

Inductive vs. Deductive Grammar Instruction and the Grammatical Performance of EFL Learners

Fatemeh Behjat

Islamic Azad University Abadeh Branch

Learning a foreign language offers a great challenge to students since it involves learning different skills and subskills. Quite a few number of researches have been done so far on the relationship between gender and learning a foreign language. On the other hand, two major approaches in teaching grammar have been offered by language experts, inductive and deductive. The present study examines which method of teaching grammar is more fruitful for Iranian male and female students. For this purpose, 150 freshman students, 110 females and 40 males, majoring in English were selected from all available students at Abadeh and Shiraz Azad universities. All the subjects took the NTC's grammar test prior to the instruction as pre-test. Then, they were divided into two groups and were taught grammar inductively and deductively in each group for one semester. At the end of the instruction, the same test was taken as post-test. The comparison between the students' pre and post-test indicated that there was a significant improvement in their knowledge of grammar. By the way, through a two-way ANOVA, it was found out that males learned grammar better when they were taught inductively and females showed a better performance when they were taught deductively.

Keywords: Inductive Grammar Teaching, Deductive Grammar Teaching, Foreign Language Learning, Gender, Knowledge of Grammar

To know what grammar is, Ur (1996) pointed out that to most people, grammar is the way words are put together to make correct sentences. Rivers (1981) defined grammar as the rules of a language. Based on the definition, since grammar is about form, it is a controversial issue to teach or not to teach grammar directly. A number of issues in classroom second language instruction, as they relate to grammar instruction, are considered in the context of recent research and theory.

Weatherford (1997) tries to explore some issues in his study. They include whether the inductive or deductive approach should be adopted; whether students can learn basic grammar rules on their own, or need teacher intervention; whether grammar should occupy a central or more subordinate role in the classroom, and what constitutes grammar. Then, he concludes that grammar is a necessary component of second language instruction, not to be either the primary focus of instruction or taken to the status of unimportance. Through a short look at the last century of language teaching practices, mixed opinions about the place of teaching language forms are revealed. In some methods, teaching grammar through explaining the rules is one of the basic parts of a language classroom. While in some others, it is believed that grammar is learned through examples and situations. To provide some perspective on challenges concerning the role of grammar in language teaching, Celce-Murcia (1991) offers some methodological trends of the past 25 years. She asks when and to what extent one should teach grammar to learners. She, then, proposes a decision-making strategy for solving this controversy, based on learner and instructional variables. Taking Canale and Swain's (1980) model of communicative competence, which views grammatical competence as one component, and she argues that grammar instruction is part of language teaching. And she suggests integrating grammar instruction into a communicative curriculum and giving grammar a special importance within the classroom.

Current views on second language classroom methodology agree on the importance of form-focused instruction within a communicative framework, ranging from explicit treatment of rules to conscious-raising techniques. Actually this range leaves a

wide variety of opinions from which a teacher can choose, depending on the students (Fotos & Ellis, 1991; Fotos, 1994).

As far as language course books are concerned, most general ELT books now include grammar tasks, suggesting a common view in ELT that learners benefit from form-based (deductive) tasks to improve their L2 accuracy. Nitta and Gardner (2005) develop a framework of conscious-raising (inductive) tasks. Comparing inductive and deductive tasks in grammar, they say both approaches are seen in the presentation of grammar. Mohamed (2004) reports on a study that was carried out to determine learners' attitudes to learning grammar through the use of two types of conscious-raising tasks. A deductive task provide explicit explanations of a grammar structure, while an inductive one require learners to discover the grammar rules for themselves. The results indicate that learners view both types to be useful, and there is no obvious preference for type over the other.

In answering the question whether grammar should or should not be taught Brown (2001) talks about six variables based on which the teacher can decide about teaching grammar, and the way it should be taught. Regarding two major methods of teaching, Chastain (1988) discusses deductive and inductive method. Deductive teaching proceeds from rules to examples, and inductive method takes the opposite approach of beginning with examples and moving to the rule. Deductive learning requires that learners understand and use the principles to specific situations, and it rests on the premise that the most efficient approach to learning is to comprehend and apply rules. Inductive learning, on the other hand, accepts the assumption that learners learn better when they use examples to infer and formulate their own rules. According to Brown, factors determining which method to choose are sex, age, proficiency, educational background, register, and needs.

