction

Grammar teaching holds a crucial role in teaching English as a Foreign Language (EFL), as without good command of grammar, the language use will be constrained. Teaching grammar is basically teaching the language rules, also known as the sentence patterns, which are essential to define meaning and use. For the decades, grammar teaching has been through some debates which can be described at the following discussion. Before 1970s, grammar was the essential part of language instruction as it was believed that without knowing the grammatical rules of the language, ones will not be able to communicate well. This belief was then challenged by the notion that "knowledge of the grammatical system of the language...was one of the main components which underlie the notion of communicative competence." (Richards & Renandya, 2002). This shift suggests that to be a communicative speaker/ writer, one should not only master

the rules of the language (the language patterns), but also should know how these rules are put together in real communication to convey meaning. However, the language users now agree that without good command of grammar, language development will be constrained. Besides, language within a good grammar is a requirement for someone to be accepted in certain social contexts, says academics, law, medics, and such. Since then, the issue does not ask whether to teach grammar or not, but it shifts to: how should we teach grammar? Should we teach it deductively or inductively? Which grammar should be taught? It implies that "the controversy has always been whether grammar should be taught explicitly through a formal presentation of grammatical rules or implicitly through natural exposure to meaningful language use." (Nassaji & Fortos, 2011) Further, the most current issue in grammar teaching mentions that the main issues of grammar and grammar teaching covers three major problems, which are: "... beginning with those that

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conceptualized teaching in terms of methods with an exclusive focus on grammar, continuing later as types of exposure to meaningful communication, and emerging more recently as a set of instructional options with a focus on both grammar and meaning.”(Nassaji & Fortos, 2011).

Two very distinct and opposing instructional approaches are inductive and deductive. Both approaches can offer certain advantages. The deductive approach derives from deductive reasoning where the concept goes from general to specific. Rules, patterns, principles are presented first, and then moves to the examples. Deductive approach which is also known as rule-driven teaching enjoys the following advantages: 1. The deductive approach goes straightforwardly to the point and can, therefore, be time-saving. 2. A number of rule aspects (for example, form) can be more simply and clearly explained than elicited from examples 3. A number of direct practice/application examples are immediately given. 4. The deductive approach respects the intelligence and maturity of many adult learners in particular and acknowledges the role of cognitive processes in language acquisition. 5. It confirms many learners’ expectations about classroom learning particularly for those who have an analytical style. On the other hand, an inductive approach starts with some examples from which a rule is inferred. In grammar teaching, teachers present the examples at the beginning then generalizing rules from the given samples. Inductive grammar learning commonly happens for native speakers of English, where they can produce a grammatically correct utterance but they do not know the rules underlie it. Inductive approach is often considered to have the following merits: 1. Learners are trained to be familiar with the rule discovery; this could enhance learning autonomy and self-reliance. 2. Learners’ greater degree of cognitive depth is “exploited”. 3. The learners are more active in the learning process, rather than being simply passive recipients. In this activity, they will be motivated. 4. The approach involves learners’ pattern-recognition and problem solving abilities in which particular learners are interested in this challenge. 5. If the problem-solving activity is done collaboratively, learners get an opportunity for extra language practice (Silvia, 2006).

The biggest difference is the role of the teacher. In a deductive classroom, the teacher conducts lessons by introducing and explaining concepts to students, and then expecting students to complete tasks to practice the concepts; this approach is very teacher-centered. Conversely, inductive instruction is a much more student-centered approach and makes use of a strategy known as ‘noticing’ in which the teacher would present the students with a variety of examples for a given concept without giving any preamble about how the concept is used. As students see how the concept is used, it is hoped that they will notice how the concept is to be used

and determine the grammar rule. As a conclusion to the activity, the teacher can ask the students to explain the grammar rule as a final check that they understand the concept.

As we can see, these two methods are completely different and simultaneous use of both is impracticable. This distinct feature finds, obviously, reflection in the results that they produce. All things considered, the researcher of the present study believes that applying inductive method as the main, but not the only, means of presenting grammar instruction is bound to produce amazing results and help students back up their knowledge with intuition and a deeper understanding of the second / foreign language. Therefore this paper is devoted to measure if there is any difference between inductive and deductive methods in terms of teaching grammar to EFL students and also investigate which one of these methods results in a higher learning outcome.