DeKeyser (1995) points out that explicit-deductive learning is more effective than implicit-inductive learning for the acquisition of grammar rules. Haight et al. (2007) investigate the effectiveness of deductive and inductive approaches for teaching grammar in college French classrooms. They teach eight grammatical structures through inductive and deductive methods.

The results of the research indicate a significant difference between participants' mean scores favoring the inductive approach. Findings of the study also indicate strong trend in favor of induction on the long-term learning of grammatical structures. They support using an inductive instructional approach to teach in the beginning level foreign language classroom. Based on a study done by Shaffer (1989), there is no significant difference between inductive and deductive teaching approaches to grammar when used in high school second language classes. In a study done by Ediger (1983), numerous issues are discussed pertaining to the elementary school curriculum, including selection of learning activities, the structure of knowledge, teaching of grammar, inductive versus deductive learning, individual versus group work and some other related issues. Regarding grammar, he points out advantages and disadvantages associated with inductive and deductive approaches in educational centers of the United States.

But in most contexts, an inductive approach is more appropriate because it is more in keeping with natural language acquisition, and it allows the students to get a communicative feeling for some aspects of language before being overwhelmed by grammar explanations and builds more intrinsic motivation by allowing students to discover rules rather than being told them. Thomas' (1970) study to determine whether inductive or deductive teaching method is better able to help college freshman English students make progress in formal grammar and mechanics, in vocabulary and reading comprehension, and in composition. He, then, concludes that (1) English students taught by the inductive method achieved significantly more in the area of vocabulary and reading comprehension than did the others, and (2) deductive and inductive methods are equally effective in instructing remedial composition skills, in grammar, and in mechanics.

Regarding the present study, a number of researches have been fulfilled by different people on the effectiveness of deductive and inductive teaching and the role of gender in foreign language learning. Mitchel (1993) examines several recent views on grammar, and considers some of the problem areas in teaching grammar such as the inductive-deductive debate, the use of the

first- or second-language for grammatical presentations, and the explicit-implicit controversy. Disregarding other issues, he says that deductive teaching is more fruitful for EFL elementary level female students. Maccoby and Jacklin (1979) accept that gender differences enhance the performance of women on verbal tasks and men on spatial ones. Baker and MacIntyre (1997) study the role of sex in second language communication and declare that male students show a lower positive attitude toward learning French. Bacon (1998) does a research on the relationship between gender and comprehension, and analysis in his study reveals significant statistical differences between the responses of men and women in their comprehension.

El-Banna (1985) investigate the effectiveness of teaching grammar by deductive versus inductive methods in an English coeducational language course. Additional student variables considered are general intelligence, verbal ability, and sex. Analysis of the results reveals no significant overall difference in effect between the two instructional approaches. However, differences are found related to the level of intelligence, verbal ability, and sex. Based on the findings, it is recommended that male learners prefer to learn grammar through inductive method. Phakiti (2003) examine gender differences in cognitive and metacognitive strategy use in the context of English as a foreign language reading comprehension. In his study, males and females do not differ in their reading comprehension performance, but males reported significantly higher use of metacognitive strategies than females. Ellis (2006) considers eight key questions relating to grammar pedagogy in the light of findings from SLA. He complements Celce-Murcia's (1991) article on grammar teaching in the 25th anniversary issue of TESOL Quarterly, which considers the role of grammar in a communicative curriculum and draws on an a linguistic theory of grammar. He finally concludes that teaching grammar through inductive method can best work for female students. In Iran, no research has been done so far related to the issue. There are both male and female students in most of language classes at the university, and the same method of teaching grammar is applied for all. Sometimes the performance of

students, male and female, doesn't seem to be better than each other. So, a comprehensive research has been done to see if students really differ in their understanding English grammar when they are taught inductively or deductively considering their sex.

Research Questions and hypotheses

To see if there is any improvement in the learners' grammar performance after teaching them inductively and deductively, and to find out which group perform better considering their sex, this study addressed the following research questions:

1. Is there any relationship between teaching grammar and EFL learners' gender?
2. Do the female learners perform better in grammar test when they are taught deductively?
3. Do the male learners outperform the female learners when they are taught grammar inductively?

Based on the above-mentioned research questions, three null hypotheses were formed as the following:

- Ho - There is no relationship between learners' gender and teaching grammar.
- Ho- Female learners do not perform better if they are taught grammar deductively.
- Ho- Male learners don't outperform the female learners in grammar test when they are taught inductively.

Method

Participants

150 students out of 300 available freshman students majoring English at Abadeh and Shiraz Azad universities were selected randomly to participate in the study. This population was chosen because it was supposed that they all had the same background knowledge of grammar. It should be noted that all of these students took Grammar (1) at the university, and actually treatment took place in their grammar class. From the so-called group, 110

students were female and 40 students were male students.

Materials

The research instrument used in the study involved a number of 30 NTC's multiple-choice questions on structure. Prior to the actual test administration, this test was piloted for content by the researcher. The test data were entered into a computer and analyzed. The result of the analysis indicated an approximate reliability of 0.88 and validity of 0.73.

Procedure

Although quite a few researches have been done on the relationship between gender and language learning, the role of inductive and deductive methods of teaching grammar for male and female students has not been addressed widely in the literature. Previously, it was accepted that, in general, females have a better performance in verbal tasks and males on spatial tasks because left hemisphere of the brain which is responsible for verbal activities is thicker in females compared to the males who have thicker right hemisphere and thus are able to analyze the phenomena better (Chastain, 1988). Moreover, Brown (2001) raised the question whether learners are better off, being given a rule and allowed to practice various instances of language, or various language forms are practiced, but the learners are left to discover rules and make generalizations on their own. Then, he concludes that disregarding many factors, an inductive approach is more appropriate for all learners.

To fulfill the present study, a pre-test of grammar was taken by the students before the instruction. The purpose of taking this test was for later comparison between the performance of students at the end of the instruction and that of the beginning to see if there is any significant difference (to obtain the gain scores) in their performance in grammar test or not. The test used both as pre- and post-test was NTC' grammar test.

Then, the students were divided into two groups and were taught English grammar inductively and deductively during their regular class time at the university. The instruction took about four months. The subjects, then, took their final test (post-test) at the end of the instruction. And in this way, the data were collected.

Results

To see if there is any improvement in the performance of students in general, a t-test was taken to compare the mean score of all subjects' pre- and post-tests. The result turned out to be 21.9 which was more than the critical value of t (1.96). So, it can be concluded that the instruction has been effective. The table representing the outcome of the t-test comes as the following:

Table 1
Paired t-test for comparing pre- and post-test scores

variable	no. of pairs	corr.	Mean	sd	t-value	df
pre-test	150		13.4200	3.413		
post-test	149		15.0167	3.251		
					21.9	

To reject the null hypothesis that there's no relationship between the performance of students who were taught grammar inductively and deductively and their gender, and to see which group, males or females, performed better a two-way ANOVA was applied. The result of the comparison is shown in Table 2.

Table 2
Two-way ANOVA for comparing female vs. male performance and inductive vs. deductive teaching

Source of variation	sum of squares	df	F
Main	116.239	2	5.843
Sex (F-M)	12.277	1	12.704
Gram (ind-ded)	101.837	1	10.238
Two-way interaction			
Sex – gram	1.815	1	18.150

Explained	128.938	3	4.321
Residual	1442.310	145	9.947
Total	1571.248	148	10.617

As the table indicates, F-value for sex factor was 12.701 which was higher than the critical value of F (4.052) and F-value of method of teaching grammar was 10.238 which was again higher than F-critical (4.052). Thus, it can be concluded that both sex and method of teaching play important roles in the improvement of students' knowledge of grammar.