## 2. Literature Review

The controversy over methods of teaching grammar has developed in the recent past, but the question remains as to the relative effectiveness of different approaches. In teaching and learning grammar, there are several methods of choice for teachers to realize the objectives to be achieved. Until now, teachers have not reached agreement on an effective method to teach and enhance understanding of grammar. With many of the methods of teaching grammar, the debate among teachers still occur. The methods that become a matter of debate are Inductive and Deductive methods of teaching. To investigate the greater effectiveness of either of these methods a number of studies have been carried over.

The inductive approach to instruction has advanced differently throughout past studies creating different variations on the same concept. For instance, Seliger conducted a study in which the instructor presented the grammar rule at the end of the lesson (1975). In other studies, the students were instructed to identify the rule on their own following the lesson (Robinson, 1996; Rosa & O’Neill, 1999; Shaffer, 1989). Furthermore, there have been variations in which students were exposed to instances of the target structure embedded in a context which did not point out the rule nor require that the students look for any sort of pattern (Abraham, 1985; Herron & Tomasello, 1992; Erlam, 2003). The conclusions of the aforementioned studies display mixed results with some proposing that the inductive approach may be more advantageous than the deductive approach (Herron & Tomasello, 1992), Contrary to the above mentioned studies, there are also some other studies which resulted in the more effective nature of deductive approach to teaching grammar. Nagata (1997) has done an experimental

comparison of deductive and inductive feedback generated by a simple parser. This study describes a parse-driven Japanese tutor designed for second language instruction and presents an empirical investigation of the program. Results of the study indicate that ongoing, rule-driven deductive feedback is more effective than example-driven inductive feedback for learning relatively complex structures. Meanwhile, Galotti (1997) has investigated children's differential performance on deductive and inductive syllogisms. In this investigation, fourth grade elementary students were examined to see when and how children distinguish deductive and inductive problems. It was found that by fourth grade students, confidence ratings for deductive problems were higher than those for inductive problems; therefore responses were faster. Some other scholars suggest that the deductive approach is more successful (Robinson, 1996; Seliger, 1975), and the remainder making no distinction between the two approaches (Abraham, 1985; Rosa and O'Neill, 1999; Shaffer, 1989). Shaffer (1989) argued against the deductive method as her study showed that students at all ability levels performed better when they were taught grammar that is considered to be difficult inductively, while Hammerly (1975) insisted that the inductive approach should only be used when teaching relatively simple grammatical structures because they felt the method is simply too difficult. Due to these conflicting results, it is impossible at this point to make a definitive statement validating or nullifying the use of any of the varieties of these instruction approaches. Therefore the current study will explore the deductive and inductive approaches to explicit grammar instruction in comparison to one another to see which one of these approaches can lead to a better learning outcome.

### 3. Significance and Objectives of the Study

A complex and continuous problem of educators is to determine the most effective method of teaching. This problem is complicated by the consideration of various instruction techniques under different titles such as discovery, problem-solving, expository, inductive and deductive methods of teaching. Most theories of instruction deal with one of these methods, but they don't share a common interpretation. One of the most interesting and important debates in education revolves around the relative efficacy of inductive and deductive methods of teaching. Research on the effectiveness of these two methods of teaching has not adequately demonstrated the superiority of either one of these teaching approaches. Therefore through this investigation the researchers aim to measure:

1. whether there is any difference between inductive and deductive methods in terms of teaching English grammar to EFL students.
2. which of these methods results in a higher learning outcome.

In order to help EFL learners to learn grammar more effectively and efficiently.

## 4. Method

### 4.1. Participants

The participants of the study were two groups of EFL students of a private English Institute in Shiraz, Iran. Sixty male and female students ranged from 14 to 17 years of age, were randomly selected and assigned to two groups of thirty students.

### 4.2. Materials

There was just one instructor for both groups who taught the same grammatical points to the students over the same time span using two different methods of teaching (i.e. deductive vs. inductive). The materials which were constructed and used for both experimental and control groups consisted of six grammatical points which were taught during three weeks. To avoid disruption of language learning process, these grammatical categories were deliberately chosen in the order presented in the students' text books:

1. simple past and past progressive
2. see + simple form of the verb
3. simple future (going to + simple verb)
4. possessive pronoun
5. to infinitive form of the verb; verb + (object pronoun) + to + verb
6. noun clauses ; e.g. How to go, When to go, Where to go

Before the treatment, Oxford Placement Test was administered to confirm the homogeneity of both groups. And after the treatment phase, a grammar test which was designed by the researchers was administered to test the hypothesis. This test composed of 30 items ranging over the grammatical points taught to both groups. The reliability of this test was measured through a pretest procedure.

### 4.3. Procedure

As it was mentioned the subjects were assigned to control and experimental groups. The first step was to check the homogeneity of the students in each group. So a pre-test (Oxford Placement Test) was administered to both groups.

Soon after the pre-test the treatment phase was gone through. There was just one instructor teaching both groups. The instructor taught the same grammatical points inductively to the control group and deductively to the experimental group during three weeks.

Before the experimental treatment all the subjects were told that they were participating in an experiment, the aim of which was to see if they learn better as a result of applying a special method of teaching. They were also informed that after the teaching period they would be tested on materials. The time interval between the teaching phase and the testing phase was short (about three days). The pretest was an Oxford placement Test of 50 multiple choice items and the post test which was administered soon after the treatment was a test of 30 grammar items of the points which have been taught to the students. Soon after sample selection and administration of the pretest, treatment phase started.

The usual order of material presentation was inductively done in the textbook (intermediate textbook). In other words, new structures were first presented in a context (in a passage or a short conversation). Then some exercises were presented on the new structures and finally at the end of each unit there was a box called "Remember" in which the new grammatical rules and structures were constructed and reviewed. More exercises on the new structures were presented in the workbook which had to be done by the students at home. As mentioned earlier, the two groups were taught differently. So there were two sections one held in the morning (control group) and the other in the afternoon (experimental group). For each unit the instructor taught the new grammar structures inductively in the morning section, while in the afternoon section the reverse order was followed that is the grammar rules and structures were first presented on the board. The explanation was done on the structure by the instructor and examples were presented in the form of separated sentences. Then the students were asked to open their book in order to be presented with more instances of the new structures provided in the passage or the short conversation. Not much time was spent on the "Remember" box since the grammar rules and structures were presented in the beginning of the session. More exercises of the book were assigned to be done by the students at home. Each grammar point was taught in the same way; inductively in the morning section and deductively in the afternoon one.

## 5. Results and Discussion

As a pretest Oxford Placement Test was administered to the subjects of both groups in order to check their homogeneity. The mean grade average of experimental group was  $X=27.34$ , and the mean average of control group was  $X=29.36$ .

the summary of the results of the pretest is presented in table 5.1.

**Table 5.1.** Number of students, mean and obtained standard deviation for O.P.T.

Intermediate Students Administered Oxford Placement Test			
Groups	Number	X	SD
Experimental	30	27.34	5.318
Control	30	29.36	5.94

After the treatment phase, a grammar test which was designed by the researcher was administered to both groups for the aim of testing the hypothesis. The reliability of this test was measured through a pretest procedure. The test was administered twice to the subjects with a time interval of two weeks. Then the correlation of the results of the two administrations was measured through Pearson Product Moment formula. The correlation was  $r = 0.92$ . the summary of the results is presented in table 5.2.

**Table 5.2.** Mean and SD for Grammar Test in Two Administrations.

Intermediate Students Administered Grammar Test						
First Administration			Second Administration			
St.s Number	X	SD	St.s Number	X	SD	r
60	16.74	4.26	60	16.15	4.16	0.92

The validity of the grammar test was measured through the criterion-related method. The Oxford Placement Test was used as a standard test functioning as the criterion. Then the correlation between Oxford test results and that of the grammar test results was measured ( $r = 0.85$ ). The summary of the results is presented in table 5.3.

**Table 5.3.** Number of students, Mean, SD and the Obtained Correlation Coefficient between Grammar and Oxford Scores.

Intermediate Students Administered Oxford and Grammar Tests					
St.s Number	X Oxford test	X Grammar test	SD Oxford test	SD Grammar test	r
60	28.09	16.75	5.81	4.26	0.85

To compare the effect of the two methods on both groups t-test formula was applied. The result of t-test for the hypothesis is presented in table 5.4.

**Table 5.4.** Students Number, Mean and Obtained t Value for Testing Hypothesis.

Intermediate Students Taught Inductively and Deductively					
Groups	Number	X	SD	t. value	P
Control	30	15.86	4.15		-----
Experimental	30	16.43	4.22	1.39	

The hypothesis of the study stated that inductive method of instruction is more effective for intermediate students. In order to test this hypothesis, a t-test was used to test the effect of inductive and deductive teaching methods on the learning of intermediate students (control and experimental groups). The mean grade point average for control group was

$X = 15.86$  and the mean of the experimental group was  $X = 16.43$ . The obtained *t*. value was 1.39 which was not statistically significant (table 5.4.). So there was no evidence in the obtained result to support the superiority of inductive instructional technique on EFL intermediate students.