Because the interaction between the two factors, gender and method of instruction, was meaningful (18.150), a sheffe test was applied to examine which group performed better than the others. The results are shown as the following:

<u>GROUP</u>	<u>MEAN</u>
Male – inductive	16*
Male – deductive	11****
Female – inductive	13.4***
Female – deductive	14.7**

As the results suggest, the mean score of inductive method was 14.7 and the mean score for deductive teaching was 12.8 which means that generally inductive teaching was more helpful in teaching grammar than deductive method. Moreover, males who received grammar lessons inductively outperformed all the other groups (mean = 16), and females who were taught grammar deductively (mean = 14.7) performed better than those who were taught inductively (mean = 13.4). The worst performance belonged to males who were taught grammar deductively (mean = 11).

Discussion

This study was designed to answer the question, firstly, whether foreign language learners can improve their grammar performance after a period of instruction. Based on this question, a null hypothesis was formed stating that there's no improvement in

the learners' grammar performance. To reject the hypothesis, and therefore, to support Weatherford (1997) who said that grammar instruction is a necessary part of second language instruction, a t-test was taken on the subjects' pre- and post-test of grammar, administered at the beginning and the end of instruction. The result of the comparison turned out to be 21.9. Due to the fact that the critical value of t (1.96) was much lower than the observed one, it was concluded that there's a significant difference between the performance of subjects in the pre- (mean=13) and post-test (mean=15).

Secondly, on the basis of the subjects' sex (male or female) and method of instruction (inductive or deductive), the subjects' scores were divide into four groups. The design was as the following:

	Male	Female
Inductive	G1	G2
Deductive	G3	G4

The second and third research questions were formed: whether male students could improve their grammar performance through deductive method and female students could outperform male learners when they are taught inductively. According to Mohamed (2004) who said that there is no preference for one method over the other, and El-Banna (1985) who stated that both methods are used as the situation warrants, these null hypotheses were formed: 1) male students can't do better on the grammar test when they are taught inductively, and 2) female students do not perform better when they are taught grammar deductively.

The result of the two-way ANOVA showed that the method of instruction can be a determining factor in the learners' performance since the observed value of F was 12.7 and critical

value of F was 4.0 and subjects' sex also affect their performance, with observed value of F as 10.2 and critical value of F as 4.0. To see which group of subjects did better than the others considering method and gender, a Sheffe test was used. The result of the Sheffe test indicated that the highest mean belonged to male students who were taught grammar inductively (mean=16). Thus the second null hypothesis was rejected. It also rejected the third hypothesis showing that female students can improve their grammar performance if they are taught grammar deductively (mean=14.7).

Conclusion

This study supports Thomas (1970) who said that deductive and inductive methods are both effective in instructing learners in grammar. It also follows what Brown (2001) said about factors which determine whether grammar should be taught deductively and inductively. It was found out students have different performances in their grammar tests based on their gender and the way they are taught. Whereas females can learn grammar better if they are given the rules first(deductive method), males show a better performance when they are given examples to induce rules(inductive method). So, the conception of not working on grammar directly in a second language class is rejected. A good language class should include ample grammar instruction, either inductively or deductively, along with instruction on major language skills.

The Author

Fateme Behjat is a teacher and lecturer at Azad university in Abade and Shiraz, Iran. She got her BA in English translation at Abade Azad University and received her MA in TEFL at IUST (Iran University of Science and Technology). She has an eight-year experience teaching at the ILI (Iran Language Institute) in Shiraz and Abade. Her main area of interest in research is issues in second and foreign language learning. In this regard, she has published a couple of articles, including "Topic interest, dictation

methods, and EFL learners' listening comprehension" in Roshd FLJ, no. 71 and an article on "Computers and Foreign Language learning" published in Shiraz Azad University Khabarname, no. 1. Her current published books are two comprehension books under the titles of "Outstanding people(1)" and "Outstanding people(2)" in 1386. She has been a faculty member at Abade Azad university since 1379.

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