Significantly, this study found that both methods seem effective when teaching grammar since the results of the analyses indicate that the inductive approach had only a slightly significant effect on EFL 60 students' immediate learning of grammar than the deductive approach. This study and its design included the highly detailed, clear, and uniform lesson plans and scripts. All of the treatment procedures were designed as an integral part of typical foreign language classroom activities in order to avoid disruption of the language learning process. Additionally, as the findings demonstrate, all students participating in this study illustrated overall improvement in their grammar knowledge over the course of the study.

Though the differences in scores between the posttest and pretest described above could be attributed to the fact that the posttest was administered soon after the instruction session. Linguistic knowledge was, thus, still in students' short-term memory unlike many teachers think, grammar instruction has a "delayed effect" rather than an instant one. Therefore the visible improvement in the posttest should, thus, not be considered the actual effect of grammar teaching.

## 6. Conclusions

Some people perceive grammar teaching as essential to teaching any foreign language (for example those in favor of Grammar Translation Method), whereas others view it as an impediment to second language acquisition. Even experts on language teaching from the past and contemporary linguists like Stephen Krashen, who once said "The effects of grammar teaching... are peripheral and fragile," seem to question the very idea of including grammar lessons in second language teaching. This incessant debate over the usefulness and the form of grammar teaching (and, consequently, of grammar instruction), in which as of yet no one has been able to support their claims with an unquestionably conclusive research, has resulted in plenty of different methods and techniques of formulating grammar instruction, among which two stand out, namely inductive and deductive method.

The hypothesis of the study stated that inductive method of instruction is more effective for intermediate students. To test this hypothesis, a *t*-test was used to test the effect of inductive and deductive teaching methods. The result of which overweighed the use of neither of the approaches. According to the obtained result, since teachers tend to have

a 'favorite' approach, it is important to know both of them well and to be able to apply them in some situations.

This study's findings contribute another chapter to the longstanding debate over the deductive vs. inductive instructional approach in foreign language pedagogy.

The results of the research questions present significant evidence in favor of the effects of both inductive instructional approach and the deductive instructional approach on the learning of the six grammatical structures targeted, and show a positive trend through which the teachers and practitioners can get benefit of a combination of both approaches in terms of the grammar item, learner profile and setting. It is also teacher's decision to choose the suitable approach in terms of learner needs resulting in gaining the best impacts. It corroborates the idea of Hammerly (1975), who suggest that some structures are simply best taught inductively while others are best taught deductively (17; 105). Fischer (1979) also said in his article that many claim that deduction leads to a higher degree of certainty of grammatical knowledge because it is more logical. I feel that the idea that weaker students could more easily understand a certain structure by being taught about it using the deductive technique is possible. Perhaps it is the case that a certain amount of core knowledge is necessary for the inductive method to quickly be effective.

The findings from this study may not be generalizable to populations of students outside of the setting where this study took place. Additionally, in terms of assessing language skills, this study focused only on the effects of the deductive and inductive instructional approaches on written grammar skills.

Researchers did not collect data concerning the students' oral production of the targeted structures during regular class time. It is necessary to note as well that this study's findings pertain only to one particular level of EFL students. Future research will need to be conducted to assess not only the method of delivery and a greater number of structures, but also the effectiveness of various instructional approaches on the learning of grammatical structures in multiple language learning populations.

The outcome of this study highlights the need for further research into the effects of alternative approaches to grammar instruction on learner acquisition of grammar structures, as well as learner motivation and reception of the lesson.

Additionally, the results of this study show that there is a need to conduct a similar study with a larger sample size to increase the power of the data analysis. Similarly, it may be interesting to conduct a study examining how the amount of time devoted to each lesson impacts the outcome. The

favorable evidence gathered in this study about the impact of either of the approaches in language instruction motivates investigation into conditions under which these approaches could be most effective. Also looking into methods of reducing stress related to experiencing new methods of instruction could increase the effectiveness of the instruction. Finally, research into ways to increase learner motivation during lessons could give further merit to the approaches. Exploring these topics in more detail in the future could enhance knowledge and understanding in the field of EFL/SLA with regards to successful methods of presenting grammar in the classroom.

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